McDONALD INSTITUTE CONVERSATIONS

Towards a Broader View of Hunter-Gatherer Sharing

Edited by Noa Lavi & David E. Friesem

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With contributions by
Olga Yu. Artemova, Ran Barkai, Nurit Bird-David, Adam H. Boyette, Hillary N. Fouts, David E. Friesem, Peter M. Gardner, Barry S. Hewlett, Robert K. Hitchcock, Emmanuelle Honoré, Jean Hudson, Robert L. Kelly, Noa Lavi, Jerome Lewis, Sheina Lew-Levy, Alan J. Osborn, Spencer R. Pelton, Magalie Quintal-Marineau, Erick Robinson, Kenneth Sillander, Penny Spikins, Gilbert B. Tostevin, Bram Tucker, George Wenzel & Thomas Widlok

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Noa Lavi & David E. Friesem,
Cambridge, October 2019

Introduction

Noa Lavi & David E. Friesem

> In a lecture about how children learn kinship terms in different societies, a linguist presented a short video showing an interaction between a two-year-old aboriginal child and his aunt while she was grilling a fish. The lecturer pointed out the kinship terms used by the aunt when referring to the child and how she encouraged the child to use a specific kinship term when referring to her. Following the lecture, in an informal discussion, a colleague of ours, a biological anthropologist, asked us whether we noticed how the video is showing from whom children learn basic social notions, emphasising the role of close kin in cultural transmission. As a social anthropologist (Lavi), I actually found this video to show a wonderful example of how children learn how to properly (indirectly) demand their share of food while respecting others' personal autonomy. I pointed out that following the child's request for the grilled fish, his aunt instructed him to 'not say you want a fish, say you *do not have* a fish'. Once the child re-phrased his words, he was immediately given a part of the fish. However, as an archaeologist (Friesem) I was actually focusing on the materials used for grilling and cutting the fish and the residues left on the ground as markers for this activity.

The story above demonstrates how the same social interaction can be examined from different perspectives. It also suggests that disciplines often direct their members towards specific questions and specific perspectives. For this reason, multi-disciplinary approaches are encouraged within academia, allowing one to regard one's object of study from many different perspectives. An effective way to do so, we feel, is simply be engaged in conversation with people from different disciplines who can view one's data through a different prism and might suggest new and refreshing ways of thinking about it.

This book re-opens the discussion about the practice of sharing among foragers and other small-scale societies, rethinking this practice's social importance, its place in constructing everyday life and social ethics and the conditions it requires. It offers a look at this central social notion in its broadest sense, regarding not only sharing of food (as was common in previous studies of the topic) but all kinds of sharing that comprise the everyday experience of foraging societies. As its title suggests, this book is about promoting a broader view of sharing by bringing together social and biological anthropologists and archaeologists who study past and present hunter-gatherers across the world. This cross-disciplinary integration yielded innovative and thrilling new theories, ideas and thoughts that help to shed light on this unique social trait and refine our understanding of the life of hunting and gathering communities in the past and present.

Why hunter-gatherers? Why sharing?

Hunting and gathering, or foraging, societies have been at the focus of anthropological and archaeological research since the early days of these disciplines. As suggested by the very name attributed to them, different communities were initially grouped together under this category primarily following economic aspects. Preceding the emergence of agriculture, around 11,000 years ago, all humans were considered to be hunting and gathering for subsistence. Hunting and gathering as the main subsistence economy is still practiced among a few communities around the world inhabiting diverse environments including deserts, rainforests and Arctic regions. And yet, this category

has long been debated by both anthropologists and archaeologists (e.g. Barnard 1983; Bird-David 1990; Ingold 2000; Schrire 1984; Schweitzer et al. 2000). The first question that comes to mind is how valid the category of hunter-gatherers is. Can we really use it to group together different societies living in diverse environments and under diverse social circumstances? Can we link between the present and the deep past, using contemporary hunter-gatherers as an analogy to understand the lives of those who lived a thousand and a million years ago? Last, how relevant is this narrow economic category in regard to such people today, considering that many, if not all, of those previously described as hunter-gatherers engage now in market economy, wage labour, agriculture or animal husbandry and gradually become active participants in nation state politics? While these questions are under constant examination and discussion, it has often been argued that *there are* unique similarities between these groups which override their differences, especially in comparison with their surrounding neighbours (e.g. Bird-David 1990). Moreover, many ethnographers highlight similarities in social notions, ethics and practices that are not only more central to people's lives than any specific economic engagement, but are also often maintained even in cases where actual hunting and gathering subsided. Scholars working across the globe had emphasized the communities' small scale, their high mobility, personal autonomy, egalitarianism and the practice of sharing as part of what they termed foragers' 'ethical framework' (Endicott 2011), ontology (Bird-David 2008), or 'foundational schemas' (Hewlett et al. 2011).

Ethnographers have long since singled out the practice of sharing as having a significant role in the lives of hunting and gathering communities around the world (among many others, see Bird-David 1990, 1999, 2005; Fortier 2001; Gomes 2011 in Asia; Bodenhorn 1990, 2000; Collings et al. 1998; Wenzel 1995, 2000 in the Arctic; Hawkes et al. 2001; Kitanishi 2000, 2006; Lewis 2005; Widlok 2004, 2013, 2017; Woodburn 1998 in Africa; Musharbash & Barber 2011; Peterson 1993 in Australia; Kaplan 1984 in the Americas). As such, it attracted the attention of many scholars who strived to understand its mechanism, reasons, implications and history. From an evolutionary perspective, hunter-gatherer sharing was often considered enigmatic as it was not clear why should an individual provide hunted or collected resources obtained through great effort to someone who has not helped to pay the cost and is not an immediate kin (Bliege Bird & Bird 1997). As a result, different models were suggested to explain this practice in terms of cost-benefit theories and risk reduction (e.g. Bliege Bird & Bird 1997; Blurton Jones 1987; Kaplan & Hill 1985; Hawkes 1991; Wood & Marlow 2013 to mention but a few). It has been suggested that due to the unpredictable availability of resources (e.g. hunted animals) and lack of storage, sharing provides a rational strategy, a sort of risk management bonding together the members of the group in a form of exchange and reciprocal relationships. Kaplan & Hill (1985) have shown that where large animals are shared, such sharing does indeed increase the nutritional well-being of the group as a whole, although not equally between all members. Blurton Jones (1984, 1987) offered a model he termed 'tolerated theft' to explain how the cost of *not* sharing resources among foragers is too high to pay due to the unpredictable nature of resources that often arrive in large quantities and are divided into smaller units. The use of the term theft in this model, however, was criticized as potentially misleading (as agreed by Blurton Jones himself, see Hawkes et al. 2014) because food is not perceived as private property among hunter-gatherer groups (Marlow 2010). In order to explain why foragers seem to prefer and invest significant effort in collecting large-sized resources under pressure to share, as opposed to obtaining smaller resources that could have been directed exclusively to their own families, Hawkes (1991) offered the 'show-off hypothesis', arguing that social reputation plays a significant role in the choices of resource acquisition and sharing behaviour (e.g. Hawkes 1991, 1993a; Hawkes & Bliege Bird 2002). Furthermore, it has been argued that competition, not necessarily over resources but for status gained through sharing, acts as an important spur to the economic productivity among humans (Hawkes et al. 2014). From an economic perspective, for many decades sharing has been understood through a market-derived theory of value, as a generalized form of reciprocity or as exchange (e.g. Sahlins 1972). In this sense, too, sharing has the potential to produce both prestige (of those who hunt and share more) and obligations (to share with those who shared with you).

In recent decades, the view of sharing as a generalized form of reciprocity has been debated by numerous social anthropologists who argued that sharing among foragers is *not* reciprocal and *should not* be taken as a form of exchange (e.g. Bird-David 2005; Peterson 1993; Widlok 2004, 2013, 2017; Woodburn 1998). Hunter-gatherers, it was argued, occasionally *do* store food, or have the ability to do so. Sharing does not always involve extraordinary quantities of meat that would otherwise be thrown away, and many foragers share ordinary food and items (Bird-David 1990, 191; Widlok 2013, 12, 2017, 75; Woodburn 1998, 48). Additionally, in many groups, scholars showed that the hunter has very limited control over the dis-

tribution of meat. Meat is usually given to everyone present at the moment, regardless of their capacity for future giving. Meat cannot be directed by the hunter to past or potential future donors and likewise does not bind the recipient to reciprocate and thus does not allow future claims (Woodburn 1998). On the other hand, it was also argued that sharing should not be considered an act of generosity as it often follows demands by people who see themselves as entitled to receive a share (Peterson 1993). Such analysis of sharing emphasizes donor obligation and recipient entitlement without implying any obliging long term engagements, because the obligatory nature of the donation disconnects it from the right to receive (Peterson 1993; Widlok 2004, 63; Woodburn 1998, 49–50). In this regard, sharing can be read as a levelling mechanism meant to reduce material inequality (e.g. Woodburn 1980, 1982, 1998).

Various mechanisms and methods were reported among different groups showing how the hunter is systematically decoupled from the meat and the giver from the receiver. These include depreciating the share and the provider (e.g. Turnbull 1966, 183; Woodburn 1982, 440–1 about African Mbuti and Hadza respectively), not involving the hunter in the act of butchering (e.g. Woodburn 1998, 51, about the Hadza), regarding as giver others than the hunter (e.g. his wife; see Bodenhorn 2000 about Alaskan Inupiaq; the owner of the dart, see Endicott 1988, 115–16, about Malaysian Batek), or attributing a dominant role in the division of shares to children (e.g. Bird-David 2017, 145, about South Indian Nayaka). Among some foraging societies, food is further detached from the person who hunted or gathered it as it is perceived as *given* to all the people by the environment or an environment-related being, such as the master of animals or the hunted animal itself (e.g. Bird-David 1990; Bodenhorn 2000b; Ingold 1996; Jackson 1995; Naveh 2007; Tanner 1979).

Although sharing is not the sole mode of resource transfer among foragers (e.g. Wiessner 1982 about *hxaro* exchange among the !Kung; Bird 1983, 78–9, about instantaneous payment for services by fellow Nayaka; Bodenhorn 2000, 31–2, about different ways of distribution of different kinds of prey among the Inupiaq; Woodburn 1998, regarding hunters' entitlement to at least some of the meat among the Hadza), it is considered a dominant practice as it is closely linked to people's sense of personhood and relatedness, deriving from and reinforcing social relations (e.g. Bird-David 1999, 2006; Endicott 1988; Gomes 2011; Kwok 2011; Myers 1986; Peterson 1993; Widlok 2017). Myers described sharing as one of the main social actions people are required to constantly perform in order to reaffirm kinship ties (Myers 1986, 104). Bird-David argued that by sharing, persons are 'made' relatives, and this in turn invites further sharing, which is required for the maintenance and generation of relatedness (Bird-David 1999, 73). Furthermore, it has been argued that the focus in sharing is not on dispersing property but on uniting people, expanding group boundaries and forming relatedness and a shared identity, a sort of extended self (Widlok 2013, 25; 2017, 20–4). Sharing not only shapes relations and affects the material culture, it also acts as a major factor in decision making, use of space and the formation of the dwelling environments (Bird-David 2009; Lavi & Bird-David 2014; Myers 1986; Friesem & Lavi 2017). The notion of sharing, coupled with that of non-sharing, is therefore ever present in the everyday lives of foragers. This argument is strengthened by many contemporary cases that demonstrate the persistence of sharing long after actual hunting and gathering has been abandoned or relegated to a marginal economic activity due to recent changes in the environments and lifeways of those traditionally called hunter-gatherers (e.g. Bird 1983; Bodenhorn 2000; Collings et al. 1998; Gomes 2011; Hart 1978; Kitanishi 2006; Musharbash & Barber 2011; Naveh 2007; Peterson 2013; Smith et al. 2010; Wenzel 2000; Widlok 2013).

Encouraged by the ethnographic observations on the role of sharing in the lives of contemporary hunter-gatherers, some archaeologists have tried to find evidence for sharing among prehistoric and early agrarian societies. However, being limited to the analysis of materials which are preserved in the archaeological record, only a few studies have discussed this issue directly (e.g. Bogaard et al. 2009; Enloe 2003; Parmalee & Klippel 1983; Speth 1990; Stiner et al. 2009). The main reason lies in the difficulty identifying in the archaeological record the social and ecological perceptions and behaviours that are associated with sharing and distinguishing them from other modes of food distribution (see more in Chapter 9 by Kelly et al.). It is therefore not surprising that most of the archaeological discussion about sharing relies on ethnoarchaeological studies (e.g. Kelly 1995; Yellen 1977, Binford 1984, to mention but a few) which aim to link between contemporary hunter-gatherers' practices and the formation of specific patterns of material distribution that can later be used as a reference framework to interpret the archaeological record.

Among the few studies that argued for an evidence of hunter-gatherer sharing in the archaeological record is the work of Isaac (1978a, 1978b) that interpreted the distribution of stone tools and animal bones dated to about two million years ago in East Africa to evince meat sharing among early hominins.

Bunn & Kroll (1986) used the frequencies of animal bones and cut marks found in Olduvai Gorge, Tanzania, dating to 1.75 million years ago, to argue for systematic butchery of substantial quantities of meat and marrow resulting in sharing on a significant scale. However, both of the above studies from East Africa were criticized for presenting patterns that could have resulted from carnivore or scavenger activity and not necessarily from human behaviour (see comments in Bunn & Kroll 1986). Parmalee & Klippel (1983) examined the spatial distribution of carcasses in the Rhoads site in Illinois as an indication of economic interaction within a campsite, concluding that the distribution of deer carcasses was a result of sharing practices between individuals or families. Enloe (2003) analysed the spatial distribution of individual reindeer carcasses from the late Upper Palaeolithic site of Pincevent in France. He argued for clear evidence of food sharing by using carcass refitting which demonstrated that bones from the same carcass were transported to different households located at the same archaeological level. Stiner et al. (2009) reported a high abundance of randomly orientated cut marks on large game bones from Qesem Cave, a late Lower Palaeolithic site in Israel. They argue that meat distribution 400-200 thousand years ago may have been highly individualized, with little or no formal apportioning of meat. By comparing these patterns with bones from Middle and Upper Palaeolithic sites that present systematic cut marks, Stiner et al. (2009) suggest that important differences in the practical and social mechanics of meat-sharing appear between the late Lower Palaeolithic and later periods.

From the representative studies mentioned above it is clear that despite the great attention given to this significant practice, the examination of sharing among foragers by both archaeologists and anthropologists has been almost entirely directed to the distribution of food, particularly large game. There are various possible explanations for this particular focus. First, hunting (especially that of large game), being an impressive act, thought of as requiring both skill and talent, attracted more scholarly attention than lower key daily actions such as fruit picking, tuber digging or sitting around the fire. Additionally, it might be easier to spot evidence of sharing of large game in archaeological records, for example by examining the spatial distribution of animal bones (e.g. Bogaard et al. 2009; Bunn & Kroll 1986; Isaac 1978a, 1978b; Parmalee & Klippel 1983), refitting animal carcasses (e.g. Enole 2003) or analysing patterns of cut marks made on bones (e.g. Stiner et al. 2009). Nevertheless, *there are* few archaeological accounts which could be read as evidence of what we might interpret as sharing of knowledge or other immaterial aspects (see the overviews provided by Tosteving and Honoré in this volume), but those were usually not framed by their authors in terms of sharing. Within anthropology, there are also a few rarer accounts describing the sharing of other non-edible material objects (e.g. see Widlok 2017, 114, about tobacco; Bird-David 1990; Wenzel 2000 about work tools; Peterson 1993 about money). Yet there are almost no papers that go beyond the sharing of material objects (whether edible or not) while making use of the terminology, mechanics and social rationality of *sharing*. One particular exception can be found in Bird-David's description of the Nayaka she worked with as sharing not only things, but also *actions, spaces and their very selves* with each other (Bird-David 1999; 2009; 2017). Despite this absence of data, there are some cases that suggest that different types of sharing are likely connected and inter-dependent. For instance, some accounts showed that reduction in opportunities of being together with relatives (which can be viewed as sharing of selves, actions, time, etc.) results in reduction of sharing and is reflected in the local relationships (e.g. Kwok 2011, 165–6; Lavi 2018, 132–48). It seems of great importance to refer to this gap in the data. Studying sharing beyond game meat and even beyond any material aspect may open a window to new ideas about the practice of sharing, its working and significance among the people practicing it.

About the book

This edited monograph emerged from a conference titled 'SHARING: The Archaeology & Anthropology of Hunter-Gatherers', held at The McDonald Institute for Archaeological Research at the University of Cambridge in September 2016. The aim of the conference was to bring together archaeologists, social anthropologists and biological and evolutionary anthropologists studying hunting and gathering societies in the past and present, with a particular focus on sharing as a central cultural pillar. Assembled together, leading scholars from different fields who famously engaged with the topic of sharing discussed sharing in its broader sense to include sharing of space, actions, knowledge, selves and identities. This fruitful discussion yielded innovative ideas and theories regarding various aspects of sharing.

As a result of the conference, this edited monograph brings a collection of papers that re-open and re-examine this well-studied concept of sharing among hunting and gathering societies in the past and present. It presents novel theories and offers new frameworks that re-shape the ways we should think

about and understand this central practice, its social implications and people's daily life. Broadening the concept of sharing brought about engagements with fascinating new aspects of this practice (e.g. sharing of selves, space and time to be equally perceived and valued by people as sharing of food) as well as new perspectives about its more intangible aspects such as relatedness, sociality, values, identities and social, self and environmental perceptions. Involving scholars from diverse fields, the book provides inter-disciplinary perspectives for the study of hunting and gathering societies from the early Palaeolithic to modern times and in a wide range of geographic areas and contexts. Each chapter brings a different angle to examine the practice of sharing and its meaning and impact on everyday behaviour, the formation and maintenance of social relations, decision making, social identities, perceptions of self and the environment, patterns of use of space and material culture. In addition, the book's chapters re-open the questions of the social conditions and realities that such practice creates and allows, and what conditions it requires, alongside the fine-tuning of its working.

A cross-disciplinary discussion between archaeologists and social, biological and evolutionary anthropologists such as the one offered in this book is surprisingly rare. This is mostly due to the difficulty and reluctance in associating contemporary foragers with Palaeolithic ones and tying between mundane ethnographic observations and evolutionary models. Yet, as the following chapters will show, while caution is indeed required in engaging in such mutual discussions, they nonetheless yield fascinating new questions and perspectives. In each chapter, writers were encouraged to consider the possible contributions of their theories to other disciplines and *vice versa*. The emergent ideas can advance our thinking toward both past and present societies. Sharing serves as a good common ground for such a cross-cultural discussion. Being first and foremost a practice, sharing can be more easily observed and studied through field observations and/or material culture. Thus, the focus on sharing, as a practice *and* a foundational social schema, can therefore aid to unravel social aspects of foraging societies, which are otherwise intangible to mere material analysis, without implying a direct analogy between the present and past.

Apart from the contribution to the academic audience and advancing our knowledge of the human past, this new discussion on sharing is highly relevant to the understanding of the contemporary realities of modern foragers. In today's context, some of these communities are seen by their neighbours, developers and state agents as poor, lazy, irresponsible or lacking motivation to work to assume what non-foragers often call 'well-being'. Some of the perspectives presented in this book may offer an alternative view, even contradicting that above, for the meanings, reasons and implications of common daily practices among foragers.

Innovative perspectives of sharing: chapters outline

The first grand contribution of this book lies in a new in-depth discussion about the centrality of **intimacy, presence and shared-living** (Part I) in the practicing of sharing. Looking at those aspects reframes sharing not so much as a strict social rule or an official norm but more as a derivate of a specific way of life which allows it. In the opening chapter of this part Bird-David (Chapter 1) urges scholars of hunter-gatherer communities to address the importance of intimate living to the working of sharing by re-introducing the aspect of scale into the analysis of those called 'small-scale/indigenous societies'. By examining five well-known studies of foragers' sharing (Marshall 1962; Woodburn 1980; Bird-David 1990; Peterson 1993; Widlok 2013; 2017), she shows that the consideration of the scalar and kinship frameworks of hunter-gatherer sharing has been neglected in previous ethnographic writing. Bird-David argues for the necessity of training attention to scale and scaling (as a practice). Foragers' tiny communities, she shows, are hyper-relational and hyper-perspectival. All members are interconnected kin; each is uniquely and multiply related to each of the others. She demonstrates how the small size of the group plays a central role in their concepts of community. Living closely together, sharing space, resources and living (in a sense even sharing themselves) is crucial in how these foragers understand and form relatives. Consequently, the smallness of the group and its kinship are critical to our understanding of all aspects of the forager world, and in particular for the context that allows sharing.

The second chapter by Widlok (Chapter 2) offers a new theoretical model of sharing which has a temporal, processual dimension, while not relying on the assumptions of behavioural ecology. He highlights the central place of *presence* in the practice of sharing. The pressure to share, he argues, is 'felt' through presence, co-residence and participation in each other's lives. Re-thinking the terms through which we understand hunter-gatherers' sharing, Widlok's account suggests seeing it not in terms of moral *obligation* (as it is often viewed) but in terms of *opportunities.* Co-presence provides *opportunities* to request (from others), to respond (to others) and to let go (for others); without

them the practice of sharing does not take place. The temporality of sharing is due to the fact that sharing comes to an end when requests come to an end and when shared presence comes to an end (ranging from mere physical separation to its ultimate expression, death). One implication of this temporal aspect is explaining why sharing decreases when people are culturally less exposed to their own finiteness and to that of others, for instance as a result of ideologies that deflect and bracket out this finiteness.

In line with the theoretical considerations offered by the two opening chapters, Hewlett, Hudson, Boyette & Fouts (Chapter 3) engage with the centrality of close presence and shared lives from a different angle, offering an innovative approach by looking at *sharing of space* and its implications for the practice of sharing in general. Comparing the Aka hunter-gatherers to their Ngandu farming neighbours in Central African Republic, Hewlett et al. regard the sharing of space in four domains: settlements, houses, beds, and interpersonal interactions (touching). They show how the Aka's spatial patterns are dictated by their desire to stay physically close to others. The intimate shared space during the day and night, the high frequency of touching, along with the sensitive care, provide a multi-modal (biological, psychological, cultural) environment in which to learn trust, empathy, and cultural models. These in turn help to contribute to other features of forager life, such as extensive sharing of food, childcare, and knowledge.

Spikins (Chapter 4) examines the significance of sharing and its evolutionary implications as part of intimate social and emotional relationships in the distant human past. She offers an explanation to understand the widespread care for illness, injury and impairment throughout the Palaeolithic, which at first does not seem to fit with a rational evolutionary sense due to its high cost and low pay. Spikins argues that the intimate life people shared led to complex evolved cognitive-emotional capacities in which people are inclined to give without necessarily receiving a direct return. Furthermore, the compassion and generosity involved in sharing an intimate life and care for others is suggested by Spikins to result in inclusion, support and appreciation of various skills and talents, which may also bring disadvantages and vulnerabilities (e.g. autism). Overall, the social, emotional and inclusive relationships people developed in their intimate communities may well explain the formation of human diversity as we recognize it today and its deep roots in human prehistory.

Sillander (Chapter 5) joins the authors of previous chapters in arguing that sharing is socially conditioned through aspirations for closeness. Studying Southeast Asian shifting cultivators and horticultural societies which lead a social life featuring abundant sharing, he suggests that a rigid economic explanation is insufficient to explain sharing. He focuses on several qualities of sociality: open aggregation, relatedness and inclusive classificatory kinship. Sillander argues that a performative social order involving social indeterminacy and small-scale societal demographic conditions compels sharing as a means for accessing social and material resources. Close social relations based on intimate practical association give rise to positive moral valuation of relatedness and sharing. Sillander revisits kinship as a central socially constituted force in hunter-gatherer and like societies, instrumental in legitimating demands in immediate sharing contexts and providing the underlying rationale for long-term personal sharing dispositions.

In the closing chapter for this part (Friesem & Lavi, Chapter 6), we attempt to frame hunter-gatherer sharing as echoed by previous chapters in this part of the monograph – to include the intimacy of living-together, shared social identify and co-presence – into a methodological approach towards the archaeological record. By drawing on our ethnographic and ethnoarchaeological work among the Nayaka, a South Indian forest-dweller society, we show how the practice of sharing selves, space, actions and things is expressed by people's use of space in terms of site structure, the formation of activity areas and finally the deposition of activity residues. We discuss how sharing behaviour may result in specific patterns of material deposition and present a brief example for the application of this interpretative framework on archaeological case studies from the Ancient Near East and how it can help to study past social behaviour.

The second part of the book revolves around the role of sharing in the creation of **senses of connectedness and joy** and in turn, a particular **sense of community**, that extends **beyond the horizons of the local group** (Part II). Bridging between the first and second parts of the book, Lewis (Chapter 7) urges ethnographers to consider the value individuals place on positive emotional relationships and experiences as a central power behind the resilience of systems of sharing, particularly the sharing of rare and non-local items. Surveying three different systems for sharing non-local products across three African groups (the *massana* ritual performances among the BaYaka, San *xaro* gift-giving, and Hadza gambling), he shows that despite structural differences, the motor that drives all three systems is the desire for joy, companionship and intimacy. These motivations, referred to by Lewis as pleasure-seeking, work to move valued items over

hundreds of kilometres and distribute them surprisingly evenly across groups. They also establish a sense of connection and cultural community beyond the immediate camp – constituting an extended sense of 'us', of a society. The extended community and members, who would otherwise be unknowable, are made present through those systems which bring their products to communities throughout the cultural area.

Like Lewis, Honoré (Chapter 8) turns to examine ritual (dance) performance, this time from an archaeological point of view augmented by her own discussion of the notion of group identity and contact. Examining rock art from the Libyan Desert massifs dating to 9000-7000 years ago, Honoré offers an intriguing case study of the immaterial aspects of sharing in archaeology. She argues that sharing of dance performances has been a more cohesive form of sharing than subsistence-related shares amongst the Late Stone Age hunter-gatherer groups in North-Eastern Africa. The images presented in the chapter show that while people were depicted similarly when illustrating the performance of ritual dances, they were individualized in other group activities like hunting. Honoré suggests that the social importance of painting such performances and shared moments lies in the formation of social memories and identities, whose definition could differ depending on the activity performed. Group identity was therefore formed by sharing the image of the group performing the dance no less than in sharing the performance of the dance itself. Thus, rock art was used as a means of sharing a certain idea of the group not only within the group but ultimately also beyond, with any onlooker.

In an exceptional integration between ethnography and archaeology, Osborn & Hitchcock (Chapter 9) explore the relations between body adornment, information sharing, and environmental uncertainty. They combine ethnographic data from the Ju/'hoansi people in the Kalahari Desert of Southern Africa regarding their *xaro* system and an exceptional archaeological record of beads from the American Great Plains dating back to AD 1280–1300. They show how beads as body adornment can be used for signalling social identity that would facilitate social interaction and sharing of information between foragers, cultivators and pastoralists. Osborn and Hitchcock suggest that environmental conditions, and in particular mega-droughts, resulted in groups shifting from local, kin-based societies that relied upon social recognition for sharing information to regionally extensive populations that made use of quality signals to enhance inter-group social interaction. They conclude that gift-giving and receiving and information sharing was especially important during periods of environmental stress, and that social and material exchanges and signalling represented key means of coping with uncertainty.

The chapter by Kelly, Pelton & Robinson (Chapter 10) follows the previous chapters by offering an important discussion on the differences in the observational scales of archaeology and ethnography. They suggest that archaeology's coarse-grained observational scale is not a weakness but a strength in understanding the conditions and primary factors under which hunter-gatherers share food, land, and information within a broad chronological perspective. Their argument is then demonstrated by an overview of Wyoming's prehistory, through its 11,000 years, using a large database of radiocarbon dates, settlement patterns and provenance of obsidian tools and the distance they travelled. Kelly et al. present a synthesis for the transition in hunter-gatherers' sharing of food, land and information, not only within the group but mostly between groups, as means to cope with changes in the availability of foods, changes that were jointly linked to both climate and human population density and brought significant transitions in the social interactions and sharing between groups.

Regarding contact not only beyond the local group but also beyond human partners, Barkai (chapter 11) engages in a stimulating discussion offering a new perspective to interpret the origins of sharing and how it was affected by the relations between early humans and elephants. He suggests that meat sharing could have emerged already two million years ago due to the preference for hunting elephants and the enormous quantities and qualities of fat and meat provided by a single elephant. As opposed to other hunted game, the surplus of elephant meat could have initiated sharing as a means to resolve this dissonance. Supported by ethnographic studies regarding hunter-gatherer perception of personhood and co-living with non-human beings, Barkai offers a novel interpretation for the extensive use of inedible elephant parts as tools, pendants and figurines, suggesting they indicate human respect for the hunted elephant as part of sharing existence in-the-world with non-human beings. According to Barkai, the special relationships of humans with elephants may well have led to the subsequent assimilation and adoption of the practice of sharing in other realms of life.

The third part of the book turns to look at **learning and sharing (and non-sharing) of knowledge** (Part III). Boyette & Lew-Levy (Chapter 12) open this part by not only examining the way knowledge is shared and transmitted, but by looking at the social background of people's learning to share. They present the underlying cultural models which motivate sharing among Aka foragers and Ngandu farmers in

their respective cultural contexts. They look at early life experiences as key in shaping motivations and imparting the foundational schema of sharing, which persists throughout childhood and into adulthood. Both Aka and Ngandu, they show, rank sharing highly among the things that are most important for a child to learn, and thus actively socialize children to sharing. Yet, sharing practices are tempered by different core cultural values in each of the two compared groups, which in turn shape distinct beliefs and practices surrounding sharing. Sharing norms are more highly conserved among the Ngandu, for whom social relationships are strictly governed by foundational schemas of hierarchy, communalism, and a material basis to social relationships. Conversely, while Aka motivate unconditional sharing, their foundational schema of respect for autonomy suggests more acceptance of variability in sharing patterns even when it comes to not sharing.

Gardner's account (Chapter 13) on sharing of knowledge reflects similar ideas about the importance of autonomy in shaping the process of learning and knowledge acquisition. Gardner regards the topic of sharing from a new perspective by highlighting foragers' limited *sharing of knowledge*, particularly in regard to descriptive knowledge. He argues that we overestimate the amount of knowledge to be acquired and transmitted, the centrality of oral tradition and the need for uniformity for a culture to function effectively. Focusing particularly on South Indian Paliyan and American Subarctic Dene, Gardner examines how learning takes place, how they handle cognitive diversity and how claims to knowledge are established. In both cases, he shows the primary shared value that one must respect all others and refrain from hampering their autonomy (including that of children) is of key importance in this regard. Wishing to avoid violating autonomy, people refrain from excessive talk and particularly from direct explanations and requests for explanations. Knowledge therefore derives mainly through observation and personal experience. While this results in considerable interpersonal variation in how people frame and express what they know, none is considered wrong or correct. As Gardner shows, these are social systems in which high cognitive diversity is acceptable, which deny the existence of experts, and avoid generalizations and attempts to establish uniformity.

Following the ethnographic perspectives about sharing of knowledge, Tostevin (Chapter 14) provides an archaeological overview on sharing of knowledge, focusing on flint-knapping and production of stone tools in prehistory. By looking at archaeological evidence, experiments and cultural transmission theory, he offers a processual discussion of what *can* and *cannot* be shared in relation to flint-knapping knowledge. According to Tostevin, as opposed to other types of skills and performances, the nature of flint-knapping, characterized by rapid blows to stone cores that produce flakes, is so fast in its execution that learning the bodily performance with anything akin to accuracy through observations alone is difficult and unlikely. He argues that flint-knapping knowledge can therefore only be shared as a performance that is followed by the observers practicing the motions, through abundant repetitions, in order to replicate that incommunicable knowledge within themselves. In line with the papers in Part I of the book, he suggests that sharing of space and time are therefore crucial to allow such sharing of knowledge. Tostevin concludes that the nature of sharing lithic technology knowledge among foragers may present greater variability in the archaeological record than from the sharing of other intangible bodies of knowledge, such as ideas and beliefs.

The last part of the book looks at the practice of sharing in **contemporary contexts of ample social, economic and environmental changes** (Part IV). It raises questions that are asked by many who study foragers today, when most if not all are practicing new and diverse modes of subsistence (e.g. farming, wage labour, etc.) and many skills, customs and rites are forsaken. In this context, where the very identity of these groups as hunter-gatherers is often questioned, an in-depth examination of the practice of sharing allows questions of foundational social notions, cultural resilience, change and continuity to be addresses.

Quintal-Marineau & Wenzel (Chapter 15) examine contemporary mixed economy and mixed food systems that have become the reality of many Arctic Inuit communities, who combine country and store-bought foods, hunting and gathering and wage labour. In their paper, they challenge the traditional focus on men in the literature on Inuit subsistence practices. Studying how money has affected the normative sharing system, they show that contemporary economic transformations have in fact expanded the contribution of women within the traditional subsistence system. Money became an important resource in wild food acquisition due to the need to acquire expensive hunting equipment. Yet money is accessed today mainly by women who engage in permanent, full-time wage labour. Men continue to be the main providers of country foods, but the time required for hunting challenges their long-term engagement with wage employment. Sharing their income with active hunter-kinspersons, women become important money providers to men,

providing the critical support required for hunting. This works not only to maintain the cultural norms of subsistence but also makes women key actors in the mixed economy, with gender (and gender relations) becoming a visible dimension of contemporary Inuit sharing relations and subsistence.

Turning to the other side of the world, Artemova (Chapter 16) offers to re-think what seems like profound changes in the lives of Aboriginal Australians today, as well as the common question regarding why those communities do not get out of what the Anglo-Australian call poverty. She shows that although indigenous Australians seem to have abandoned many of their traditions, if we closely observe their actions and choices it is clear that they still retain the ideology and practice of sharing – the obligation to give what is requested, and the expectation that things will be procured with the help of others. Artemova highlights an important notion that often evades our attention, the tendency towards a *minimization of effort*. Such a tendency means that people do not try to maximize utility or efficiency. Once the immediate needs are satisfied, any additional effort to obtain more is perceived as useless. This perspective provides an important alternative interpretation for many behaviours observed today, such as the lack of interest in accumulating wealth, permanent jobs and personal belonging, the popularity of gambling (in which people are 'hunting for money') and the continuity of sharing through which money is quickly spent and things change hands, get broken down rapidly and are thrown away. The objective scarcity of resources, she shows, is not perceived as poverty by the indigenous people themselves. This is the key to the continuation of their communal life and preserving personal integrity. The social risk of reducing sharing to achieve what white people call wealth or well-being cannot be overestimated.

The closing chapter by Tucker (Chapter 17) examines a case of contemporary low rates of food sharing among the Mikea foragers of Madagascar, addressing the argument that their lack of sharing testifies that they are not genuine hunter-gatherers. Opposing this view, Tucker argues that the very definition of what hunter-gatherers are is an invention of European thought. Mikea, he claims, should be considered hunter-gatherers since they perceive themselves as such, in distinction to their agro-pastoral neighbours. Mikea do have a sharing ethos, but there would seem to be conflicting norms of generosity and property. Tucker offers three alternative possible explanations. The first is that due to Mikea's agro-pastoral ancestry, they treat food as clan property; second, consistent with the tolerated scrounging model, self-interested foragers are unlikely to share small and synchronously acquired foods; and third, social norms of generosity and property have changed due to market involvement and poverty. As Mikea have been increasingly drawn into the market economy, they may have shifted to thinking of foods and communal property as commodities and private property, changing from generalized to balanced reciprocity. While each explanation might not provide sufficient evidence, Tucker proposes that they should be considered simultaneously to offer a valid explanation for the question of Mikea sharing.

Concluding remarks

This edited monograph offers innovative perspectives into a broadened view of sharing among foragers that includes tangible and intangible forms, as a practice, a social notion and an experience which holds meanings far beyond the mere distribution of meat and material goods. Integrating different contexts and perspectives, the authors in this book demonstrate how hunting and gathering people apply similar perceptions, values and mechanics for sharing of space, actions, land, knowledge, time, self and identity, as previously highlighted by scholars mostly for meat sharing. Broadening the view of sharing therefore advances us to better understand its significance among the people who practice it. In addition, the exceptional integration between archaeologists and social, biological and evolutionary anthropologists offered by this edited volume expands the understanding of what is socially required for sharing, its development, what it allows in return and its implications not only for foraging societies, but for the social evolution of humanity as well. This cross-disciplinary volume raises an insightful discussion on the evolution and social complexity of non-agrarian societies in general and provides new tools and ideas to explore the complexity and diversity in the social world of past and contemporary foraging societies. Without implying that contemporary hunter-gatherers are a relic of prehistoric societies, the new concepts and understandings of sharing that emerge from this book provide a multi-layered framework which can be applied in contemporary ethnographic contexts, as well as in archaeological sites, aiding in unravelling intangible aspects of the hunter-gatherer world and lifeways and in testing similarities and differences between past and present. Last, a broader and more holistic view of contemporary foragers may aid in better understanding their perceptions and actions in a world of increasing modern interventions, attempts at assimilation and conflicts.

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Part I
Intimacy, presence and shared-living

Chapter 1

Where have all the kin gone? On hunter-gatherers' sharing, kinship and scale

Nurit Bird-David

'Sharing' is a keyword in our digital era, its usage expanding as technology develops. A few decades ago, we digitally shared data, yet now we digitally share our lives through social networks and our possessions through 'sharing economy' platforms. This sharing is spreading so rapidly around the globe that, despite critique of the capitalist motives spurring it, some observers suggest that the new technology is reviving an 'innate human capacity to share' going back to 'our hunter-gatherer ancestors' (Botsman & Rogers 2010, 68; cf. Sundararajan 2016, 5). This thesis resonates with anthropologists of modern hunter-gatherers, as some of them too regard sharing as 'the most universal form of human economic behavior' (Price 1975), arguing that hunter-gatherers display 'prototypical sharing…at the simplest forms of human social organizations' (Woodburn 1998, 63).

In this chapter, I review anthropological investigations on foragers' sharing systems, with an interest in the question of their comparative utility in thinking about human sharing – past, present and future – and an emphasis on problems arising when overlooking scale and kinship. I argue that if we want to understand hunter-gatherer cultures of sharing, in and of themselves and, all the more so, within broad human vistas, we must attend to their kinship and scalar bases more substantively than we have done thus far. Past scholarship minimizes or altogether omits scale and kinship from analysis of once so-called 'small-scale societies' and 'kinship-based societies', known today as 'indigenous peoples', an elision that distorts our understanding and our ability to learn from them.

Both scale and kinship have attracted renewed interest in recent decades. While a detailed discussion of these developments lies beyond the scope of this chapter, it is useful to briefly outline the ways new approaches compare with those enfolded within earlier categories of 'small-scale' and 'kinship-based' societies before turning our attention to hunter-gatherer sharing as an illuminating case-study.

Socio-cultural anthropology was founded on broadly mapping its terrain in scalar terms – distinguishing between small-scale and large-scale societies. However, as part of resistance to the modernist paradigm, these scalar terms lost their cardinal place, especially the use of *scale* in its modernist sense as an objective independent variable indexing societal progress. Mid-late twentieth century attempts to rejuvenate the scale concept (e.g. Barth 1987) had little impact on anthropology. 'Small-scale society' generally became a worn-out cliché and – in politically correct multiculturalism – a rarely used tag.

However, starting in linguistic anthropology and social geography, recent years have seen the rise of new approaches to scale, sometimes referred to as 'the scalar turn',[1] the focus shifting to scaling as a verb, as agential action and symbolic resource. Cultural anthropologists have exploited this fresh emphasis in studying large-scale(ing) systems, approaching large-scale(ing) as a cultural and political act and as a particular mode of knowing and making a world.[2]

In recent work (2017a, b), I pursue this approach in studying small-scale societies with a particular emphasis on hunter-gatherer people as my field of expertise. Furthermore, I have argued that if the case for large-scale(ing) holds, we should examine anthropology's own originating large-scale (and continuously expanding) project of studying small-scale worlds. And in addition to recognizing this paradoxical basis of our discipline, we should explore whether and how its large-scale terms compromise the study of small-scale worlds, whose appeal inaugurated anthropology and continues to affect its comparative insights and agendas.

As for kinship, this concept founded debates on communities classified in the 1930s' as 'band societies', later subsumed in the 1960s within the category

of 'hunters and gatherers', their mode of subsistence rather than social organization – including kinship – thereafter framing their anthropological study.[3] Consequently, few hunter-gatherer scholars continued to focus on kinship. Anthropology generally in those years denounced the study of kinship as a cultural particularity embedded in the Western bio-genetic terms that had shaped its study (Schneider 1968, 1987).

But then, in the latter part of the twentieth century, kinship 'rose from the ashes'. 'The new kinship studies' has of late become a trendy and prolific field. In its new incarnation, kinship is approached as a cultural system, with relations socially and culturally performed rather than predetermined by birth and marriage. The modern Western kinship system is approached as just a cultural option, by no means monolithic even in the so-called West. These developments have filtered back into hunter-gatherer studies, whereby some ethnographers show how continuous performance is essential to hunter-gatherers' recognition of even close blood-kin and how kinship relations are strategically acted out in these communities (e.g. Bodenhorn 2000; Nuttall 2000; Widlok 2013). This new work revives and delves into earlier concerns (e.g. Myers 1986; Bird-David 1982, 1983, 1994) yet paradoxically earmarked hunter-gatherer kinship as the subject of 'culturalist' analysis. Furthermore, this new work diverted attention away from the fact that in these tiny communities many members are birth- and marriage- kin, even if those ties do not alone constitute kin in local terms and require continuous performance for their recognition. Altogether, kinship has remained an optional subject in hunter-gatherer scholarship.

If scale and kinship have been marginalized in hunter-gatherer scholarship, it is not because the relevant facts are unknown to the ethnographers. No ethnographer living with a foraging group can possibly remain oblivious to the fact that it is minuscule in scale with most members kin, some genetically and others related by marriage. The average hunter-gatherer band size is estimated at 28.4 persons (Kelly 1995, 211; cf. Hill et al. 2011); married siblings often constitute its core; and we know these communities have 'universal kinship systems' (Barnard 1978), whereby everyone 'is able to define a kinship or quasi-kinship tie to everyone else' (Woodburn 1980, 105). These facts are well established, yet they appear minimally, if at all, in analyses and theories of hunter-gatherer cultures, raising the question: Why do these fieldwork facts 'disappear' in ethnographic texts?

This surprising 'disappearance' of kinship and scalar facts can be identified in my own work's trajectory. During most of my late-1970s fieldwork in South India, I was living with a small group of foragers, primarily in one particular hamlet. I studied them, those whom they visited and those who visited them, all of whom they considered 'our own people'. The adult-residents of this hamlet included a brother and two sisters, respectively married to a sister and two brothers, two of their daughters with their husbands, and a third brother of the second sibling group who was married to a cousin of the first sibling group. Those with whom they exchanged visits lived in similarly small and even smaller hamlets at a distance of less than a day's walk. For the most part, they were all close relatives (see Bird-David 2017a, 92–3). Notably, except for when I specifically address kinship matters, I identify these close kin simply as 'Nayaka' – Nayaka people, Nayaka foragers, a Nayaka man – obscuring their kinship relations and prefiguring them as merely an assembly of ethnic subjects.

My initial writings on this group include demographic estimates, such as that the hamlet in which I lived was comprised of 26 people (8 men, 6 women and 12 children); the local group had under 100 people; and the ethnic group at large – quoting questionable government estimates based on outsiders' identity categories and identifications – contained 1300 Nayaka (known officially as Kattunayaka, *katu* means forest). As is common in anthropology, I do not repeat these figures in my later publications on the Nakaya, nor are they noted in literature using my work. The small group of kin with whom I conducted my fieldwork has simply become 'Nayaka' (sometimes specified as Nayaka of South India or Nayaka of the Nilgiris), at once obscuring their scalar as much as their kinship basis. It took me thirty years, and as many articles published during those years, to realize the distortive effects of this biased representation on attaining an understanding of these (and other) foragers' experiences and cultural worlds. I initiated a redress in recent years (Bird-David 2017a, b, 2018 a, b), generally alerting attention to what I tag (for lack of better terms) as my, and others', 'scalar-blindness' and 'scale-insensitivity'. I show how ignoring the scalar and kinship bases of the worlds of hunter-gatherers encourages large-scale biased misunderstandings of their intimate worlds.

In the present chapter, I keep in mind these redressed biases as I look at the increasingly pertinent issue of hunter-gatherer sharing. Hunting and gathering people commonly share meat and, to a lesser or greater degree, other gathered food and possessions. Their students have generally agreed on this fact but have conceptualized this sharing in different ways. Some analyses focus on the survival strategies of rational individuals who respond to unpredictable hunting and food insecurity by shar-

ing a successful day's yield with the expectation of receiving shares from others on unsuccessful days (e.g. Wiessner 1982; Cashdan 1985; Smith 1988). Compared with this 'insurance policy' approach, a 'social cohesion' approach focuses on relations within the community. In this latter view, sharing relieves social tensions and is part of the foragers' mode of sociality (e.g. Marshall 1962; Myers 1986; Ingold 1999; Peterson 1993; Bird-David 2005). Straddling these two approaches, other analyses dwell on political ideology, relating sharing to foragers' egalitarian systems or, conversely, to their collective appropriation of resources (for the first view, see Woodburn 1980, 1998, and Barnard & Woodburn 1988; for the second, see Lee 1988 and Ingold 1986). Still other analyses focus on cultures, with sharing related to foragers' perceptions of the environment or to their construction of a 'self' extended to include others (for the former, see Bird-David 1990, 1992; for the latter, see Widlok 2013, 2017, and in this volume).Whether these studies focus on the individual or on the community – with economic, social, political or cultural emphases – I maintain that they invariably pay insufficient attention to scalar and kinship frameworks of sharing. This chapter attempts to address the question, why, and to argue for their fuller integration.

In particular, I aim to examine how facts of kinship and scale disappear in writings on hunter-gatherer sharing (and on their cultures generally) despite their undeniable visibility in the field. I maintain that previous work can be redressed and that future work can give due attention to these factors, yet only if we examine at a fine grain their current textual marginalization. To this end, I here review five seminal articles on hunter-gatherer sharing to illustrate common problems and slippages in writings on the subject. Pursuing a chronological order and geographically moving from Africa through Asia to Australia and back to Africa, I examine work by Lorna Marshall (1962), James Woodburn (1982), myself, Nurit Bird-David (1990), Nicholas Peterson (1993) and, lastly, Thomas Widlok (2013). Again, my aim is to train our attention on common inherent problems in 'writing up' cultures of small scale(ing) societies that are communities of kin.

To clarify my choice of terms, note that I use *foragers* both for brevity and as means of disassociating those I discuss from complex hunting-gathering societies. Foragers here refers to traditions followed prior to, and partly continuing through, these societies' integration into nation-States. As far as *kinship* is concerned, this designation is not a priori restricted to blood- and marriage-based relations nor does it ignore the bases of such relations in social processes.

The unscalability of kinship identities

Lorna Marshall's (1962) article, 'Sharing, talking and giving: Relief of social tensions among !Kung Bushman' permits a useful starting point for our discussion, and not only since it is among the earliest, and remains among the most cited, works on hunter-gatherer sharing. A retired literature teacher adventuring with her family on a scientific expedition, Marshall was a perceptive and skilful writer unbound by the genre constraints that hobbled subsequent students of hunter-gatherers. She lived among the Nyae Nyae !Kung in the 1950s, before governmental or non-governmental agents of change established a presence in their lives.

Marshall focused on this group's sharing of meat, describing it as a 'custom' whose function was to pre-empt conflicts and tensions in the band. To convey the need for this 'custom', she perceptively writes: 'One has only to imagine one family eating meat and the others not when they are settled only five or ten feet apart in a fire werf and there are no walls for privacy' (p. 236). Marshall proceeds to provide a rich description of one particular meat-sharing event (from going hunting to consuming the meat), a significant event in local terms. One hundred people were present in the camp, including all local band members and visitors from four other bands.

Marshall leaves no doubt about the sharers' close kinship ties; here I provide only a brief synopsis. The four who left the camp to hunt were a man (hereafter Y), Y's wife's brother, Y's brother and Y's sister's husband. The latter was a visitor and the other three regular camp residents. These four relatives travelled under the hot sun for eight days until they succeeded in shooting an eland, then spent another three days tracking the injured beast until it died, and two more days carrying the meat back to the camp. Y was the one who shot and injured the eland with an arrow given to him by his sister, who had received it from her husband, who had received it from his brother, who had received it from his wife, who had received it from her brother, who had made the arrow.

Upon returning to camp, large chunks of meat were first distributed among the four hunters and the last owner of the arrow. They all subsequently shared their portions with their primary relatives: the four men with their wives' parents, their wives and children. Next they shared them with their siblings and sibling's spouses and children (we do not hear how the arrow-owner, a woman, shared her large portion of meat). The meat-recipients cooked and shared their portions with additional relatives around their hearths. Marshall writes that everyone present even-

tually received a share and stresses that all of them were kin. In fact, only six of the one hundred people present were 'so remote [kin] that we did not bother to trace them' (p. 240), from which we can understand that the rest, 94 (94 per cent), were close enough kin for her to readily trace their connections.

As her text moves on to analyse general patterns of !Kung meat-sharing, Marshall gradually phases out sharers' kinship identities, presaging a pattern that would recur and worsen in later texts on hunter-gatherers' sharing (and more generally in writings on hunter-gatherer and other kinship-based communities). A practice thus developed whereby local perspectives on kinship identities would give way to observers' general categories. For example, Marshall writes that hunting parties tend to contain two to four or five men, who enjoy hunting with each other, and who can be from different bands (p. 237–8). Even a superb writer like Marshall thus seems unable to avoid 'translating' local kinship identities (Y's brother, Y's wife's brother, etc.) into the sectorial categories of *men* and *hunters*. Relational, situational and diverse kinship identities are not easily scalable. If for no other reason, for the sake of a legible text, a writer must shift from specific details to general categories.

This perspectival shift abstracts the actors from their hyper-relational kinship context, where each individual is uniquely and multiply related to each of the others. It standardizes and serializes the actors as four men – four times the category 'man' – with each one appearing as a stand-alone being, abstractly groupable and re-groupable with like-others. While Marshall could have written that *male-relatives* or *related men* usually go on a hunt, keeping their kinship entanglements visible in the story, this representation might suggest to readers a preference for hunting with relatives, whereas it is clear from Marshall's work that the reverse is true: whoever one prefers to hunt with happens by default to be one's kin. The necessary literary style attendant to shifting from a participant's to an observer's perspective has implications as serious as they are unavoidable. For example, Marshall abstracts what she observes as 'waves' of meat sharing going outwards to kin, the evocative image continuing to animate discussions of sharing today. But how does this image apply if members of this small community are multiply connected to each other in diverse ways? Does not the meat criss-cross among multi-related relatives? Cannot a couple get meat as a hunter's wife's parents, as a hunter's parents, as siblings of another meat-recipient, and so forth? Later in this chapter, I show how Widlok (2013) argues that strategic choices from diverse relational options is precisely at the heart of the work of sharing.

Enter individuals

We remain in Africa yet move on to James Woodburn's (1982) important article, 'Egalitarian societies' based on his work beginning in the 1960s with Hadza living in Tanzania. Woodburn offers a different perspective on such communities' sharing, shifting focus from small-band living to economic transactions and property relations. His usage of the term *sharing* opens up to encompass the sharing not only of game, but of resources of all sorts, both consumable and non-consumable. Woodburn's work demonstrates how the ethnographic drift toward the general continues, further pushing kinship and scale to the backstage, if not offstage, in hunter-gatherer studies. He moves past Marshall's categorical terms, modelling these people simply as individuals, living in and constituting groups.

Whereas Marshall details a particular event then moves toward generalizing patterns, in 'Egalitarian societies' Woodburn (1982) describes Hadza patterns from the get-go, the standard approach by that time, and compares them with !Kung patterns. Woodburn argues that hunter-gatherers with immediate-return systems live by an egalitarian ideology, which explains their sharing. Game initially belongs to the individual hunter through whose labour it is obtained. However, an egalitarian ideology enforces sharing the kill among the group's members, who are entitled to shares, not as common owners, but as political equals. Sharing, he argues, helps to assert and enforce the hunter-gatherer political-ideological commitment to equality. Sharing serves to disengage property and prevent its accumulation as an unequal basis.

The term *individual/s* recurs in this text far more frequently than do *kinship* and *kin* – 38 times compared with seven and eight times, respectively. The latter two terms arise primarily when Woodburn notes the little bearing particular kinship relations have on the traffic of sharing. In addition to the general problems ethnographers face in writing about tiny communities of kin, Woodburn's use of *individuals* aligns with the 'subsistence-turn' in hunter-gatherer studies, which assumes individuals (rational, in some scholarly traditions) as existentially given and basic units of analysis. His use furthermore derives from his choice of *egalitarian* societies. Woodburn (1982, 431–2) was aware of this concept's modern French and English connotations – an ideology that ontologically prefigures individuals as society's primary moral and political units. As this term travels from nation-states to tiny communities of kin, despite the huge scalar disparity, it carries these ontological

attendants to foragers' worlds. The Hadza (and other hunter-gatherers) are thereby projected as individuals, their kinship relations a merely optional issue in the analysis of sharing.

Hadza kinship had troubled Woodburn earlier on – for example, he wrote:

> As an anthropologist, one is accustomed to thinking of a hunting and gathering society as held together by a mutually acknowledged set of rights and obligations – especially kinship rights and obligations – that it comes as something of a shock to find that this does not apply here (1979, 257–8).

Woodburn struggled to accommodate this perplexing discovery of a lack of a familiar kinship system with the counter-fact that Hadza had a 'universal kinship system', a form first identified and conceptually developed by Alan Barnard (1978), which Woodburn defines as a system 'in which everyone – or at least everyone within the political community – is able to define a kinship or quasi-kinship tie to everyone else' (1980, 105). To resolve this apparent tension – foragers framing themselves as kin in ways counter to anthropological expectations of the time – Woodburn characterizes these relations as not 'load-bearing': '[They] do not carry a heavy burden of goods and services transmitted between the participants in recognition of claims and obligations' (1980, 105). Woodburn thus marginalizes kinship relations as a factor in his analysis of sharing, whereas an analytical alternative involves rethinking kinship in a society that is itself a community of kin.

The small size of hunter-gatherer camps additionally receives scant mention in Woodburn's article, only noted in introducing the ecological-material setting: 'People live in small camp units containing usually a dozen or two [dozen] people and moving frequently' (p. 435). In his initial work, Woodburn writes that the Eastern Hadza population he studied in the 1960s comprised four hundred people, with group size varying from 4 to 38.[4] Had these figures not been omitted in later work (as was then commonplace in cultural anthropology), perhaps we could have intuited that its members cannot simply be individuals living in a group. Rather, many of those Hadza were – and could not have been other than – interconnected kin. Evident of a general pattern in hunter-gatherer scholarship, this article co-marginalizes both kinship and scale, to all affects erasing them.

Notably, in Woodburn's (1998) later work, egalitarianism moves to the background. He argues for regarding hunter-gatherer sharing as a distinct economic type, in line with earlier work by Bird-David (1990) and Peterson (1993) discussed below. Suffice it here to note that *individuals* hardly appears in this later chapter, but also neither does *kin*. The currency becomes *people*, a common choice in today's hunter-gatherer scholarship. For example, Woodburn observes: 'People should give freely without expectations of return. People should share, not exchange…. People are expected to ask for the share to which they are entitled. If people can avoid requests to share, they will often do so' (pp. 54–6). At best, *people* is scalarly ambivalent, obscuring the actual local group size and even training the reader to imagine far greater numbers than the reality of a few dozen kin in a local band and few hundred to a few thousand regarding themselves as part of a 'political unit'.

Kinship as a root metaphor

The article I next examine is my own, 'Giving Environment: Another perspective on the economic system of gatherer-hunters' (Bird-David 1990), based on my work with forager Nayaka in South India since the late 1970s. Known mostly for its contribution to studying cultural perceptions of the environment, this article also approaches foragers' sharing as a transactional system, contrasting its logic and forms with those underscoring the gift economy and, more generally, with exchange as a transactional type. It relates the Nayaka's distinctive economic 'sharing' system to their understanding of their environment in terms of kinship: Nayaka register the forest as a parent giving them food and themselves as its children; they are thus siblings who share that food (see also Bird-David 1993 on other hunter-gatherers). Accordingly, the Nayaka's economic repertoire does not include gifting, reciprocating or exchanging, but instead giving, requests to be given and avoiding giving.

While this article broaches the subject of kinship, it is not sufficiently sensitive to the foragers' scalar context and their overall kinship framework. Kinship figures in the analysis largely as a metaphor, albeit a key cognitive metaphor underlying the Nakaya's environmental perceptions and cultural-economic models.[5] In addition, while kinship relations are identified in some of the article's ethnographic illustrations, the remainder of the group is described simply as 'people'. For instance, I describe one 'old lady' as living 'with her daughter, son-in-law and their child' (p. 91). This woman would frequently ask 'her daughter and other people in the hamlet to give her food'. Her constant requests upset her daughter and son-in-law and so to avoid

the requests, they moved to another place. I would not be surprised if readers assumed that only those specifically mentioned in the article were kin, as opposed to the old lady's other neighbours. Such an assumption could not be more incorrect as everyone living in the Hamlet were closely related kin.

Alongside my partial employment of kinship terms, I repeat the ethnonym *Nayaka* alongside *people* and, on occasion, *individuals.* This article thus provides an apt case for showing how the use of ethnonyms also contributes to the 'disappearance' of kinship and scale, just as much as do sectorial categories and *individuals* as illustrated above.

Ethnographers must use ethnonyms for the sake of legible texts, not to mention comparative work, even though their study-subjects may not use such names themselves. For example, those I describe – and whom are known by outsiders – as Nayaka would call themselves *nama sonta* (us, our relatives), usually encompassing humans and non-humans 'living with us'. Many hunter-gatherer (and other small-scale) communities referred to themselves by contextual terms translatable as 'real people', 'humans', 'kinfolk', and so forth, prior to their subjection by externally introduced proper ethnonyms (see Bird-David 2017b).

As used today, ethnonyms prefigure a world comprised of a series of distinctive and exclusive ethnic groups, each of which includes members sharing one or a combination of determining attributes (language, ethnicity, country, etc.). Using ethnonyms in hunter-gatherer scholarship carries this social ontology into their world, leading us to imagine such societies as the Nayaka as distinct from other societies, with each of its members a Nayaka person. We regard each such person as an individual, and not a priori inter-related with the others, again marginalizing their kinship relations, which for them define their community as well as the identity of each member.

Notably, in later work (2005) I employ the metaphor of 'connected vessels' for thinking about hunter-gatherer sharing. This metaphor helps in imagining their sharing as resources flowing among connected beings until they are levelled, rather than as dividing them among separate individuals. I note how 'sharing' is not a direct translation of hunter-gatherers' vernacular terms, for it carries diametrically opposite usages in English: sharing-as-dividing objects versus sharing-as-joining experiences. The 'connected vessels' metaphor helps to foreground the second sense, even when, in Western terms, material objects are shared. While this metaphor may help Western imagination better envision Nakaya sharing, it still fails to incorporate kinship and scale.

Demand-sharing constitutes social relations

We now move eastward to Australia to textually examine Nicolas Peterson's (1993) landmark article, 'Demand sharing: Reciprocity and the pressure for generosity among foragers.' Peterson's article presents ethnographic data largely from Aboriginals in Australia, who in many respects diverge from the foragers examined above, yet he nonetheless makes some comparative references to these and other cases. On this comparative basis, Peterson claims that unsolicited giving is less common among hunter-gatherers than is nagging and demanding shares and raises the question as to why this discrepancy has been so little addressed. His inquiry notes the mindset anthropologists bring to the ethnography of sharing, just as they do to the ethnography itself. He points a blaming finger at Westerners' ethical construction of generosity as 'outwardly unsolicited and altruistic giving' (p. 861). Because Westerners positively construe free giving as generosity, he argues, and because ethnographers have not explored hunter-gatherers' own ethics of sharing in its day-to-day practice, 'our deeply held understanding and evaluations slip into the vacuum…[leading us to] inversely figure demand-sharing as negative' (p. 870).

Peterson thus debunks sharing's earlier and ethnographically popular association with generosity. Meanwhile, he powerfully trains our attention on its everyday practical performance and then back again on its social function. He observes how hunter-gatherers construe unsolicited giving as rude, dominating and even aggressive, especially when large gifts are concerned. In their system, unsolicited giving is associated with asymmetrical unequal relations and demanding shares with autonomous agency; an agent who demands shares thereby tests, asserts and builds his/her relations with others. Therefore, solicited givers are not dispassionate. They are indeed compassionate, but act only when someone presents him- or herself as lacking something and asks for it. On their part, share-demanders do not just selfishly ask for what they want. Demand-sharing is a deep and nuanced social practice, at times strategic and at others well-removed from self-conscious calculation (pp. 870–1). Thus, Peterson concludes that demand-sharing carries a positive ethic of generosity.

With all its insight, like other works of the time, Peterson's analysis still lacks attention to the scalar and kinship framework of hunter-gatherers' bands and societies. Not a single population figure appears in his article, not even for the groups providing the main ethnographic illustrations: the Yolngu (Murungin), Wik-mungkan, East Gunwinggu and

Pintupi. While Peterson occasionally uses the term 'small-scale societies', he does so in the classic sense whereby he does not refer to the scalar basis, but to types of social relations that differ from those in modern large-scale societies.

Attending, as he does, to social relations, Peterson leaves their kinship basis elusive, along with the ways the foragers themselves describe their relations. The dominant analytical concept is *social relations* – appearing eleven times in the article – rather than *kinship relations*, which appears only once as 'kinship connections'. Furthermore, *social relations* dominates the article's argument throughout. For example, in the abstract Peterson argues that demand sharing 'is important in the constitution of social relations in egalitarian societies' (p. 860). Then in the introduction, he states as one of the article's objectives to emphasize 'the constitution of social relations through social action' (p. 861), which he pursues in a section titled, 'Demand sharing and the representation of social relations' (p. 868). Peterson concludes by stating that future research is needed to determine whether demand sharing is also fundamental to 'the constitution of social relations in less egalitarian, pastoralist and agriculturalist societies' (p. 871). Peterson is thus caught in the same apparent paradox as is Woodburn, namely that kinship is pervasive, whereas demand-sharing (simply sharing for Woodburn) does not follow kinship's 'normative morality' nor any other 'prescriptive behavioral formulas'. Like Woodburn, Peterson's solution is to keep kinship relations outside the analysis.

Re-enter kinship, talk and presence

For a final example, I return to southern Africa and turn to Thomas Widlok's (2013) article on fieldwork he conducted in the 2000s, 'Sharing: Allowing others to take what is valued'. Fifty years since the time of Marshall's fieldwork, the State has deeply penetrated these foragers' lives. This article advances the 1990s effort to distinguish sharing and demand-sharing from reciprocity and exchange with Widlok theorizing hunter-gatherer sharing as a complex transactional socio-economic phenomenon in its own right. He does so in ways that contribute to a renewed anthropological interest in value, treating it as a type of transfer coexisting and expressed in terms of market-exchange and reciprocity, not limited to particular modes of subsistence. He draws ethnographic illustrations from his work with the Akhoe Hai//om in northern Namibia, a southern African community of foragers, who had by then partially assimilated the State's names for them (Widlok 2000).

Widlok identifies three factors in his analysis, the first being kinship. He notes as do earlier commentators that every member of the group is regarded as a kin yet sharing does not abide by kinds of kinship relation (2013, 19–20). At the same time, he examines how the Akhoe Hai//om choice of kinship terms within their small community of multi-related kin is related to sharing: they choose close kinship terms to elicit sharing. Past sharing experiences informs choices of close kinship terms, and close kinship terms informs the likelihood of sharing.

Widlok additionally relates sharing to a particular mode of conversation which he describes as 'a lot of parallel talk' rather than linear 'talk and countertalk', namely utterances that do not get responses and statements apparently ignored as if they were not heard (see 'pluralogue', Bird-David 2017a). Widlock observes how within this mode of conversation, sharing is triggered through diverse speech acts, ranging from direct demands ('give me water'), to complaints ('I have no water'), to indirect utterances ('imagine that there was something to drink') (p. 21). Subtle speech acts are effective when uttered within earshot of everyone present. The third factor is 'presence', which Widlok argues is the most critical and an underlying condition for the other two. Presence permits participation in such conversations as well as limits those one considers close kin. Sharing-recipients are those who are present, and all those present receive/take shares.

Widlok squarely returns kinship to the picture and, although he does not explicate it, to me he also points to the scalar basis of sharing, yet still insufficiently. The small size of the sharing group is critical to the three factors Widlock associates with sharing, especially the first one relating sharing to the dynamic choosing of kinship terms from multi-optional kinship connections, a sign of a small inbred (not to be confused with endogamous) community. But so is the second factor. The particular type of conversation Widlock describes predicates a small company of interactants within sight and earshot of one another. Most clearly, the third factor, presence, which Widlok regards as the crucial precondition of sharing, indicates a small scale, since – given the local technology of communication – one can be 'present' among only a limited number of people.

Unfortunately, scale and kinship fade to the background in Widlok's (2017) recent book on sharing (see also in this volume), where he instead exploits a concept borrowed from the work of consumer behaviour scholar Russell Belk (2009) on sharing in mass consumer societies. Redressing the academic neglect of sharing in highly commercialized societies, Belk highlights its extensive practice largely within

the immediate family circle. To explain its practice against the grain of homo economicus, Belk argues that we consider those close to us as our extended self, making sharing with them tantamount to sharing with oneself (p. 724). Belk ascribes the 'extended self' to the family as a corporate collective body with which its members identify, this identification informing their behaviour. Widlok exports this notion to the small hunter-gatherer community of kin across the vast scalar ocean, adding the proviso that here the 'self' is not only 'extended' but also 'limited' by demands of others and by opportunities to access goods from them. Framing the discussion in terms of 'self' and 'others' moves it away from local kinship identities and obscures the scalar determinants of their sharing logic and practices.

Conclusions

Kinship lost its earlier centrality in hunter-gatherer scholarship, beginning with the groundbreaking *Man the Hunter* (1968), but not because ethnographers have been unaware that kinship relations constitute hunter-gatherer communities, whose members all regard themselves as kin. 'Where have all the kin gone?' and more importantly, 'Why?' are pertinent questions I pursue in this chapter. Addressing these questions is complex precisely because kinship underpins foragers' everyday life, their personal and collective identities and their cosmologies, indeed, every facet of hunter-gatherers' lives, even if not in ways ethnographers expect. While no doubt there are other reasons for this neglect, here I focus on causes related to writing ethnographies on tiny communities of kin within a discipline whose objective has been the large-scale comparative study of cultures throughout the world. My analysis of five influential articles on hunter-gatherers' sharing aims to reveal some of the obstacles that have taken attention away from the scalar and kinship bases of hunter-gatherer cultures generally, and from analysis of sharing in particular. These include prioritizing general patterns, prefiguring hunter-gatherers as individuals, the use of ethnonyms, the habituated focus on social relations, and misapplying concepts suited to describing large-scale societies in analysis of intimate terrains.

Obstacles are also intrinsic to the irresolvable problems arising in 'writing up' ethnographies, the conventional idiom 'writing up' in part connoting upscaling as a vital part of the job. Scholars must write about intimate worlds known to their dwellers through lived-experience and about groups that often have no written languages, numerical vocabularies, fixed place-names, abstract temporal and spatial coordinates, and so forth, in ways that any anthropologist can understand anywhere, requiring the use of scalable terms (cf. Tsing 2012; Scott 1998). What may appear a mere stylistic issue can function as a sort of ontology-shifter. The many conventions of ethnographic writing, such as ethnonyms, personal names, maps, kinship diagrams and census data that elsewhere I describe as Trojan horses (Bird-David 2017a, 2018) all distortedly represent local intimate worlds in scalable terms applicable to any society of tens and hundreds of millions. Although such problems are irresolvable, awareness of them can help us come closer to understanding hunter-gatherers' lived experience, despite and past the limits of writing about their societies, cultures and worlds.

The scalar and kinship bases of foragers' sharing should not mislead us toward disregarding their cultures of sharing as simply that which close relatives naturally do. Rather, the articles I here review reveal complex cultures of sharing among intimate kin, from Marshall who focuses on meat-sharing as a core tradition to Woodburn who profiles what people can and cannot do in keeping this tradition. Bird-David's elaborates on attendant economic rationales and repertoires of conduct, whereas Peterson analyses the subtleties and ethics of everyday practice. Finally, Widlok identifies sharing's discursive forms and co-constitution with kinship and community. Taken together, these works furnish a cultural theory of sophisticated cultures of sharing in small hunter-gatherer communities of kin. New work (Hewlett et al. this volume) continues to develop our understanding of sharing cultures among intimate hunter-gatherer communities by describing their members' spatial closeness in terms of density in settlements, house size, bed size, and intensity of touching. Other work (Lewis this volume) delves into the extent to which pleasure-seeking motivates sharing.

In addition to enhancing our understanding of hunter-gatherer sharing, appreciation of the scalar and kinship bases of hunter-gatherer cultures and worlds is crucial for its archaeological study and for placing it into broad historical and comparative perspectives. Indeed, some modern hunting and gathering populations are larger than the forager groups I discuss, recent catastrophic history has impacted the size of some modern groups, and large hunter-gatherer groups likely existed in the past. Nevertheless, I feel we can safely assume the evolution of tiny communities into larger ones, rather than the reverse, and to assume that kin have a significant presence in communities of a few dozen members.

Evidence as much as common sense indicates the small size and close kinship constitution of early

human groups. For example, genomic evidence suggests that our ancestors lived in small highly inbred groups (see Marshall 2013), they commonly mated among close relatives, including with half-siblings (Prufer et al. 2014), and past human populations reached only in the thousands, at most in the tens of thousands, with tiny communities living locally and exchanging mates with the nearest neighbours (Chris Stringer cited in Marshall 2013). Such evidence can speak to the evolutionary importance of intimate cultures and cultures of kin. Only ethnographers are in a position to understand such cultures' dynamic forms and to learn how they function, by crucially factoring kinship and scale into their analysis.

Notes

1 Over the past two decades, social geographers have intensively engaged with issues of scale (see, for example, Jones 1998; Howitt 2002; Masuda & Crooks 2007; Moore 2008; Giesbrecht, Crooks & Williams 2010). Anthropologists have considered scale more sporadically (see, for example, Berreman 1987; Strathern 1991, 1995; Ferguson & Gupta 2002; Latour 2005, esp. 183–5; Philips 2013).

2 On large-scale and large-scaling as a frame of thought and a resource involving particular ways of seeing and making the world, see Scott 1998 and Strathern 1991, 1992a.

3 See more on the shift in Bird-David 1994.

4 Based on Woodburn's three-year long synchronic and diachronic survey of one particular old woman with whom he stayed (1968a, 104–5).

5 See Bird-David 1993 for a comparative perspective on kinship metaphors in hunter-gatherer cosmologies.

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Chapter 2

Extending and limiting selves: a processual theory of sharing

Thomas Widlok

For a long time explanations of sharing have been proposed primarily from the position of evolutionary theory, more specifically from behavioural ecology. Considerable research has been conducted with reference to what are now often considered complementary modules within the evolutionary model, such as reciprocal altruism, tolerated scrounging, kin selection, and costly signalling to name the most common ones.[1] Anthropologists who felt uncomfortable with underlying assumptions of these models, or with evolutionary approaches more generally, tend to resort to a descriptive 'culturalist' approach that highlights the particularities of specific ethnographic cases and the cultural meanings attached to sharing by the agents themselves. This contribution proposes that there is room for theoretical models of sharing that are comparative and explanatory – and which have a temporal, processual dimension – while not relying on the assumptions of behavioural ecology. I discuss these theoretical ideas under the labels 'extending self' and 'limiting self'. Reference is made to hunter-gatherer ethnography but also to examples from consumerist societies. After briefly discussing some shortcomings of evolutionary theory the chapter outlines ideas of extending self and limiting self and the theoretical purchase that they provide before ending with some remarks on remaining challenges for future research in this field.

What is wrong with evolutionary models of sharing?

It is important to underline how productive evolutionary theory has been for research on sharing since a lot of empirical research has been inspired by evolutionary models. This has proven very valuable in particular in the field of hunter-gatherer studies where these models have been influential at a time when many hunter-gatherer economies were still heavily characterized by sharing, allowing researchers to collect rich data. Evolutionary anthropologists have done their homework, as it were, in terms of their work on sharing. They have worked out theoretical models and used them as inspiration for systematically collecting empirical data. The onus is on the social and cultural anthropologists to do the same by employing alternative theoretical ideas, in this contribution more specifically those emerging from practice theory and processual social theory.

Self-critically social and cultural anthropologists have to note that they have been hampered by two things, firstly by an over-reliance on the gift-exchange paradigm and secondly by a reluctance to connect ethnographic case studies to comparative theories. As I have pointed out elsewhere (Widlok 2017) there is – still – a wide-spread notion that sharing phenomena are covered by gift-exchange theory and there is of course a great deal of work on the gift, not only by Melanesianists. There are a number of reasons why gift-exchange theory is so strong, with the result that it features in all the main works of economic anthropology (e.g. by James Carrier, Marshall Sahlins, Chris Gregory, Keith Hart and most recently by David Graeber). In all these works great care is given to establish that the world knows and practices forms of transfer that are not capitalist or market-oriented in nature. However, in the alternatives described there is in fact only limited ethnographic data on sharing. Conversely, there has been a growing opposition amongst ethnographers who have worked on sharing to accept that giving gifts and sharing are similar enough to be covered by one theory. The discontent has been expressed across all regions, see Rival (2000) for South America, Kent (1993) for Africa, Lye (2004) for South-east Asia, Bird-David (2005) for South Asia, and MacDonald (2000) for Australia. It is nicely summed up in a text by Woodburn (1998) programmatically entitled 'Sharing is not a form of exchange', but it is mirrored

in other contributions (e.g. Hunt 2000) and this critique has been put forward also by anthropologists working outside the hunter-gatherer domain (see Gell 1999, 88). The fact that the equation between gift-exchange and sharing has been reproduced despite the heavy weight of evidence against it may be attributed to the general influence of Marcel Mauss' ideas in all quarters of present-day mainstream anthropology. It seems that the situation is now finally changing since it has been sinking in that sharing is a mode of transfer in its own right and that it is in most respects very different from gift giving. Claims that 'in practice, there is no strict boundary between what is exchanging and what is sharing' (Honoré, this volume) need to be qualified in the face of a large body of ethnography that pinpoints a great deal of differences between exchanging and sharing – particularly when looking at the practice itself. Providing an outline of a distinct theory of sharing beyond the description of individual ethnographic cases will facilitate this process.

Before engaging in this task, however, a few words are in order to justify the claim that current evolutionary theory in itself is not sufficient to provide a comprehensive theory of human sharing. This is not the place to engage fully with the matter but a few points need to be highlighted. There are fundamental critiques of evolutionary theory, be it of the creationist type that rocks US American academia regularly or the more sophisticated philosophical type of critique that, for instance, Tim Ingold continues to raised (Ingold 2007, 2013, 2015) or that has been explored by Deacon (2012). There is also a diversity of approaches and positions out there that are usually covered under the label 'cultural evolution' (see Richerson & Christiansen 2013). In the context at hand, some more modest should be made. They concern firstly, the problem of establishing the relative importance of sharing once it has become a regular part of the human repertoire and secondly, the problem of explaining sharing solely in terms of its outcome (adaptation, selection, fitness) and not in terms of its ongoing social dynamics.

The problem of historical diversity

Consider first the evidence about sharing compiled by primatologists. Jaeggle & Gurven (2013) have summarized the evidence about sharing among primates and found that there is a broad correlation to be found: As you go up the phylogenetic tree of apes there is more sharing, or rather sharing broadens up from sharing with offspring only, to including partners and it only becomes really widespread among one species, namely humans. On the whole the instances of sharing in non-humans are far and apart, miles away from cases like the Ache which get about 80 per cent of their provisions through sharing at any one time. This suggests a linear increase of sharing in terms of quantity and breadth. The anthropologically more intriguing question, however, is what happens once sharing has been established among human foragers, i. e. once cultural variation sets in. The most striking feature of the evolution of sharing is not so much that it has emerged but rather that it has become so variable and versatile in human culture. Other primates have survived into the presence without (much) sharing and in many societies in human history sharing is suppressed or side-lined in the face of market exchanges and the giving of alms or gifts.

Even if we accept for a moment an evolutionary scenario of hunter-gatherers, agriculturalists and industrial and post-industrial society of today as being representative of evolutionary stages it seems that we do not get a continuation of a linear development. Rather, we may get closer to a sort of bell shape or sinoid curve where sharing peaks among foragers but then gets limited by increasing gift-exchange and market exchange systems. We have not reached the end of the curve and it is currently being discussed in how far sharing through social media, the internet, the so-called sharing economy etc. is or is not an increase of sharing compared to what we had before. The question is not easy to answer. While sharing instances may have increased in absolute terms the problem remains to establish what proportion of all transfers are sharing transfers, how they are intertwined with other (and conditioned by) forms of transfer and whether there is a classification of transfer forms that can easily be applied across time and space. In any case, whatever the evolutionary forces that allowed sharing to emerge in the evolution of life, the diversity of historical trajectory since makes it implausible that this is all there is to what enable or inhibits sharing in the further course of development.

Sharing, it seems, is underdeveloped among animals, including non-human primates and other social animals who may occasionally help each other but very rarely share food or other items. Similarly, sharing has also been considered to be decreasing in human society under conditions of growing social complexity since the Neolithic introduction of animal and plant domestication (see Marlowe 2004). What happens once sharing has become a part the repertoire of modes of transfer amongst humans but with changing articulations and emphases? The scale and the particular shape that sharing takes in some human social settings (but not in others) is not explained by a general evolutionary benefit for wide-ranging sharing. Since sharing as a practice seems to thrive particularly

well under the rather specialized conditions of egalitarian societies, anthropologists have tried to pinpoint some of the cultural factors that foster sharing, and those that inhibit it. The comparison is not between humans and animals but between humans in a wide variety of cultural settings: Why do Nayaka (Bird-David 1990) have a cultural cosmology of a 'giving environment' (and most of their Indian neighbours do not), why do Hadza (Woodburn 1982) have a strong 'cultural obligation' to share (and the neighbouring African farmers do not), and why do indigenous Australians (but not other Australians) have a 'relational ontology' about persons, an ontology that reproduces sharing even in the contemporary welfare economy (Macdonald 2000; Peterson 2013)?

A number of important ideas have been formulated in the process, for instance the importance of demand in sharing (Peterson 1993), the tension between autonomy and collectivity in sharing (Myers 1988), the importance of scale and kin (Bird-David 2017) and the importance of presence (Widlok 2017) to name but a few. Moreover, there are now some attempts to move towards a non-evolutionary theory of sharing to be outlined further below.

The problem of outcome

Evolutionary theories of sharing have focused on the beneficial outcomes of sharing at societal and individual level. This is because at the face of it, sharing – in particular sharing with non-genetically related individuals – seems to challenge deeply engrained notions according to which evolution is all about ensuring the survival of individuals and their genetic heritage. Sharing sustenance with other organisms that are genetically unrelated undermines Darwinian assumptions about competition and selection. More considerate work under the evolutionary paradigm has therefore conceded that not all practices can be traced back to a particular 'fitness benefit' (Kelly 1995, 177) and that the evolutionary benefits of sharing may be 'between-species advantages' that can outweigh any disadvantages that sharers may suffer in as individuals (Marlowe 2004). However, the focus on outcomes continues to be a problem. It has been remarked that thinking of sharing only in terms of the distribution of amounts of calories falls short of what sharing achieves (Hyndman 1985) but there is a more general point to be made here. As Abbott (2016, 4) has recently pointed out: 'The social process doesn't have outcomes. It just keeps on going.' What exactly keeps sharing going if it is not an optimal quantifiable outcome, a net gain of calories? What are the conditions under which sharing thrives even though there are other ways available of making a living and of satisfying one's needs? Moreover, we may ask the same questions not only with regard to material outcomes such as calories and objects but also other benefits such as pleasure and excitement (see Lewis, this volume). After all, pleasure is not limited to having a certain item at the end of the day but it is in the pursuit of shared activities, in the way in which items may connect people and in the 'participation in moments of intense sociality' (Lewis, this volume) as well as in the anticipation and memory of these moments.

When seeking to trace the particular conditions that enable and maintain sharing (or – as the case may be – disable and prevent it) it is useful to turn to the ethnographic record that provides this kind of information. Elsewhere (Widlok 2013) I have summarized these conditions under the headings of establishing relatedness, modes of conversation and presence. Here, I want to highlight that there is a temporal dimension to these conditions. Sequence does matter in sharing as social practice. It is not sufficient to know 'who ended up having what' since there is no end to the transfers (see above) and since giving after receiving is different from receiving after having given just as it matters who demands what from whom at which stage of a set of 'waves' of sharing (Fig. 2.1) that ethnographers around the world have documented (see Widlok 2017, 9).

The theories that are grounded in ethnography and that are discussed in this contribution are non-evolutionary in at least two senses. Firstly, they re-install human agency to the picture. Instead of assuming 'selfish genes' or some other homunculus to which the ultimate driving force of evolution is being ascribed (as criticized by Deacon 2012), the starting point is human practice in terms of both, choices made by humans in particular settings as well as the unintended consequences of their actions. Secondly, they invert the common sequence in evolutionary theory that seeks to establish relevant patterns in simple settings and organisms and assumes that these can then be upscaled to the more complex settings where, for instance, social and cultural institutions play a major role. The theories introduced in the next section rely on sharing as it is observable today as habitual practice that forms part of complex human behaviour. Habits and habitualization can explain patterns over time (back in time as well as forward in time) without the need to assume that there is a single closed set of 'natural laws' at work at all levels of complexity. At the same time the theories of personhood to be introduced shortly nevertheless have a strong temporal dimension. Previous attempts to make anthropological theories of personhood fruitful to archaeology

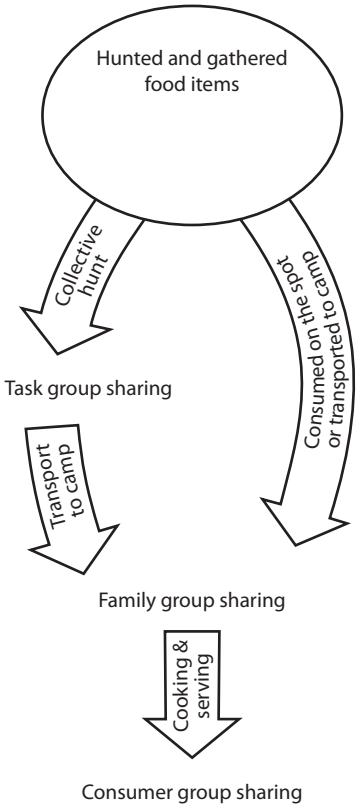

Figure 2.1. *The waves of sharing (following Bahuchet 1990 and Widlok 2017).*

have adopted the idea that there are different types of personhood for instance individual versus dividual (partible/permeable) personhood (see Fowler 2004).[2] The idea pursued in the remainder of this contribution is that it is not so much cultural types we are dealing with but rather partly conflicting tendencies to change the dynamics of personhood, more specifically to extend self and to limit self. Both tendencies may be present at the same time in human society thereby explaining the fact that there is no linear increase or decrease to be observed with regard to human sharing – and that it cannot be explained with reference to outcome alone. Forager specialists are reluctant to consider theories of self for understanding sharing (see Bird-David, this volume) so that some clarification is necessary here. Moving from particular (indexical) observations to (de-indexicalized) constellations is a problem for every ethnography, not just those of hunter-gatherers. As soon as we use categories like 'sharing' or 'kin' we always generalize to some degree beyond the individual cases that are never entirely alike. With regard to foragers, however, it has been claimed that their 'pluripresent kinship' is so different that to talk about their sharing terms such as 'individual' or 'group' do not apply (see Bird-David 2017 and comments). There is no room here to discuss the issue except to point out that, firstly, sharing is a recognizable phenomena beyond forager cases and therefore needs an analytic language that applies across these cases, that, secondly, an exclusive attention on kin relations is not appropriate because sharing in many settings goes beyond kin (in whatever definition), and, thirdly, the notion of universal self as 'a centre of being' and selves as 'loci of experience' (Morris 1994, 14) is not to be confused with the notion of individual as society's 'pre-given […] primary moral and political units' (Bird-David, this volume). I think it is instructive to see how sharing is scaled up (or down) among foragers who encounter kin and non-kin as much as among the neighbours and peers that encounter one another on digital platforms. Starting with selves is not to buy into consumerist assumptions of calculating individuals but it allows us to describe different 'cultural models of self' (see Hewlett et al., this volume) and how relations and relatives are made relevant in sharing activities in the first place.

Extending the self

This theory of sharing as extending the self builds on what Nurit Bird-David (2005, 207) has called 'entangled identities' or 'joined lives' and what Russell Belk (2010, 724) has tried to bring into an account of 'extending the self' that can help to explain variation in the intensity and breadth of sharing. These ideas built on the 'sharing in' rather than the 'sharing out', in other words it is not the dispersal of property that is at the centre of attention but how transfers bring together and unite people. Or, as I have put it elsewhere (2004, 61) the focus is not on giving and receiving but on 'extending the circle of people who can enjoy the benefits of the share resource'.

In Belk's model the key to sharing is that those who are close to us are treated as 'part of our extended self' so that 'sharing with them is like sharing with self' (2010, 724). This is why sharing takes place, above all, within the immediate family circle even in highly commercialized contemporary societies. When children take food that their parents have bought and placed in the fridge, when they use the facilities of their family home etc. it would be wrong to consider this following an abstract rule of reciprocity because there is no movement between two units. Anthropologists are generally in agreement with this observation since this kind of relatedness has been reported for many kinship systems. However, it is important to note that people who share their home and their resources in this way need not be genetically related, nor do they

necessarily consider one another to be kin. Rather, in Belk's theory, it is not necessarily kin that makes people share but also sharing that effectively extends the self. Moreover, there may be other cultural practices and conditions that effectively extend the prevalent notion of self which then in turn allows them to extend the group of people with whom they share. Instead of assuming that an individual (fixed in terms of its extension of self) has to altruistically overcome set boundaries we are, according to Belk, dealing with a single unit that is feeding itself. This 'aggregate extended self' (Belk 2010, 725) has been constituted through numerous habitualized activities which create and maintain its boundaries. In other words, the 'training' that leads people to develop sharing as a skill is based on the many everyday activities in which people extend their selves. As Belk notes, what works most readily in many immediate families can also work more or less effectively among peers in an age-set such as the student hostels or flat shares (see Widlok 2017, 104–5). In small bands of foragers these everyday acts of bonding and extending the self are regularly trained as has been documented ethnographically (see, for instance, Marshall 1961). Belk, being a researcher in consumer studies, points out that extending the self can also be anchored in commercial settings, for instance in the practices of co-consumers sharing a brand of clothes (Belk 2010, 726) or those sharing files on the internet (see Widlok 2017, 142). Extending the self in this way is by no means 'natural' or an inescapable evolutionary law since there are also many activities that work against such an extension, typically when people engage in direct competition with one another or when exercising exclusivist practices for instance in systems of consumption as distinction (Bourdieu 1979). Here the extension of self is greatly restricted, or rather one may speak of an amplification of self in demarcating oneself from others (by increasing status, reputation and distinction) rather than of extending the self towards others. Similarly, insisting on drawing the boundaries of the ethnic or other 'we' group ever more narrowly in face-to-face interaction (Widlok 2015) extends the self in a restrictive way since it only includes certain members of a 'we' group and thereby also 'un-trains' what is needed in order to realize widespread sharing.

The theory of sharing as extending self has not only cross-cultural plausibility. Rather, it can help to explain the variation of sharing in different cultural systems because the extension of aggregate selves varies across (sub)cultures, and more generally over time and across situations. The theory can therefore explain why sharing is so widespread and broad among humans and why it is so culturally diverse. While some core notion of self, as a sentient centre of experiencing the world, is a good candidate for a cultural universal among humans, the various forms of establishing personhood as extended self is culturally very diverse. It requires considerable imagination and complex processes of consciousness to recognize a self as a person since that person need not be congruent with an individual body. As humans we are used to the fact that one and the same individual may act as different persons in different context and moreover that there are 'legal' persons which are either not tied to a human body (e.g. modern corporations) or that go beyond individuals (e.g. clans). We have also become accustomed to objects that can come to stand for particular persons (in religious shrines, or in bureaucratic or digital forms of identification) just as foragers may engage interpersonally with animals and landscape features. As Bloch (2013) has pointed out, humans not only entertain a transactional sense of person but also a transcendental one. When thinking about sharing and when practicing sharing we not only conduct transactions with other individual bodies but our sharing is motivated and framed by the ways in which we 'transcendentally' conceive of the others as persons, as selves connected to our self and at times as constitution a single aggregated self.

By contrast, recognizing personhood in oneself and in others is either absent or very limited among animals and therefore can also explain the relative absence of sharing among non-humans. Moreover, given that personhood is subject to cultural imagination, it is also not surprising that there is considerable diversity in the ways in which people recognize personhood and determine what the relevant 'selves' are and how far they extends. Again, the diversity of personhood concepts can therefore help to explain that sharing varies so widely in its intensity and width among human groups. For archaeology, this means that when trying to reconstruct sharing relations in any one place the attempt has to be made to elicit as closely as possible the concepts and boundaries of personhood in the place and time one is dealing with. Above all, it is productive to understand that extending the self (as a constructing selves) is a dynamic process. While there may be prevalent notions of personhood in particular 'cultures', there is also some evidence that the extension of self can shift as individuals grow and undergo stages in their biography but also according to situational conditions in particular social constellations. The examples that come most readily to mind are children who grow up to learn (or unlearn) certain forms of sharing (see Schäfer 2014) and the participants of 'effervescent' rituals that entice 'demand participation' and also 'sharing' (see Widlok 1999).

Limiting the self

Belk's theory of extending self is good to think with and it takes us a forward in explaining cultural diversity as well as recurring patterns in human sharing (for a further critique, see Widlok 2017; John 2016). However, –this is only half the story because humans not only have the capacity to extend selves and personhood. Their notion of self and person is also critically conditioned by the human ability to limit one another as selves and to reflect on the limits of their selves as being 'threatened' by their own finiteness and by being limited by death. In other words, humans not only have the capability of extending theirs selves in many different ways but also face the necessity to deal with the limiting of their selves in at least two ways, in the finiteness and limitation of their earthly lives and in being constantly confronted and limited by other selves around them. Being limited by others is a precondition for establishing a self in the first place but, again, this limitation does not come 'naturally' since animals seem not to experience it in this way. Rather, human ways of organizing social co-presence (or sociality) and of creating institutions with which we remind one another of the finiteness of our lives, are above all cultural ways.

Take the way of creating and recognizing 'presence' in social interaction as an example. As I have pointed out elsewhere (Widlok 2017) physical presence is the prototypical means for prompting sharing. Figure 2.2 shows screenshots from footage taken among ≠Akhoe Hai//om foragers in northern Namibia who recognize 'hanging around in order to get a share' as an important social institution. Video analysis allows us to see how subtle presence and demands are made and managed. Those demanding food may use not only words but also their gaze or outstretched arm and body posture to underline their request. Those who have may initially turn their gaze and their body away before attending to the person making the request (as seen in Figure 2.2). More generally speaking a demand made only vocally, often across distance, is much less effective and often half-jokingly than a demand that is underlined by appropriate gazes, body gestures and postures. This makes sharing much more dependent on indexical acts in a particular situation than other forms of transfer which rely on specific and recognized obligations to return, considered 'on record' by both giver and receiver. Explicit demands may underline the presence of the person trying to elicit a share but frequently it is a 'silent demand' (Løgstrup 1997) that can be nuanced in many ways – just as the responses to these demands. ≠Akhoe Hai//om approach one another's fire places regularly when the occupant of the fire place is able to share something. The goal is to make that person recognize the presence, to recognize that people are constantly in need and therefore should be given a share. The fact that presence (and the recognition of presence) is often silent is relevant insofar as this pre-discursiveness also helps to explain why children learn these strategies so early in life. It also explains why sharing is typically considered a strong moral obligation even if there is no body of codified rules that would need to go along with it. The pressure to share is 'felt' through presence. Paradoxically, a direct demand is relatively easy to fend off. In foraging camp one often hears people shout from afar, including demands of various sorts. But many of these demands or questions are not responded to, and if people respond they can counter the demand either by claiming that there is not enough, by lying

Figure 2.2. *Screenshots from a field video documenting sharing among ≠Akhoe Hai//om.*

that they have anything, at all, or by making promises for the future. Physical presence at the fire place is much harder to ignore. The presence of others limits those who cook food and to the degree that this presence is culturally constructed and constitutes a social practice, that of limiting, and there is a distinct time-dimension involved since presence can grow with time (when bystanders refuse to leave) or it can diminish with time (when visitors have not re-visited for a long time).

This is not only the case around the fire place but more generally true. When visiting another camp the newly arrived ≠Akhoe Hai//om quietly sit under a tree or at the margins of the camp, seen by everyone but formally not yet arrived, not yet recognized as arrivals. It usually takes a while as locals may finish what they are currently doing, may get dressed or may light a pipe before they greet the visitors and thereby recognize their presence. Once they are recognized, visitor may stay on for considerable time, receiving a share of the local food and sometime turning into 'regular' co-residents after some time. The presence-sharing nexus is continually trained. Approaching people and being present is read as a positive silent demand and turning away from people, splitting up, separating oneself and avoiding co-presence is read as a negative response to these demands. 'Demand sharing' has been used in the literature to label sharing prompted by voiced demands initiated by those who want to receive something (see Peterson 1993). But one could go further than that by suggesting that there is no sharing without a demand in a somewhat wider sense of sharing a demand. By 'sharing a demand' I mean the human ability to recognize that a fellow human shares one's demands such as eating regularly, having a place to stay and so forth. This awareness is implicated in the way in which we share our lives with one another in which we can – and need to – fulfil our needs through others and others through us. All human life is limited by death but more specifically this limitation creates linearity and unrepeatability, the characteristic temporality of human life which implies that an action A carried out after action B is never quite the same as an action B carried out after action A, and indeed an action A carried out before action B (see Abbott 2016, xii). It does matter as to when a demand is posed in the sequence of sharing waves (see Fig. 2.1). Those who successfully demanded something in the first wave, for instance, are often subject to demands at the second wave. It is difficult to hold on to something extra after all others have finished their share. Moreover, there is also a spatial limiting dimension in that A being close to B and C is different from A being close to D and E and typically the inability to be close to all of them at the same time (see Fig. 2.2).

Cutting a longer story short one of the main results of the everyday experience of a limited self is that humans realize that they can go beyond their own limited opportunities by drawing on the support of others but that in turn endless and limitless accumulation is impossible. They not only experience this early in life but throughout their lives, above all through the death (and mortality) of every particular other with whom they share their lives. Evolutionist approaches only take account of death as a general possibility (an ultimate outcome), not as an individual certainty that colours how humans lead their lives. In evolutionary conceptions any one individual only needs any others for transmitting one's own genes into future generations. For some genes to be transmitted across generations they require some humans who carry them and who die in the process but it does not matter who these carriers are and who exactly dies at what point in time, or before whom.

The social process of developing a sense of self is set in motion by demands that others make for something that I, as the owner, thereby may start to consider to be 'mine'. A man or a woman can only gain a sense of self and act meaningfully on the basis of this sense of 'me and mine' when he or she is limited by others and their demands. The prerequisite of developing a sense of self, of being someone in particular who is limited by others who are equally particular is a twofold finiteness, namely being finite with regard to others and being finite with regard to the extension of one's life -and that of others (Marten 1987). Humans 'essentially' live in non-essentialized existences, they are always encounter one another in particular relations due to their limited selves, as junior or senior, as children or parents, as husband or wife and so forth. Whether a demand for a share is made and whether it is being met depends on these specificities, the ways in which we relate to others at particular points in time and in space. The human capacity to distinguish one another along these specificities is the reason why sharing varies in social relationships. It also explains why it grows exponentially when crossing the threshold to humanity. It is not only an extension of the person beyond the individual (see Belk 2010) but also establishing a notion of personhood and personal relations in the first place – primarily through realizing that persons and relations are finite and do not extend endlessly. Sharing depends on the ways in which humans are able to distinguish and understand relationships and lived practice. It is not a strategy that is hard-wired in genetic, cognitive or behavioural programmes but a skill that is built up across a multitude of sharing events.

The analytical purchase of the new theories of sharing

As mentioned before, there have been successful attempt to make anthropological ideas about personhood fruitful for the long-term perspective and for the kind of evidence that archaeologists may be able to establish (see Fowler 2004). To begin with the ideas of extending and limiting the self may help us to rephrase the well-known tripartite scheme that Marcel Mauss for gift giving, namely the sequence of the obligation to give, to receive and to return (see Mauss 2002). Note that these 'obligations' are principal and timeless in nature, one has always got the obligation to give, to accept and to return a gift. On the background of what was discussed above with regard to the limits and finiteness of life that create a specific temporality for human sharing, it is possible to think of sharing transfers not so much in terms of obligations but in terms of opportunities, more specifically the opportunity to ask (others), the opportunity to respond (to others) and the opportunity to let go (for others). Along the lines of a processual social theory one may ask as to what conditions create and foster these opportunities and whether there are conditions that prevent these opportunities to emerge. While the notion of 'obligations' immediately begs the question as to what social power or institution is enforcing these obligations, the notion of 'opportunities' makes it easier to see how the observable patterns have emerged out of myriad of individual actions without any larger entity being necessarily in place. Moreover, the conditions for opportunities may be easier to trace than the impact of large external agencies, especially when turning towards the past and the long-term. As Abbott (2016, 5) has argued, continuity over time may be more readily ascribed to the biological, memorial and substantive 'historicality' of individuals who carry forth the past in their habitual practice (which in turn leave residues in their individual bodies) leading their lives rather than to institutions or organizations trying to engineer these lives. Instead of imagining 'large social forces that push little individuals around' (Abbott 2016, 4), a processual approach takes the responses of individuals taking their opportunities that open up under certain conditions as a lead.

The opportunity to request

By replacing 'the obligation to give' with 'the opportunity to request' the potential recipient rather than the forced giver becomes the focus of attention. The distribution of resource sites is regularly recorded in archaeology, and so is the distribution of sites where resources were processed. This reflects the position of those who have something and face the question of what to do with this resource, whether to keep it, trade it, give it away or discard it. What deserves equal attention, however, is the position of those who do not have but who may want to make a request. As Hewlett et al. (this volume) point out 'proximity is an important predicator of sharing' so that we need to investigate the conditions that provide opportunities to request and the creation of spatial proximity is very important in this context. Archaeologists find it easier to recognize sharing as 'dividing of material goods' in their record rather than sharing as 'multiplying immaterial things' (see Honoré, this volume). But it is important to note that 'sharing a visit' or shared participation in an event may leave material traces, too, in particular when we consider how spatial arrangements influence the opportunities to request. Comparing Figures 2.3 and 2.4 provides a first impression how much the spatial (and social) permeability of a place conditions these opportunities. Figure 2.3 is a small foraging camp of a ≠Akhoe Hai//om person in the north of Namibia. The place is accessible from many different directions, the spatial structure gives little opportunity for hiding anything from sight or from keeping visitors at a distance. Conversely, it gives plenty of opportunity for approaching the residents, for knowing what they do and what they have and for requesting a share. Figure 2.4 is a homestead of Owambo agro-pastoralists in the very same region of Namibia with its characteristic palisade fence, its embeddedness in a cultivated field and its wooden huts. While the ≠Akhoe Hai//om hut is a permeable spatial structure in which anyone can easily get access to the hearth and the fire places of others, this homestead has a much lower permeability (see also Widlok 1999). The relative impermeable spatial structure corresponds to a relative impermeable social structure since even inside the homestead space is highly structured with a designated place for visitors and for different categories of residents. Getting at the hut of the homestead owner in such a structure takes time and effort as one needs to pass by the huts of unmarried boys, the kitchen, and the places of the women in the household before getting to the homestead owner. Note that this is a matter of *relative* permeability and impermeability. Compared to some more recent spatial structures, for instance the 'gated communities' now advertised all over Africa and the rest of the world (Fig. 2.5), the Owambo homestead has in turn a somewhat higher permeability. This is because the spatial structures are the aggregate result of a host of activities over time, building activities as much as dwelling activities and more generally activities of

Figure 2.3. *Small foraging camp of a ≠Akhoe Hai//om person in the north of Namibia.*

Figure 2.4. *An Owambo agro-pastoralist homestead in northern Namibia.*

Figure 2.5. *Advertisement for a gated community in Nairobi, Kenya (2015).*

regulating distance and nearness. When discussing Belk's notion of 'extended self' above, it became clear that this extension is by no means natural or inevitable since there are always practices that counteract the extension of self, creating impermeable space is one of them that can be read in the anthropological and archaeological record.

The opportunity to respond

'The opportunity to respond' importantly includes the opportunity to deflect or dodge a demand for sharing. The most common strategy amongst foragers to do so is mobility, moving away so that one is no longer subject to demands. But not only people come and go, opportunities, too, come and go so that sharing has not only got some depth of time, a *chronology*, but above all an appropriateness of time, a *kairology*. As I have explained in more detail elsewhere (Widlok 2017), sharing is all about timing. Premature giving is problematic because it interferes with personal autonomy and has the potential of creating dependency. Belated giving (i.e. hoarding) also is problematic and can create harsh reactions and the practices of others that anthropologists have discussed under the notion of 'levelling mechanism'. Giving in too readily into inappropriate demands (what the Australians call 'humbugging') and responding sufficiently to a response is what the temporal skill of sharing is all about. Having received something in one wave of sharing makes you subject to demands by others who have not as yet received. It is therefore important to move beyond the common recording of 'amounts shared' and give more attention to these waves of sharing (see Fig. 2.1) because ethnographers across the world agree that making your claim at the right time is what enables sharing.

It is a challenge for archaeologists to document as to who intermingled with whom and in which time rhythm at any particular site. However, what the long-term record, in particular of physical human remains, may disclose is the effects of rhythm and regularities in habitual practice over a long time. If everything is changing all the time, the challenge is to understand where stability comes from. Given what is known today about implicit knowledge and cultural skills being engrained in individual bodies it is likely that much of the social stability of social systems in which sharing is prevalent is due to the physical continuity of individuals whose lives overlap and who train one another in the important skills of life – including things such as the right timing in sharing. Traces of a living self are left with the wider social landscape that has interacted with that person over time. Having said that, it is also important to remember that the larger and largest part of the structure that individuals bring forward from the past into the present is located in their own bodies and selves. It is their memories as well as their record of past nutrition, diseases, movements, (sexual) relations and so forth that leaves residues in their physical bodies (see Abbott 2016, 6). The extension and limiting of selves are culturally variable and they are tightly connected to social practices such as sharing. Relatives and co-residents participate in one another's lives. The more they share their life (in terms of residence, diet, hygiene and so forth) the more they retain a record of one another, including one another's habits. In other words, by looking at physical remains of co-resident persons comparatively (signs of nutritional stress or of food consumption reflected in tooth records for instance) one can get hints about the prevalence of sharing over time and even in the distant past. Sharing, it could be hypothesized, not only improves the health of a population but it may also make a group of people more alike both in terms of how healthy and unhealthy features can be reconstructed from the human remains. Conversely, if co-resident individuals show distinctive features with regard to these physical features, we may hypothesize successful strategies of avoiding sharing, of responding negatively to demands or of being able to live autonomous lives. When anthropologists think about 'opportunities to respond' they tend to think ethnographically about linguistic responses, speech acts or intercorporeal actions in face-to-face settings. However, these 'responses' may also be read much more broadly and much deeper in time as responses which leave traces in individual bodies. If sharing is a particular habit, a habit that is regularly brought about by certain conditions, we need to look more closely at what the traces of these habits are in the physical bodies of those who practice sharing.

The opportunity to renounce

Turner (1999) has introduced the term 'renouncing' to the discussion but one may also speak of 'to let go' since this is one way in which foragers typically phrase the fact that things are gained and things are lost. Renunciation has a connotation of active striving for relinquishing things which need not always be present. The renouncer may not be happy about having lost something to someone else, just as many foragers resist and bemoan the fact that they are being pressured to share but ultimately has to comply. It is also important to note that this letting go or renouncing is different from the strategic 'sacrificing' that religious or worldly utopian thought. In the latter case

it is part of a do-ut-des (I give so that you may give) strategy, giving up so that one achieves eternal life or a better life for future generations or for humanity in the abstract. The renouncing involved in sharing is not directed towards a utopian resolution. Rather, the expectation is that within a lifetime everyone who has forgone something also receives opportunities to request again which can start a new sequence, but not endlessly given the realization that lives and selves are finite (see above).

Part of the specific temporality of sharing is due to the fact that sharing comes to an end when requests come to an end and when shared presence come to an end. This explains the puzzling fact why in foraging societies with high sharing intensity old and frail people may be left alone and may not get extra support. It is explicable on the grounds that their presence in terms of their ability to make requests may be diminishing, too. An ancestor system (like in Africa), by contrast, in which old people can make lasting claims on the young, even beyond their death, is more likely to stimulate specific gift-giving obligations rather than sharing. If it is true that sharing is all about being mortal, about realizing the limits of self, and about being prepared to let go of things, and the world, when the time comes then it may be possible to predict from the burial habits how entrenched sharing is in a particular setting. There is ethnographic evidence to support this point.

Figures 2.6 and 2.7 are pictures from burial sites of two different contemporary Khoisan groups in southern Africa. One is a ≠Akhoe Hai//om graveyard in which graves are not marked. Relatives and residents typically do not know who is buried where and they never visit the graves. The other one is a ≠Aonin Nama graveyard in the coastal Namib Desert. This a group has adopted a modest degree of monumentalism since graves are clearly marked, they are made to last, and they are (at least nowadays) explicitly made at a site to which people regularly turn to celebrate their cultural heritage enshrined in the graves of ancestors, in particular of their chiefs, and for making claims of land and succession to office. The two grave types closely correlate with a high incidence of sharing in the first case and a more developed system of gift-exchange and mutual obligation and dependence in the second case. It is probably not possible to read off the importance of sharing from the prevalent types of gravesite (or vice versa) in any categorical way. For instance, graves among the ≠Anoin Nama are diverse, some more 'monumental' than others, reflecting the stratification of this society. And in many San groups sharing occurs side-by-side with other forms of transfer (e.g. *hxaro* gift exchange or nowadays buying and selling). However, the practice of limiting selves, in terms of mortal selves that have no ancestral power about the living and no justification based on a utopian life after death, are reflected in both, the way the dead are being treated and in the role of sharing. Learning to let go takes place in both instances. Sharing decreases when humans are culturally less exposed to our own finiteness and to that of others, typically as a result of ideologies that deflect and bracket out this finiteness. If the good that really counts is to be found in an afterlife or at the level of abstract groups or nations, then the realization of goods in sharing can easily take second place. Learning to become a skilled sharer is not acquired once and for all through early socialization in childhood. Rather, the training continues in a life-long way and it culminates in the ability to be able to let go of what one accumulates in the course of a lifetime and ultimately to let go of one's life itself. The daily routines of sharing enable individuals in these societies that cultivate sharing to also cope with the fact that 'shrouds have no pockets'. However, the logic works both ways: A society in which the recognition of human finiteness is appreciated and cultivated also provides fertile ground for the development of sharing practices in the everyday.

When persons die, they do not just die for themselves but can be said to die for one another, the death of others being a constant reminder of one's own finiteness. Many hunter-gatherers like the ≠Akhoe Hai//om are renowned for their insistence that the dead are truly dead, that they have had their live. The living do not 'owe' them anything in that sense, at least not more than they owe to the social beings with whom they continue to share their lives on a daily basis. In their practices giving up life in death is not 'traded in' for a better life in the way as proposed by many book-based religions or political ideologies. There is also no attempt to convince oneself (or others) that it the value of giving up things in sharing is compensated for the prospect of a utopian future where one has everything. Sharing, as I have formulated it elsewhere (2004) realizes its intrinsic good of extending the circle of those who can access a good. By contrast, many worldviews suggest that individual lives, however miserable, gain their meaning through membership in a larger metaphysical body, be it the 'house', 'clan', 'nation', a 'church' or 'the scientific community'. I have emphasized the importance of a recognition of the finiteness of life in many hunter-gatherer societies. The 'transactional' character of sharing deflates any 'transcendental' units such as 'the house' that may be established through other means (see Bloch 2013). It will be worth investigating in detail whether there is a correlation in the long term record

Figure 2.6. *≠Akhoe Hai//om burial ground.*

Figure 2.7. *≠Aonin Nama burial ground.*

between evidence for such 'transcendental' units, the 'fictitious selves' that humans have the ability to create, and the evidence for sharing.

Conclusions

This contribution has outlined key ideas that may become important ingredients of a non-evolutionary theory of sharing. The importance of the human cultural imagination of how personhood can be extended (as described by Russell Belk) has been highlighted for understanding the cultural diversity of sharing amongst humans. Moreover, attention has been given to the importance of finiteness that is pre-discursively experienced from an early age on and throughout ones life but also realized in acts of mutually limiting one another. Learning to let go of things and to let go of a particular status vis-a-vis others is therefore an everyday experience but one that is culturally entrenched in very different ways in different cultural contexts. It is also a genuine human trait and therefore an explanation for the considerable differences to be found between wide-spread sharing among humans and rather restricted sharing among non-humans. Correspondingly, the notions of 'extending self' and of 'limiting self' can become the productive cores from which one may develop a more comprehensive theory of sharing. In an attempt to connect these anthropological ideas to a processual social theory that also looks at the long term, this chapter has highlighted the traces that practices of 'extending' and 'limiting' self leave in the long term record when looking at the permeability of spatial structures, at the physical bodies of individuals sharing their lives with other

selves and at the ways of dealing with death and the question of an afterlife. Having established that 'sharing' is a category of its own that deserves its own theoretical consideration rather than being an afterthought to gift-exchange theory, there is still a lot to be done to flesh out a comprehensive theory of sharing. The modest aim of this contribution has been to show that there are shortcomings in the dominant evolutionary approach to sharing, in particular its focus on outcomes and its inadequate dealing with cultural diversity. It has also tried to show that a theory of sharing that centres around the extending and limiting of selves can deal productively with these shortcomings as it reinstates agency and the open nature of social processes. For those who are dissatisfied with the ways in which the evolutionary paradigm is applied to phenomena such as sharing the new approaches to sharing illustrate that there are other ways of describing and explaining long-term, transgenerational effects of individual social practice and the processual nature of social life.

Notes

1 The literature produced within this research paradigm is overwhelming. I have tried to give an overview of the main contributions in Chapter 2 of my recent book (Widlok 2017) without, however, being exhaustive.

2 Note that these were largely based on new developments in gift-theory (see Strathern 1988; Busby 1997).

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Chapter 3

Intimate living: sharing space among Aka and other hunter-gatherers

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Mobile hunter-gatherers (or foragers) are known for their extensive sharing of game meat (Gurven 2004), childcare (Hrdy 2011), and to some extent knowledge (Hewlett et al. 2011) but no study that we are aware of has examined how foragers share space across a range of domains. Bird-David (1990) suggests that foragers share food with many others, do not store food, and stop when they have enough food each day because they live in a 'giving environment'; i.e. they trust that under normal conditions the natural environment will provide them with resources just as they trust that others in the settlement will share with them every day. This chapter explores whether or not the giving environment extends to sharing space with others. Are foragers generous with their living spaces? How much space do individuals use in a settlement, house or bed? Individuals in many Euro-American cultures have their limits in how much space they will share in their home, beds, or interpersonal interactions. They may need a certain amount of space in a bed to feel comfortable or a certain amount of space in a house so they do not feel crowded. Euro-Americans, like peoples in all parts of the world, have cultural preferences and feelings about how much space one can share with others.

The primary aim of the chapter is to explore what we know about the space foragers share in four domains: settlements, houses, beds, and interpersonal interactions. Do hunter-gatherers share space any differently from food producers (e.g. farmers or pastoralists)? Does sharing space vary by domain? What explanations do anthropologists use to explain spatial patterns in foragers? The secondary aim of the chapter is to consider the possible impacts of sharing space. What, if any, are the relationships between sharing space and sharing food or other forms of sharing? Do feedback mechanisms or loops exist? What are some of the hypothetical biological, psychological, or cultural consequences of sharing space? Most anthropologists would acknowledge that the four domains of shared space are influenced by individuals and culture (e.g. learned spatial preferences, knowledge about the size or where to build a house), but few consider how the constructed environments impact individuals (e.g. their biology or psychology) and culture (e.g. maintain, constrain, or modify cultural beliefs and practices).

All of us have conducted research with the Aka hunter-gatherers of the Central African Republic so each spatial domain usually starts with a detailed description of Aka patterns and how they compare to those among the Ngandu, their farming neighbours (see Lewis, this volume, for an overview of Pygmy and non-Pygmy groups in the Congo Basin). Our experiences with Aka likely filter and bias our generalizations about other foragers. From there, we describe patterns in other hunter-gatherer groups that have comparable data and then move to comparisons of spatial patterns with food producers to see if any differences exist between foragers and food producers. When data exist, we also describe comparable data from developed countries.

Since data from the Aka permeate the chapter, we provide a brief introduction to their culture and views towards interpersonal space.

The Aka are one of about 15 ethnolinguistic groups of Congo Basin hunter-gatherers (Hewlett 2014). About 40,000 Aka live in northern Republic of the Congo and southern Central African Republic and about 2000 live in and around the study area. The Aka live in mobile groups of 25–35 people and rely upon a wide variety of hunting and gathering techniques for day-to-day subsistence. The Aka have multidimensional social-economic relationships with Ngandu and other farming ethnic groups. As with several forager groups, three related foundational schema (i.e. relatively concise concepts and values that pattern thinking and feeling and pervade many

domains of life) are: an egalitarian ethos, respect for the autonomy of each individual, and extensive sharing. An egalitarianism ethos devalues hierarchical ranking, including political, age, or gender ranking. Men and women of all ages are viewed as relatively equal and have similar access to resources. Respect for individual autonomy in the context of the community is also a core value that permeates many dimensions of Aka life. One does not coerce or tell others what to do, including children. Finally, giving or sharing is also a pervasive way of thinking in Aka life; they share 50–80 per cent of foods acquired, they share it with most everyone in camp, and they share it every day (Kitanishi 1998). Sharing of childcare is also extensive; infants have up to 20 different caregivers (Meehan 2004), fathers provide more direct care to infants than infants in any other culture (Hewlett 1991), and 90 per cent of Aka mothers report that other women nurse their young babies (Hewlett et al. 2011). In this chapter, we extend the sharing foundational schema to the domain of space.

Sharing is a foundational schema among the Aka and several other foraging groups. Within the foundational schema of sharing, several more detailed and specific cultural models exist. Cultural models are implicit ideas about how the world works and guides behaviour and interactions (Holland & Quinn 1987; Boyette & Lew-Levy, this volume). For instance, hunter-gatherer groups usually have cultural models about how particular game animals should be divided. In the U.S., cultural models exist about where husband and wife should sleep; the married couple is 'sacred' and husband and wife seldom sleep in different rooms regardless of the size of the home. This is not the cultural model in India and other cultures (Shweder 2003).

A cultural model important for understanding Aka spatial patterns is the belief and desire to stay physically close to others. When Aka adults were asked to list the characteristics of a good mother or father, staying physically close to the child was frequently mentioned as a desirable quality for both fathers and mothers (Hewlett 1991). One Aka father said 'We Aka look after our children with love from the moment they are born to when they are much older. The villagers love their children only when they are babies, but when they are big they are beaten badly. With us, even when the child is big we cuddle them and keep them close.' Staying close is also highly valued in husband-wife relations. In a study of Aka husband-wife relations (Hewlett & Hewlett 2008) both husbands and wives expressed sentiments similar to this Aka woman: 'I show I love my husband when we are together and I touch him and stay close to him.' Children also want to stay close to others. An observational study by Fouts & Lamb (2009) examined conflicts between toddlers and older juveniles and found that 38 per cent of the hunter-gatherer conflicts were over toddlers desire to stay close to juveniles whereas only 2 per cent of conflicts among the neighbouring farming children were about staying close. Juvenile-toddler conflicts among the farmers were much more likely to be about competition over objects and juveniles hitting the toddlers, both of which were rare in the hunter-gatherer children.

The Ngandu neighbours of the Aka live in sedentary villages of 50–200 individuals and have fields of manioc, corn, plantains and peanuts. They exchange some of their domesticated crops for meat and other forest products of Aka hunter-gatherers. Foundational schema among the Ngandu farmers are distinct from those of the Aka and include: gender and age hierarchy and communalism. Women should defer to the requests of men and the young should show deference, be respectful, and listen to anyone older than them, be they older brothers and sisters or parents. The farmers are patrilocal and patrilineal and have strong clan organization. Communalism refers to a cultural value placed on putting the needs of the group, generally clan members or the extended family, over the needs of an individual (Hewlett 1991).

Density of households: Sharing space in settlements

Archaeologists have systematically examined spatial patterns (called site formation) of hunter-gatherer settlements for a long time (Binford 1980, 2001; Kroll & Price 1991; Gamble & Boismier 1991; Kent 1993a) and here we focus on studies that examine the density and compactness of settlements of living hunter-gatherers. Ethnographers working with mobile hunter-gatherers have noted that the population densities of forager subsistence areas are low but that the densities of their living environments are remarkably high (Konner 1976; Draper 1973; Hewlett et al. 2010). Archaeologists utilize at least two ways to quantitatively describe the compactness of a settlement: 1) the average amount of space each individual has in a settlement or 2) the average distance to the nearest neighbouring household. The nearest neighbour calculation can be measured from household hearths or the centre or front of houses. Table 3.1 summarizes results of systematic studies on the size of settlements and the average amount of space each individual has in a settlement. Table 3.2 lists the average nearest neighbour distances for groups we were able to find data. The tables indicate that, with the exception of the Australian groups,

Table 3.1. *Measures of settlement density in five forager groups.*

	Aka	Efe	Hadza	!Kunga	!Kungb	Ngatatjara
Mean size of settlement	262 sq. m (2820 sq. ft)	242 sq. m (2604 sq. ft)	796 sq. m (8565 sq. ft	358 sq. m (3853 sq. ft)	477 sq. m (5134 sq. ft)	39809 sq. m (428501 sq. ft)
Mean number of inhabitants	22.0	18.9	41.5	17.4	27.3	32.7
Mean area per person in settlement	11.5 sq. m (123.8 sq. ft)	12.5 sq. m (134.5 sq. ft)	19.2 sq. m (206.6 sq. ft)	20.6 sq. m (221.7 sq. ft)	17.5 sq. m (188.0 sq. ft)	1219 sq. m (13121.2 sq. ft)
Source	Hudson, this chapter	Fisher & Strickland 1991	O'Connell et al. 1991	Gould & Yellen 1987	Draper 1973	Gould & Yellen 1987

forager settlements are relatively small and dense. The size of some forager settlements, such as those of the Aka and Efe, are about the size of an average house in the U.S. or Australia (see Table 3.5). The average amount of space per individual in the settlement is about 10–20 sq. m (100–200 sq. ft).

In terms of average nearest neighbour, considerable variability exists, but, in general, neighbours are close. Several ethnographers and ethnoarchaeologists have noted that forager houses are so close to each other that people can hand items back and forth without getting up (Draper 1973; Fisher & Stickland 1989). Fisher & Strickland (1989) indicate that only 4 per cent of houses are more than 10 m away from another house. Average nearest neighbour data are limited in farming and pastoral cultures, but with the exception of the Australians, nearest neighbours in these cultures are almost twice the distance than those of the foragers. Among the farming Tswana average nearest neighbours are 17.7 m apart while among the pastoral Herero they are 20.8 m apart (Gould & Yellen 1987).

Table 3.2. *Average nearest neighbour in forager groups with data.*

Ethnic group	Average nearest neighbour house	Reference
Ache (forest context)	2–3.5 m (6.6–11.5 ft)	Hill 1994, O'Connell 1987
Ache (reservation context)	100 m	Gurven et al. 2002
Aka	4.3 m (13.8 ft)	Hudson, this chapter
Efe	4.8 m (15.7 ft)	Fisher & Strickland 1991
!Kung	7.8 m (25.6 ft)	Gould & Yellen 1987
Hadza	5.9 m (19.4 ft)	O'Connell et al. 1991
Mikea	>10 m (>32 ft)	Kelly, Pover & Tucker 2005
Alywarre	25–35 m (82.0–114.8 ft)	O'Connell 1987
Ngatatjara	36.7 m (120.4 ft)	Gould & Yellen 1987

Ethnoarchaeologists identify two possible reasons for the large Australian settlements. Gould & Yellen (1987) hypothesize that Australians do not have wild animal predators that threaten settlements as do the African groups such as the !Kung, while O'Connell (1987) suggests that Alywarre households are far apart because they receive rations from the government that are not shared with others. The predator hypothesis suggests that forager settlements are compact to keep more eyes on predator threats. A heated debate occurred between Binford (1991) and Gould & Yellen (1991) about the predator hypothesis. Binford indicates that several Australian groups (Yintjingga and Ingura), Andaman Islanders, Punam, and some South American groups (Alacaluf and Yahgan) have compact settlements similar to the !Kung but that they do not have any wild animal predators. He indicates that some Australian groups live far apart because they rely more heavily on gathering and do not have large game hunting and therefore have fewer cooperative subsistence activities and less of a need to live close together. Gould & Yellen counter his critique by pointing out that the Australian groups he mentions as living in compact settlements do have a dangerous predator, the estuarine crocodile, and that Binford only provides photos and anecdotal evidence for the other groups. What may be of interest for this chapter is that the debate identified (mostly from ethnographer's photos) at least 10 other forager groups from all parts of the world with compact settlements (Binford 1991) and that the hearth to hearth calculations for the Ngatatjara were taken from clumped windbreaks that shared a hearth (Gould & Yellen 1991) indicating that some segments of the settlements were densely organized.

Archaeologists Whitelaw (1991) and Binford (1978, 1991) have been particularly interested in trying to understand the diversity in the density of forager settlements. Whitelaw examined 112 cultures and 800 settlement plans and identified several factors that were associated with forager settlement density. Settlements are denser when: the settlement size is small, the

group is more 'traditional' (versus acculturated), the settlement is occupied for a short period of time, and the group lives in the tropical forest (versus savannah groups). Several of his factors help to explain variability in Table 3.2; Ache, Aka and Efe live in the tropical forest, have smaller settlements, are traditional (in forest context for Ache), and frequently move. Whitelaw indicates that animal and plant resources are more dispersed and medium sized game meat a regular part of the diet in tropical forest environments than they are in savannah environments where they rely more on gathered foods. Forest environments encourage more cooperation (sharing food and subsistence activities) and households are therefore closely spaced. Although the !Kung live in a savannah environment, Gould & Yellen (1987) also find that the frequency of food sharing explains compactness of !Kung settlements. In general, archaeologists indicate that 'In situations encouraging cooperation, the residences of cooperating individuals are likely to be closely spaced, facilitating communication and interaction, as well as allowing monitoring of what others do and do not have is also important in maintaining close relations to be seen to be cooperating fully' (Whitelaw 1991, 168).

Binford (1991b) indicates that cooperation influences the density of settlements, but he emphasizes variability by season within a forager group and shows that camp density is greatest during the season when cooperative hunting takes place; i.e. the density of camps is associated with organizing labour in the group. Binford also emphasizes the importance of cooperative subsistence activities to explain the dense settlement spacing in the predator debate mentioned above.

Like Whitelaw above, several scholars (O'Connell 1987; Fisher & Strickland 1991) have proposed a link between settlement density to the frequency of food sharing. Issues exist with this explanation because the Ache share extensively in both the forest and reservation contexts (Gurven et al. 2002) but nearest neighbours in the reservation setting are 20 times the distance than in the forest setting, Ngatatjara share meat but nearest neighbours are far away, and Mikea nearest neighbours are at intermediate distances, but they rarely share food outside of the household (Tucker 2004, and in this volume). While nearest neighbour densities are problematic for explaining Ache sharing, Gurven et al. (2002) find that regardless of forest or reservation setting proximity is an important predicator of sharing; they are more likely to share with those physically close to them. The Mikea data are also consistent with the idea that distance between households matters when it comes to sharing food; Mikea do not share very much food and their households are far apart from each other, arranged in a linear north–south pattern and are often separated by heavy brush which together limit visibility into other households (Kelly et al. 2005).

Pronounced cross-cultural diversity in forager settlement densities exists and archaeologists provide several useful studies to explain that diversity. One of the most common explanations for the diversity is variation in food sharing or sharing in subsistence activities. While extensive diversity occurs in forager settlement spatial density, a general trend also exists. Forager settlements are generally smaller and more compact than settlements in other modes of production. It is also reasonable to propose that intimate living is at least in part associated with extensive sharing of resources and cooperative subsistence activities commonly associated with forager life.

Sharing space in a home

Both archaeologists and social-cultural anthropologists have been interested in household space. Narroll (1962) conducted an early study of household space in 18 non-industrial cultures and identified a modal number for the spatial area used per person: 10 sq. m. This was an important study because archaeologists could use the standard number to estimate the population of settlements. Several archaeologists critiqued this work with case studies (LeBlanc 1971; Wiessner 1974). Brown (1987) found several inaccuracies with the original study and conducted a more extensive 36 culture study from the Human Relations Area Files (HRAF) Probability Sample and found that the average household space per person was 6 sq. m. Wiessner (1974) pointed out that the study did not fit mobile hunter-gatherer patterns and Porčić (2012) demonstrated that the 6 sq. m applied only to agricultural cultures, but not mobile cultures (see Steadman 2016 for a complete review of this topic).

Social-cultural anthropologists have used household dwelling size to predict other features of culture, such as whether a culture is patrilocal versus matrilocal (matrilocal households are larger; Divale 1977; Ember 2017), and to address hypotheses from psychologists that humans have needs for particular amounts of space in a home. If they do not have enough space and homes are crowded, they hypothetically develop social-psychological pathologies, such as being more aggressive, using harsher means to discipline children, being more likely to be depressed and having children that have social-behavioural difficulties in school (Brown 1987; Blake 2007).

Wiessner (1974) described why the cross-cultural studies of dwelling space do not fit foragers, but she did not provide cross-cultural data on forager household

Table 3.3. *Average size and space per person in Aka and Efe homes.*

	Aka	Efe
Average size of house	4.8 sq. m (51.7 sq. ft)	5.1 sq. m (54.9 sq. ft)
Average number of rooms in a house	1.0	1.0
Average number of beds in a house	1.7	nd
Average number of people per room	3.1	3.2
Average space per person in a house	1.5 sq. m (16.1 sq. ft)	1.6 sq. m (17.2 sq. ft)
Source	Hudson, this chapter	Fisher & Strickland 1989

space. Table 3.3 provides data on the average house size and average space per person among the Aka and Efe foragers of the Congo Basin. Data are based on measuring 30 homes among the Aka and 115 homes among the Efe. The Aka and Efe live about 1700 km (1056 miles) from each other, but their homes and average space per person are remarkably similar. The household space per person for both are substantially lower than the cross-cultural standard of 6 sq. m. Fisher & Strickland (1989) also found that the correlation between house size and number of people in a house correlated weakly and that it only explained 6 per cent of the variance. Mikea forager household space is somewhat larger (5.6 sq. m; Kelley et al. 2005) than the Aka and Efe houses, but the average number of inhabitants per house is not reported so it is not possible to calculate household space per individual.

A few ethnoarchaeologists have provided precise data on dwelling floor space, but some measures of household space also exist in ethnographies in the HRAF studies mentioned above. Table 3.4 provides dwelling size and space per person from Brown's (1987) HRAF study. His used measures from the largest typical house in a culture. So, if a group used communal houses in one season and family houses in another season he would use the larger communal house size to calculate dwelling floor size and average space per person. His original study did not analyse data by subsistence type so Table 3.4 reorganizes his sample into foragers and farmers (only 2 pastoral cultures were included in his sample and are omitted in the table). The mean forager living space per person is substantially lower than the mean in farming cultures (t=2.90, df=33, p=0.00 (two-tailed)). If we include the Efe and Aka data from Table 3.3, household densities are particularly high in the Congo Basin groups (Aka, Efe, Mbuti); forager individuals in the Congo Basin have about 1 sq. m of living space.

Table 3.4. *Comparison of space per person in a typical household of mobile hunter-gatherers and farmers. HRAF data modified from Table 2 in Brown (1987). All sources for the cultures can be found in Brown.*

Ethnic group	Dwelling floor area (sq. m)	Number of inhabitants	Sq. m per person
Mobile hunter-gatherers			
Andamans	223.3	90.0	2.5
Chukchee	30.2	6.5	4.6
Copper Eskimo	12.9	5.0	2.6
Klamath	41.7	12.0	3.5
Mbuti	2.0	6.0	0.3
Ojibwa	10.0	7.0	1.4
Ona	7.7	7.2	1.0
		MEAN	2.3 sq. m (24.8 sq. ft)
		SD	1.5
Farmers			
Amhara	30.2	5.0	6.0
Aymara	7.0	4.7	1.5
Bemba	15.1	4.2	3.6
Cagaba	12.6	2.0	6.3
Ganda	55.5	3.0	18.5
Garo	56.0	4.6	12.2
Hausa	11.3	2.3	4.9
Highland Scots	20.8	5.1	4.1
Iban	101.3	6.1	16.6
Ifugao	10.0	3.0	3.3
Iroquois	28.1	8.0	3.5
Kanuri	11.5	1.4	8.1
Kapauku	23.7	11.3	2.1
Khasi	55.5	4.7	11.8
Korea	59.4	5.7	10.4
Lau	34.0	4.8	7.1
Pawnee	181.5	27.7	6.6
Serbs	41.9	5.0	8.4
Sinhaese	56.2	4.6	12.2
Taiwan Kokkien	146.1	23	6.4
Tarahumara	23.9	4.0	6.0
Tikopia	24.6	6.0	4.1
Tiv	16.6	2.3	7.2
Truk	28.0	10.0	2.8
Tucano	100.0	27.5	3.6
Tzeltal	36.0	5.0	5.0
Wolof	12.6	1.7	7.4
Yanomamo	783.9	153	5.1
		MEAN	7.0 sq. m (75.3 sq. ft)
		SD	4.2

Table 3.5. *Average home size and living area per person in developed countries (modified from Wilson 2017).*

Country	Size of house (usable floor space) (sq. m)	Floor space per person (sq. m)
Hong Kong	45	15
UK	76	33
Japan	95	35
France	112	43
Canada	181	72
Australia	214	89
Denmark	137	65
Germany	109	55
Sweden	83	40
China (urban only)	60	20
Russia	57	22
Italy	81	31
Spain	97	35
Greece	126	45
U.S.	201	77
MEAN	111.6 sq. m (1201.2 sq. ft)	45.1 sq. m (485.4 sq. ft)

A few other things are important to remember about many forager houses. Most houses are primarily for sleeping and maybe cooking, and people spend most of the daylight hours outside of the house. Wiessner (1974) suggested that this may be why forager houses are smaller than those found in other small-scale cultures, but an issue with this proposition is that people in many, if not most, small-scale horticultural cultures spend most of the day outside of their homes and only use the house for sleeping, cooking, and storing food and wealth items. Also, many temperate and tropical mobile hunter-gatherer homes are organized into circles or semi-circles, have thin walls of leaves or brush, and do not have rooms or doors that limit access to others.

In order to place sharing of household space in broader cross-cultural perspective, Table 3.5 examines the average household living area per person in developed countries. As with the data on foragers and farmers, considerable variability exists between countries, but average forager household living densities are about 20 times higher than those in developed countries. Farmer living densities and household space per person are much closer to forager densities than they are to those in developed countries. These data may help to explain why scholars in developed countries characterize foragers as living in intimate (this chapter), dense, compact, tight or crowed spaces.

Multiple studies conducted in developed countries indicate that overcrowding can lead to several social and health problems including increases in child mortality, respiratory conditions, social conflicts, mental illness, malaria, and meningitis (Hall 1966; Grove & Hughes 1983; Fuller 1996; UK Office of the Deputy Prime Minister 2004). Overcrowding is defined in several ways, but is often defined as having more than 1.5 people/room or less than 165 sq. ft (15 sq. m) per person (Blake et al. 2007). Only about 3 per cent of U.S. households live with less than 165 sq. ft per person. Using this criterion, all foragers and all but two farming cultures live in overcrowded conditions.

Anthropologists have examined the relationship between space available per person and social pathology and Draper's (1973) !Kung case study and Brown's (1987) cross-cultural research with 36 non-industrial societies do not find any support that 'crowding' (i.e. less space per person) leads to more social pathology or harsher child rearing practices. Overcrowding in developed countries is often a measure of poverty. The data from small-scale cultures suggests that humans can and prefer to live in very intimate conditions but that dense living in developed countries is often not by choice and a consequence of poverty and pronounced political-economic inequality which leads to the lack of access to essential health and education resources.

Sharing space in a bed

Ethnoarchaeologists and social-cultural anthropologists have measured settlement and household living spaces, but few have examined the density of shared space in a bed. Ethnoarchaeologists have measured bed sizes but do not provide data on the number of people in each bed while cultural anthropologists have listed the number of people sharing a bed but not the size of the bed (Shweder 2004). We conducted one of the few systematic studies that examines both bed size and the number of people in a bed among the Aka foragers and Ngandu farmers. We measured 34 Aka and 69 Ngandu beds and recorded the number, sex, and age of individuals sleeping in each bed (Hewlett & Roulette 2014). Table 3.6 provides the average size

Table 3.6. *Average space per person in a bed among Aka hunter-gatherers and Ngandu farmers (Hewlett & Roulette 2014).*

	Aka	Ngandu
Average size of bed	0.9 sq. m (10.7 sq. ft)	2.0 sq. m (22.3 sq. ft)
Average number of people in a bed	2.7	2.0
Average space per person in a bed	0.4 sq. m (4.4 sq. ft)	1.2 sq. m (12.8 sq. ft)

Figure 3.1. *Four people co-sleep on an Aka bed.*

and space per person in Aka and Ngandu beds. The Aka have particularly intimate and dense sleeping conditions as each person has less than a half a meter square (about 4 sq. ft) to sleep. Individuals who share a bed often sleep on their sides and touch others throughout the night (Fig. 3.1).

Beds and sleeping spaces per person in developed countries are substantially larger. A single-sized bed is 1.8 sq. m (18.8 sq. ft) in the U.S., 1.7 sq. m (18.2 sq. ft) in the U.K., and 1.9 sq. m (20.3 sq. ft) in Japan. In general, developed countries have more space per person in a bed than either the Aka or Ngandu and have 4–5 times more space per person in a bed than do the Aka.

Sharing interpersonal space: touching

Hall (1966) was one of the first anthropologists to examine how culture influences interpersonal spatial relations. He established the field of study called 'proxemics' and it generated hundreds of studies in several disciplines. He described four spatial distance zones in humans: intimate distance is associated with people one knows very well such as a spouse, close family and friends and ranges from touching to 45.7 cm (touching to 18 in); personal distance is used primarily for occasional acquaintances and ranges from 0.6-1.2 m (1.5-4 ft); social distance is used primarily with strangers and usually takes place within 1.2–3.7 m (4–12 ft); and public distance is for gatherings of strangers and ranges between 3.7–7.6+ m (12–25+ ft). In this chapter, we are particularly interested in the 'intimate' distance because most people in forager settlements are close family and friends (see Bird-David, this volume, for more on the importance of small-scale contexts in forager communities). We focus on touch as this is the most intimate space and likely one of the easiest to quantify cross-culturally.

Hall (1966) hypothesized that people from 'contact' cultures (i.e. Arabs, Latin Americans, southern Europeans) prefer more touch and close distances than those from 'non-contact' cultures (i.e. Asians, North Americans, northern Europeans). Several researchers tested his hypothesis and confirmed his

contact culture hypothesis (see Remland et al. 1995 for a review). Unfortunately, few were actually based on observational research and all were conducted with individuals from developed countries. We thought that one book titled 'Proxemic Behavior: A Cross-Cultural Study' (Watson 1970) might be promising, but it examined proxemics in four groups of international students attending the University of Colorado: Arabs, Latin Americans, Southern Europeans, and Northern Europeans. No small-scale cultures in this study. The few studies of proxemics that were based on observations often used very short video tapes of interactions, often 30-60 seconds, so we do not know the average amount of time people in these cultures or nations touch others during the day. A recent interview-based study by Sorokowska et al. (2017) examined social, personal, and intimate distances in 42 countries and found that social distance averaged 135.1 cm (53.2 in), personal distance averaged 91.7 cm (36.1 cm) and intimate distance averaged 31.9 cm (12.6 in). The paper evaluated several variables to explain the cross-national variability and found that temperature and age correlated with intimate space; older people and people living in warmer countries preferred larger intimate distances than young people and those living in cooler climates.

In this section of the chapter we examine studies of the frequency of one form of intimate space – touching – among the Aka and other mobile hunter-gatherers. Comparative data from farming communities or peoples in other modes of production are presented when possible.

As mentioned in the introduction, we have conducted field studies with foragers and farmers in central Africa and several of us (Hewlett, Boyette and Fouts) conduct research on the daily lives of children in these cultures. Focal follows of children during daylight hours (6 a.m. to 6 p.m.) were conducted in all of our studies and we all coded the instances children were held or touched. Figure 3.2 illustrates the percentage of time (i.e. percentage of 30 second intervals) the hunter-gatherer and farmer children were held or touched during the day.

The comparison shows that from infancy to adolescence that Aka forager children are held or touched substantially more than Ngandu farmer children. Figure 3.2 is limited to holding and touching at various ages. If we include within proximity (i.e. touching or within arm's reach of someone during the day) the percentages jump considerably; for instance, Aka two year olds were within proximity of someone 93.8 per cent of the day, three year olds were within proximity 89.2 per cent of the day, and four year olds were within proximity 80.1 per cent of the day. Comparable studies with Euro-American infants show that they are held/touched considerably less than the Ngandu children; Euro-American young infants are held or touched 12–30 per cent of the day and older infants are usually held less than 10 per cent of the day (Konner 1976; Hewlett 1996; Hewlett et al. 2000). Euro-American infants are often placed in infant carrying devices such as an infant seat, car seat, or crib.

Boyette (2012) examined Aka forager and Ngandu farmer touching in middle childhood and early adolescence in great detail and found that by comparison to farmer children, forager children: touched others more frequently, touched a greater number of individuals, were more likely to touch individuals of different age categories, and were more likely to touch individuals of the opposite sex.

A study of adolescent grief by Bonnie Hewlett (2005) found that touch and holding were key elements to coping with the loss of a loved one among Aka foragers. An adolescent girl explained (2005, 330): 'I cried a lot and after the burial the people in camp listened to me and held me and after awhile the sadness lessened.' By comparison, the Ngandu farmer adolescents seldom mentioned touch and felt better after people started to give them food and material objects.

Lewis (2016, and in this volume) conducted research with the BaYaka foragers, the southern neighbours of the Aka, on how children learn to sing, and described child spirit play singers in the following way: 'Typically, singers sit together with their limbs resting on one another – literally "mixing up their bodies" (*bo. saŋganye njo*), or dance in tight coordinated formations.' Draper (1973, 303) provides a similar quote when she described proximity among the !Kung: 'As people sit in camp, resting, talking, and doing chores, they prefer to gather in knots or clumps, leaning against each other, their arms brushing, the crossed legs overlapping.' Likewise, Radcliffe-Brown (1933, 117) described Andaman Islander greetings: 'When two friends or relatives meet who have been separated from each other for a few weeks or longer, they greet each other by sitting down on the lap of the other, with their arms around each other's necks, and weeping and wailing for several minutes till they are tired. Brothers, father and son, mother and son, mother and daughter, and even husband and wife greet each other this way, with the husband sitting on his wife's lap.'

In terms of other systematic studies of touch in hunter-gatherer childhood, Draper's (1973) observational study of !Kung children under the age 14 found that girls were in physical contact with at least one other person in 57 per cent of observations and boys were in physical contact with someone in 35 per cent of the observations. Hamilton (1981) conducted

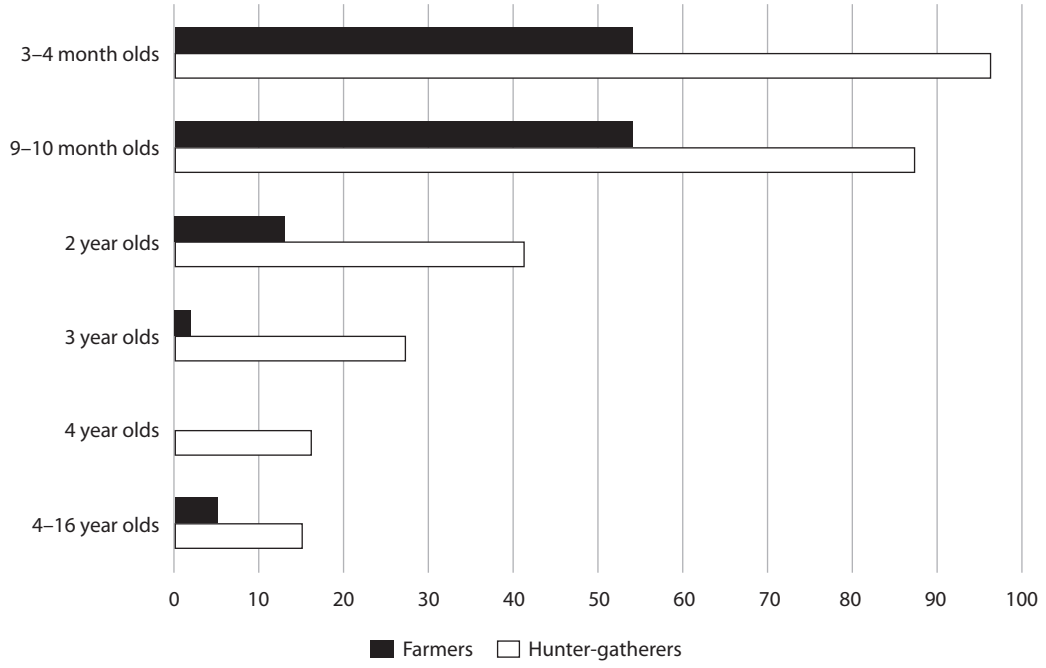

Figure 3.2. *Percentage of time forager and farmer infants, children and adolescents are held or touched during the day (infant data from Hewlett et al. 2000; early childhood data from Fouts, this chapter; middle childhood and adolescent data from Boyette, this chapter).*

a quantitative study of holding/touching among the Australian Gidjingali and found that during daylight hours 0–6 month olds were touched 93.6 per cent of the time, 6–18 month olds 83.2 per cent of the time, and 18 month olds–5 year olds were touched 23.9 per cent of the time. The Australian frequencies of touching are similar to those of the Aka foragers and higher than those for the Ngandu farmers in Figure 3.2.

In another type of systematic cross-cultural study of touch in hunter-gatherer children, Lozoff & Brittenham (1979) reviewed the ethnographies of 187 cultures in the Standard Cross-Cultural Sample (SCCS) for descriptions of holding and other features of infancy. Table 3.7 summarizes some of their results and shows that forager caregivers are much more likely to hold their babies than are caregivers living in other subsistence modes. Their study also demonstrates that foragers are more likely than farmers and others to immediately respond to a crying or fussy infant and to provide affectionate care. Along similar lines, another systematic SCCS study with children of all ages found that hunter-gatherers were significantly more likely to show warmth and affection to their children than were caregivers in other subsistence systems (Rohner 1975). Montagu (1971) also described extensive touching and affectionate care of infants among the Netsilik and other foragers but it was not a systematic study and he did not compare cultures with different subsistence systems.

Table 3.7. *Infant holding and other measures of caregiver sensitivity (modified from Lozoff & Brittenham 1979).*

	Hunter-gatherers (10 cultures)	**Other subsistence modes** (177 cultures)
Infant held > 50% time until crawling	100%	56%
General affectionate care	100%	72%
Immediate, nurturing response to crying	100%	74%

Few studies exist on touching in hunter-gatherer adults. The most extensive research was conducted by Sugawara (1984) among the G/wi San. It was the first and remains the only systematic study of proxemics among forager adults. He conducted focal follows of G/wi adults and adolescents throughout the day. Table 3.8 summarizes unintentional touching (he omits intentional grooming) and proximity (i.e. within 0.3 m or 12 in.) of male and female adults. Adult males touched others 14 per cent of the day, but most of the touching occurred with other males. When an adult male touched a female, it was usually his wife.

Table 3.8. *Percentage of time intervals G/wi adults touched or were within proximity (0.3 m; 12 in) of other males and females in the camp setting during daylight hours (calculated from Fig. 7 in Sugawara 1984).*

	Touching males	Proximity to males	Total	Touching females	Proximity to females	Total
Adult Males	11%	25%	36%	03%	09%	12%
Adult Females	02%	11%	13%	11%	22%	33%

Table 3.9. *Percentage of time G/wi adolescents touched or were within proximity (0.3 m; 12 in) of other males and females in the camp setting during daylight hours (calculated from Fig. 9 in Sugawara 1984).*

	Touching males	Proximity to males	Total	Touching females	Proximity to females	Total
Adolescent Males	30%	25%	55%	02%	05%	07%
Adolescent Females	02%	04%	06%	22%	28%	50%

Likewise, adult females touched others 13 per cent of the day, but 85 per cent of the touching was with other females and when women touched a male it was usually her husband. If we consider both touching and within 0.3 m or within arm's reach, G/wi males were 'intimate' with someone 48 per cent of the day and female adults were intimate with someone 46 per cent of the day.

G/wi adolescents spent even more time in intimate space with others than did G/wi adults and, as one might expect, the same sex preference also existed. Table 3.9 outlines Sugawara's results and shows that adolescent males spent 62 per cent of the day in intimate space (touching or within arm's reach) with someone else and adolescent females spend 56 per cent of the day within reach of someone else. If adolescents were in intimate space with someone, 90 per cent of the time it was with same sex individuals.

Sugawara (1984) also examined the relationships between people who touched and found that of the dyads that touched at least once, 41 per cent of them were touching genetic kin, 41 per cent of them were touching affines, and 18 per cent of them were touching non-kin (calculated from data in Table 9 in Sugawara).

It is interesting to note that ethnoarchaeologist Binford (1978) also calculated proximity among Nunamiut adult males. He measured the distance between the left and right knees of men seated next to each other around a fire and found that men seated in groups of 3–4 sat 33 cm (13 in.) apart but when the size of the group increased to 5 men the average distance dropped to 24 cm (9 in.); they spent most of this time eating and talking. These measures fall within the 'intimate' zone described by Hall (1966).

We were unable to find all-day observational studies of touch in adults in developed countries similar to those conducted by Sugawara (1984). Hundreds of experimental psychology and therapeutic studies of touch exist in developed countries and they have identified an array of positive physical and mental health benefits of touch including: a) various emotions can be communicated by simple touch (Hertenstein et al. 2006); b) lower levels of touch during childhood can influence the development of depression (Takeuchi et al. 2010); and c) children are more likely to express positive emotions when they are touched more often (Bai et al. 2016). We know from the previous sections that houses and beds in developed countries are large, the section below shows that children in developed countries seldom co-sleep after infancy, and most places of employment in these countries seldom allow touching. Overall, it implies that touching during the day or night in developed countries is likely to be infrequent by comparison to the frequencies of touching for children and adults in foragers.

In terms of touching at night, an observational study of Aka and Ngandu found that Aka children and adults rarely slept alone and were touching someone throughout the evening. Ngandu farmers regularly co-slept but adolescents and adult males were more likely than the Aka in these groups to sleep alone (Hewlett & Roulette 2014). By comparison, the frequency of co-sleeping with infants in the developed world varies substantially, but if one examines co-sleeping beyond infancy only 5–23 per cent of 5- to 11-year-old children and 2–4 per cent of adolescents in the developed countries share a space and touch others at night (Yang & Hahn 2002). Most children in these groups would be considered 'deprived' by both Aka and Ngandu standards, by which all children under the age 11 co-sleep with someone.

In a cross-cultural study of husband-wife co-sleeping, Whiting & Whiting (1975) found that hunt-

Table 3.10. *Husband-wife co-sleeping in hunter-gatherers versus other modes of production (modified from Whiting & Whiting 1975).*

	Hunter-gatherers (26 cultures)	**Other subsistence modes** (115 cultures)
Husband and wife sleep together	96%	57%
Husband and wife sleep apart	4%	43%

Table 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.*

Age	**U.S. market economists**	**Ngandu farmers**	**Aka foragers**
18–29	2.2	4.0	7.3
30–39	1.7	4.4	8.4
40–45	1.3	2.1	5.4

er-gatherer spouses were much more likely to co-sleep than spouses in other modes of production (Table 3.10). This means that men in non-forager cultures sometimes sleep alone (like Ngandu men mentioned above) and that adult females in these groups sleep with the children. Among foragers, it means that children are more likely to co-sleep with both parents rather than only mother. The Hewlett & Roulette (2014) study found that forager children before adolescence usually co-sleep with another adult whereas farmer children were more likely to sleep with mother or other siblings.

Finally, the most intimate form of physical contact is sexual intercourse. Few studies exist on forager sexual behaviour, but a study among Aka and Ngandu married couples found that Aka couples had significantly more frequent sex than the Ngandu; the Aka averaged sex 3.0 times per night and the Ngandu 2.2 times per night (Hewlett & Hewlett 2010). Aka explained that sex was primarily to search for a child rather than for pleasure. One Aka man said 'The work of the penis is the work to find a child' (2010, 112). Frequency of sex is seldom described in the ethnographic record, but one forager ethnographer, Roheim (1933), reported that Aranda of Australia had sex 3–5 times a night. Sexual behaviour researchers in developed countries do not even ask how often a couple has sex per night; they usually ask informants about how often they have sex per week or month. Consequently, comparable data on sex per night from developed countries does not exist. But it is possible to convert the Aka and Ngandu data into frequencies per week because they reported frequencies per day and as well as the number of days between sex. Table 3.11 shows the average frequency of sex per week among three age categories of married couples in three populations. The table demonstrates that the Aka have substantially more frequent sex and intimate physical contact on average than either of the other two groups.

Hypothetical implications of intimate living

We have explored shared space in forager settlements, houses, beds, and interpersonal relations. Impressive and important cross-cultural and intracultural diversity exists in each domain, but the limited data we were able to locate indicate foragers generally have more intimate living environments than do peoples in other modes of production. We now turn to a discussion of biological, psychological, social, and cultural consequences of forager intimate spatial environments. The implications are hypothetical because we or others have not directly evaluated the relationships.

Oxytocin

Touch impacts human feelings and social behaviour through an array of neurobiological systems (Olausson et al. 2016; Field 2014), but here we focus on oxytocin. Oxytocin (OT) is a mammalian hormone and neuropeptide made in the hypothalamus and released into the blood supply from the pituitary. Originally, it was thought to be primarily a female reproductive hormone that played critical roles in childbirth (influencing cervical dilation and uterine contraction), lactation (letdown reflex), and maternal nurturing (reducing stress and increasing attention to the newborn). Recent research has shown that OT influences both males and females and that in addition to childbirth and breastfeeding, several other behaviours increase its expression: skin-to-skin contact, pleasant touch (e.g. hugs, massage, holding hands), and intercourse (Carter 2014; Feldman et al. 2013). Researchers have also demonstrated that OT increases human trust (Kosfeld et al. 2005; Zak et al. 2005), generosity (Zak et al. 2007), empathy (Carter et al. 2009), and pair bonding (Williams et al. 1994). Studies in Israel show that sensitive care in infancy (touch, affect, vocalizations) by parents influences a child's OT levels and a child's sharing with friends three years later (Feldman et al. 2013). The expression of OT and its interactions with the genetically similar vasopressin, which is associated with defence and aggression, are complex, but most researchers agree that OT increases with various forms of intimate touch and that OT promotes prosociality (e.g. sensitive care, giving, trust, attention to social stimuli, social connectedness) and decreases stress (blood pressure and cortisol levels) in humans (Carter 2014; Gettler 2014). Reduction of stress (cortisol levels) may be particularly important because interpersonal

conflicts, illness, death, and other stressors, permeate forager life.

The hypothetical implication for hunter-gatherers is that their culturally constructed intimate living environments may contribute to regular expressions of OT and decreased levels of cortisol. This may promote higher levels of interpersonal trust, giving, and cooperation, such as those proposed by Bird-David (1990) and documented by Gurven et al. (2002) and others. OT may enhance generous sharing of a) food, b) allomaternal care, and c) knowledge/information. Feelings and behaviours generated by OT may also decrease stress (cortisol) in daily life and reinforce cultural norms and foundational schema of sharing. OT has seldom been measured in foragers (see Jaeggi et al. 2015 for exception), but one of the only studies of diurnal cortisol levels among Tsimane foragers indicates that their cortisol concentrations are lower than any known group (Nyberg 2012). Overall, OT is a potential amplifier and feedback mechanism to forager cultural systems of cooperation and sharing.

Cultural models of trust and egalitarianism

Attachment theory (Bowlby 1969) is one approach developmental psychologists use to explain how children develop feelings and views of self and others. John Bowlby was interested in explaining the intense distress, anxiety, and despair infants exhibited when separated from primarily caregivers. He hypothesized that infants' fussing, crying, crawling, or reaching for others functioned to maintain proximity to caregivers and that this strategy was designed by natural selection to promote the safety and survival of infants. Research in several cultures supports the universality of the attachment system, as infants in all cultures demonstrate attachment behaviours towards specific others by late infancy (Main 1990). The development of what Bowlby called 'internal working models' of self and others is part of the attachment process. Children who receive consistent, prompt, sensitive and attentive care tend to feel more secure about their world and their environment with others. As children's memories and information-processing capacities mature and repeated child-caregiver interactions occur, the child develops internal working models of self and others. Children with caregivers who are warm, attentive, take the child's perspective, perceive their signals and interpret them correctly, and react promptly and contingently develop trusting internal working models. Children who receive inconsistent care develop a sense of self that is insecure and mistrustful of others. Children with trusting views of others are more likely to explore their environments and become more autonomous.

Internal working models are one type of cultural model discussed in the introduction. They are socially acquired (via lived experiences with others in the culture) knowledge and feelings that provide a baseline for understanding and predicting the intentions of others. They emerge in a context of multisensory (e.g. touch, body, smell, eye movements) communication. The cultural models based in the attachment process tend to be conserved over time, but can change if the environment changes later in life (e.g. divorce, illness).

In relation to this chapter, we have demonstrated that Aka foragers are much more likely than Ngandu farmers to hold or touch their children at all ages (Figure 3.2), and that cross-culturally hunter-gatherer caregivers are more likely than caregivers in other modes of production to hold their infants, respond quickly to a fussing infant, and be more affectionate. In a separate paper, we also demonstrate that Aka infants are more likely than Ngandu infants to be breast-fed on-demand, nursed by other women, and responded to much more rapidly when they fuss or cry (Hewlett et al. 2000). Foragers invest heavily in holding and maintaining proximity to children, but it does not mean that Aka and other hunter-gatherers have child-focused rearing patterns. Caregivers provide attentive care but children are not the centre of attention most of the day; men and women care for children as they go about their daily activities and most adults spend most of their time interacting with other adults, often of the same gender.

We argue that the intimate shared space during the day and night, the high frequency of touching, along with the sensitive care, contribute to hunter-gatherer internal working models (or cultural models) of trust of self and self with others. Our approach provides mechanisms for understanding how hunter-gatherers acquire what Bird-David (1990) calls pan-forager metaphors (what we call cultural models) that contribute to extensive food sharing in foragers.

It is also important to note that the foundational schemas of autonomy and egalitarianism also contribute substantially to the development of trust in self and others. Trust and autonomy established in infancy and early childhood are built upon in middle childhood and adolescence because cultural schema promote autonomy, giving and egalitarianism. Forager caregiving is indulgent, especially in infancy and early childhood, but as children grow older they are free to do pretty much what they want. Parental control is minimal, children are free to learn as they participate in adult activities, and they are consistently reminded that they are not better than others. By contrast, parents in the developed world may emulate hunter-gatherer sensitive care in infancy, but

the children then move onto preschools and formal education systems where respect for autonomy is typically limited and inequality pronounced. Teachers and other adults are in control and children are ranked on a daily basis (i.e. receive grades) which means some children are better/worse than others. The ranking and limitations of autonomy impact how children feel about themselves and others.

The intimate living environment of foragers may also play a role in establishing and maintaining the foundational schema of egalitarian gender relations. Nancy Chodorow (1974) predicts that in cultures where men/fathers are intimate identity figures for boys/sons (consistently nearby and available, like women/mothers are to their girls/daughters), and men/fathers are active participants in infant care, that the boys growing up will know precisely what it is like to be male and less likely to devalue tasks and roles of women. If men have an intimate idea of what it is like to be a man in many contexts, they are less likely to degrade those things associated with being a woman. Males who grow up primarily with women learn what it is like to be a woman in many contexts, but as they mature and are expected to acquire a masculine identity, their knowledge of what it means to be male, especially in diverse contexts, is often vague and imagined. They use female tasks and roles to define what men do not do; for example, being a man means not cooking or holding babies. Cross-cultural studies support her hypothesis and indicate men in low-male involvement cultures are more controlling and less egalitarian (e.g. females excluded from public decisions) (Coltrans 1988).

Hunter-gatherer intimate living means young boys usually have several adult males around within easy viewing distance, if not touching or within arm's reach. Even if a boy's own father is not around, due to divorce, death, or he likes to travel, it is easy to observe many other adult males in camp. Young boys are very familiar with what it is like to be male in many contexts, observe males doing female tasks in particular contexts (e.g. flexibility in gender roles), often co-sleep with their father and mother, and consequently do not devalue those tasks or things generally associated with females. Evidence consistent with this perspective comes from cross-cultural studies that show that hunter-gatherer fathers are more likely to provide direct care of children than fathers in farming and pastoral cultures where male salience is lower (Marlowe 2000).

Empathy

The discussion about attachment theory and how it contributes to internal working models of self and others assumes that humans have an evolved capacity to read and share the intentions of others, often called 'theory of mind' (Tomasello 2001). This ability is associated with characteristic features of our humanity: cooperation and empathy for others (see Spikins, this volume). The evolved propensities for empathy interact with culture, such as the four spatial domains in this chapter. We hypothesize that cultural environments of intimate living amplify an individual's empathy for others. They sleep with, touch, see, hear, smell and closely interact with everyone in the settlement in a variety of contexts. The shared spaces increase the depth and breadth of empathy for a broad range of others.

Social learning

Social learning is basically acquiring skills or knowledge from others rather than learning them on your own. It is a distinguishing feature of our humanity and has enabled humans to adapt to diverse environments around the world. Social learning in non-human animals is generally limited to a few traits, often linked to finding food or mates, but in humans it involves acquiring thousands of traits, including subsistence skills, cultural models, and kinship systems. Intimate living as described in this chapter can influence social learning in several ways (see Tostevin, this volume, for greater description of social learning of technologies).

Firstly, the proximal living with many others means that children or adults have easy access to multiple models from whom they can learn (i.e. observe, imitate and provide demonstrations). Many others can comment or guide an individual trying to learn a skill or particular knowledge. For instance, our study of teaching among the Aka found that caregivers often turned infants sitting on their laps outwards towards all others in the settlement; we called this 'distribution teaching' because multiple others in the camp then engaged and communicated with the infant (Hewlett & Roulette 2016).

Secondly, the intimate living can contribute to mechanisms of transmission that promote the high fidelity of skills and knowledge. The ability to observe many others in a settlement, house, bed, or while touching, means that individuals can easily cross-check what they are learning with different models, obtain comments from a broad spectrum of people or easily observe and copy what the majority in camp is doing. Evolutionary theorists have emphasized that high-fidelity social learning is key to humans' ability for cumulative culture, i.e. to expand and build upon previous skills and knowledge (Lewis & Laland 2014).

Thirdly, intimate living helps to explain the nature of social learning in foragers. Our study of teaching among the Aka found that teaching episodes

were very short, usually lasting a few seconds, subtle, often non-verbal (e.g. pointing or moving the body), and occurred while touching (Hewlett & Roulette 2016). Individuals in a settlement know each other very well which means that learning can often take place rapidly through non-verbal communication (i.e. eye or body movements). Anthropologists from developed countries interested in social learning may be missing critical features of social learning in foragers because formal education systems and cultural models of learning in developed countries emphasize verbal explanations.

Fourthly, dense living and frequent touching augments intimate knowledge of others (their emotions, personality, trust) which provides teachers (anyone who modifies his/her behaviour to enhance learning in another) the opportunity to easily build upon what learners already know (called 'scaffolding' in the social learning literature). Intimate knowledge of others also enables teachers to minimize their investment; in other words their modifications of behaviour can be brief, subtle, non-verbal. The pronounced trust of others that emerges from intimate living also means that learners trust their teachers and that the teachers trust the abilities of learners. Research has shown that trust on both sides promotes rapid social learning (Harris 2015).

Finally, sharing is a foundational schema among the Aka and many forager groups, but all domains of sharing require social learning. Individuals have to learn social norms of food sharing or how to cooperate in subsistence activities before extensive giving or cooperative activities can occur. Children have to learn how to provide sensitive care to infants to promote the kinds of trust described above. Foragers also have to learn how to share space with others in a settlement, house, or bed.

Sharing and cooperation in other domains

All of the impacts described above can promote sharing and cooperation in other domains, such as food sharing, allomaternal care, and knowledge. The impacts discussed above are mostly unconscious or unintended consequences of the intimate shared space. By contrast and described in the settlement section of the chapter, archaeologists and human behavioural ecologists suggest a more explicit reason; foragers live close to each other so they can monitor what other have or do not have to share (Whitelaw 1991; Gould & Yellen 1987; O'Connell 1987). Anyone who has lived with foragers knows that not everything is shared and that some individuals try to rapidly consume or conceal what they have acquired so they do not have to share with others (see Marlowe 2010 for examples from Hadza). This hypothesis is limited to settlement density and has not been applied to sharing space in a house or bed or to why foragers of all ages frequently touch.

Hypothetical impacts of intimate shared spaces among foragers are discussed above, but it is important to remember that they likely interact and influence each other. Cultural models of self and others promote trust and sharing of intimate spaces with others and the sharing of intimate spaces may increase the amount of touching and OT levels. In terms of food sharing, the primary topic of sharing in the hunter-gatherer literature, it should be clear that all of the proposed impacts described above can increase the frequency, scope, and intensity of giving and sharing.

Summary and conclusion

This chapter explored shared space in forager settlements, houses, beds, and interpersonal relations. Limited data existed on these topics but, in general, foragers shared intimate space across a variety of domains. Some statistical evidence existed in two (household density and touching) of the four domains that foragers share intimate space more frequently than do food producers. The quantitative data in the other two domains (settlement and bed density) were consistent with this pattern (foragers more intimate) but we were unable to find many comparable data on food producers. We anticipated that foragers would be intimate in some domains, such as the frequency of touching in infancy, but when we pulled the data together and compared foragers with food producers we were surprised by the levels of forager intimate living across a variety of domains. Aka young children were within an arm's reach of someone between 80 and 94 per cent of daylight hours, G/wi adolescents were within reach of someone 62–56 of the day, and foragers averaged about 2 sq. m of living space in a house by comparison to 45 sq. m for people in developed countries. Studies with Australian foragers demonstrated that intimate living may not occur across all domains.

The secondary aim of the paper was to consider possible ways in which the shared spaces impact and interact with other features of forager life including food sharing. We identified biological (oxytocin, cortisol), psychological (development of trust and empathy), and cultural (social learning) factors that may be impacted by intimate living. Several if not all of these factors could amplify, often unintentionally, and provide feedback loops, to giving and sharing in other domains (Fig. 3.3).

Why intimate living? The chapter identified ecological (monitoring others, wild animal predators, cooperative subsistence activities), cultural (models

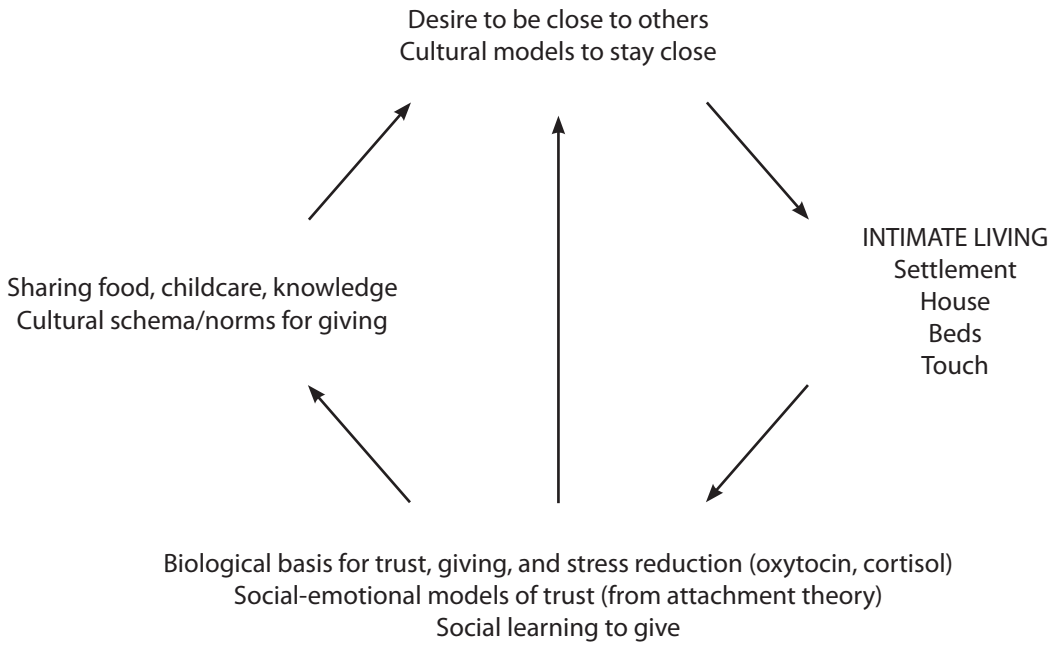

Figure 3.3. *Feedback loops between intimate shared spaces and other forms of sharing.*

and norms about sharing space), and biological (endocrinology) variables associated with forager intimate living, but only factors associated with settlement density – predators, cooperative subsistence activities, monitoring, food sharing – have been evaluated systematically by archaeologists (e.g. Whitelaw 1991). We do not have the space here to review the studies of these variables, but we offer a few alternative hypotheses to those presented by archaeologists to explain settlement density.

Learning to trust

For children in particular, the intimate living environment provides a multi-modal (biological, psychological, cultural) environment to learn trust, empathy, and cultural models that amplify the frequency and scope of sharing food, childcare, and knowledge.

Promote and maintain giving

Cultural schema and models promote sharing and giving, but the intimate living environment provides critical feedback that promotes and maintains giving and sharing.

Intimate living across the four domains presented can increase the depth and breadth of knowledge, empathy, trust, and attachment ('bonds') to others. This can enhance sharing food and childcare, cooperation in subsistence and other activities, and rapid social learning. Social learning will be more efficient and rapid if members of the group deeply know, empathize with, and trust each other. Sharing/giving will be more extensive if a person trusts that others will do likewise in the future. Subsistence and other forms of cooperation are more efficient if participants can empathize and know each other very well; they can read each other's intentions and non-verbal communication, as well as know each other's strengths and weaknesses.

Intimate living can also at times be viewed as a form of 'silent demand' where individuals stay close to particular others in order to obtain a share of resources or learn new skills (Løgstrup 1997; Widlock, this volume).

We should mention that intimate living has costs, such as the increased exposure to diseases of contact and difficulty hiding wealth or food resources from others, but overall, the benefits of food sharing and other forms of cooperation noted above outweigh the costs.

Why are forager living environments generally more intimate than that of food producers?

Daily food sharing and cooperation beyond the household occur less frequently in food producing cultures than they do among foragers in part because food producers use storage of food and other resources to buffer variability. The biological, psychological, and cultural feedback loops of trust, empathy, and social learning may be less important

to making a living in food producing cultures so the need for intimate living spaces are not valued as much. Substantial differences exist in the daily realities of foragers and farmers; foragers live in a one-room dwelling and have constant visual/aural tracking of people in other dwellings whereas food producers often live in multi-room dwellings and or have significant visual distances between neighbours. Likewise, the especially pronounced lack of intimate living environments in the developed world may reflect the decreasing importance of trust and empathy due, in part, to sharp declines in the importance of daily sharing and cooperation beyond the household. Like storage in food producers, peoples in developed countries have developed political-economic institutions to deal with risk and making a living. One might suggest that those living environments in developed countries are 'touch deprived' and may help to explain why they have a variety of industries trying to remedy the lack of touch (e.g. massage therapy, attachment parenting, holding pets). One could hypothesize that the living environments in developed countries not only lack the biological-psychological-cultural feedback loops that support sharing and cooperation, but that the constructed environments also lead to their own selection pressures which may contribute to the disappearance of human cognitive abilities for trust and empathy.

We want to note that some scholars hypothesize that forager settlements are compact or that their houses or beds are small and dense because they are always moving (Brown 1987; Ember 2017). Mobility may play a role, but we want to point out that if a forager did not want to share space with others in a camp, house, or bed, it generally does not take much time or energy (in environments with vegetation) to build a home far away from others or to make a bed of leaves, skins or logs to sleep alone. It may take an hour or so to build lean-to or dome-shaped house and less than 30 minutes to make a separate bed. Our years of experiences with the Aka and other hunter-gatherers suggest that people could easily increase their living space if they wanted, but they prefer to be physically close to others.

Finally, this chapter broadens our awareness of space as a way to view complex feedback loops between the biological and social, and intersections between adaptive patterns and individual choices in daily practice. Thus, intimate spaces have made forager life successful over evolutionary time and enjoyable (see also Lewis, this volume, on economies of joy) and sustainable in the proximate timescale of daily life.

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Chapter 4

Sharing and inclusion: generosity, trust and response to vulnerability in the distant past

Penny Spikins

As the contributions to this volume demonstrate *sharing* is fundamental to the way of life of mobile hunter-gatherers. Sharing structures all aspects of life from the basics of how subsistence is organized to how people perceive of themselves and others. Sharing of food has received the most attention, however mobile hunter-gatherers also share all aspects of their existence from hunting risks, childcare, knowledge and power to their concept of who they are and how they relate to those around them. Moreover, there is little doubt that sharing has been key to our evolutionary success. Confronting predators or large prey is extremely risky, however by sharing risk early humans were able to compete with predators for carcasses, and later hunt collaboratively (Whiten & Erdal 2012). Being able to acquire meat through active scavenging and hunting seems in turn to have been key to brain expansion, and indeed expansion of our complex social brain (Gamble, Gowlett & Dunbar 2011). Likewise provisioning and shared care allowed vulnerable young to be raised to adulthood irrespective of individual variance in food acquisition or parental availability and is key to long periods of infant dependency and learning (Hrdy 2011; Hill & Hurtado 2009). Sharing of care for those who are injured contributes to significantly reducing mortality (Sugiyama 2004; Spikins et al. 2018b) and knowledge sharing to health (Salali et al. 2016). Without a capacity to give to those in need (and receive help when needed) in many different ways early humans would not been able to move into the new ecological niches which made them successful (Gurven et al. 2012; Whiten & Erdal 2012).

The material evidence of sharing extends far back into early prehistory, yet a differing evidence base has tended to draw the disciplines of archaeology and anthropology to approach sharing amongst hunter-gatherers from somewhat different perspectives. For *archaeologists* studying hunter-gatherers from material remains, sharing has typically been seen in terms of measurable material transfers such as of food (see Barkai, this volume) or raw materials. The nature of the archaeological record equally lends itself to issues over large scales of time and space such as seen through long term movements of raw materials or gifts (see Kelly et al., this volume). *Anthropologists* however benefit from enviable evidence for sharing as part of intimate social relationships (see Bird-David and Hewlett et al., this volume). For hunter-gatherers in a modern context sharing is not only an economic reality but also part of more intangible relationships between people, as seen in the sharing of identities, knowledge (see Tostevin, this volume), space (see Hewlett et al., this volume) or intangible resources such as songs (see Lewis, this volume). Anthropological contexts illustrate that sharing for modern hunter-gatherers is about how social relationships between people operate through a certain *generosity* of giving without securing a reward.

Each perspective gives vital insights into sharing as the practice which lies at the heart of hunting and gathering societies, nonetheless different approaches can create a certain tension in our understanding of what sharing *is*. One would even be forgiven for concluding that sharing within the mobile hunter-gatherers of the distant past and those in the present operated under entirely different principles. Hunter-gatherers of the distant past who distribute resources or effort are typically described as 'collaborating' (with the implication that some long term economic benefit to the exchange is visible) whilst modern hunter-gatherers 'share', implying a sense of giving. The significance of sharing as part of intimate social and emotional relationships in the past is often overlooked. As a result, we are often left without satisfactory explanations for important social behaviours in the distant past. Rational collaboration fails to explain the extensive lengths which people from very early in our evolutionary past went to in order

to look after the ill and injured, often when it will have been obvious that such individuals would not survive (Spikins et al. 2018a). Likewise, the inclusion of sometimes vulnerable individuals, such as those with autism, appears difficult to explain (Spikins, Wright & Hodgson 2016).

I argue here that to fully understand sharing in the far distant past we need to find how to relate the intimate social and emotional context of sharing in modern hunter-gatherers to large scale patterns of resource transfers seen in the archaeological record. By doing so we can begin to understand how complex emotional relationships of generosity, trust and response to vulnerability create the social conditions of *sharing* as distinctive from *calculated collaboration*. A perspective on sharing as a socio-emotional system which results in particular types of resource transfers allows us to explain apparently enigmatic social behaviour in the distant past such as widespread care for the vulnerable. Moreover, we can begin to appreciate how the socio-emotional basis of sharing has had a long-term influence not only on our emotional capacities but even our human populations structure.

Sharing in an evolutionary perspective

Taken from an evolutionary perspective the sharing that we observe in modern mobile hunter-gatherers is markedly different from anything we might term 'sharing' in other social mammals (see Widlok, this volume). Sharing is a complex and conscious process which extends beyond kin for example (the Aka for example share 50–80 per cent of what they hunt and gather with all of the group every day (Hewlett & Hewlett 2013, 75). Moreover the 'pay-offs' of sharing are not only not direct, but even *not apparent* on an individual level at all (Nowak & Sigmund 2005; Silk & House 2011). There doesn't seem to be rational reasons to share so extensively. Rather than transfers of effort or resources being part of supporting one's kin or of a two way relationship between peers with some sense of 'tit-for-tat' as we see in primates, sharing in modern hunter-gatherers is based on needs, rather than pay-offs (Smith et al. 2018; Jaeggi, Burkart & Van Schaik 2010; Tomasello & Vaish 2013).

Sharing relies on several evolved cognitive-emotional capacities which mark humans as distinct (Fig. 4.1). Perhaps the most obvious is that of our level of emotional self-control – to share demands resisting the temptation to take for oneself or keep to oneself and instead give to others, whether this be resources, time, or what we might term the emotional work of empathizing, consoling or supporting others (Heatherton 2011). Food sharing for example demands substantial self-control in overcoming one's own hunger or anticipation of food is order to give this to others (Crittenden 2016). Sharing also demands an other-focus or empathy, a capacity to be emotionally motivated by the needs of others, and cognitively able to think through how to help. Though human empathy has it's neurological foundations in mother-infant bonds, unlike any animals we empathize and can be motivated to share with friends, strangers, inanimate objects and even concepts (Decety et al. 2012). Furthermore sharing can only flourish where there is a capacity to judge the reputation of others (who may or not be trustworthy), an awareness of one's own reputation and willingness to detect and punish cheats (Manapat, Nowak & Rand 2013). Shared power depends on monitoring of other's behaviour and motivations and a shared response to cheats or those who seek to dominate for example (Boehm et al. 1993; Boehm 2012).

The high levels of 'give and take' typical of practices of sharing in hunter-gatherer rely not on definable material returns but the benefits of a social reputation for generosity – giving generously to those in need improves one's reputation, and so future support when in need (Gurven et al. 2000). Amongst the Ache for example those hunters who are most generous in sharing their kill are most willingly looked after when ill or elderly (Gurven et al. 2000). Sickness and injury prevent Ache hunters from hunting around a third of the time which illustrates how important such support is in hard times. Likewise amongst the Martu

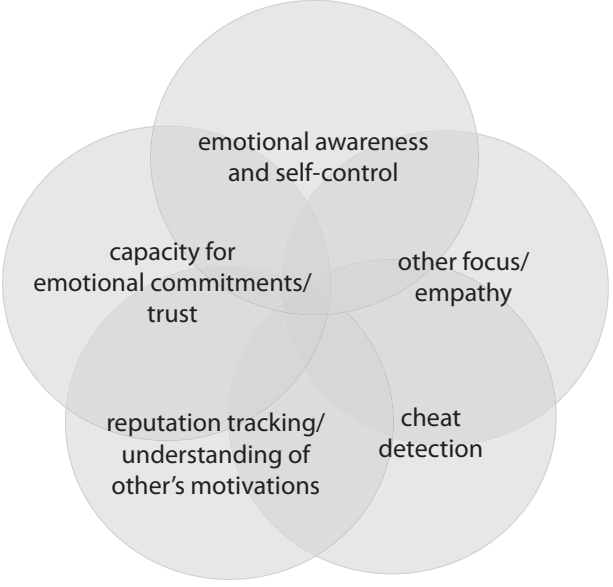


Figure 4.1. *Significant cognitive-emotional capacities involved in sharing in mobile hunter-gatherer contexts.*

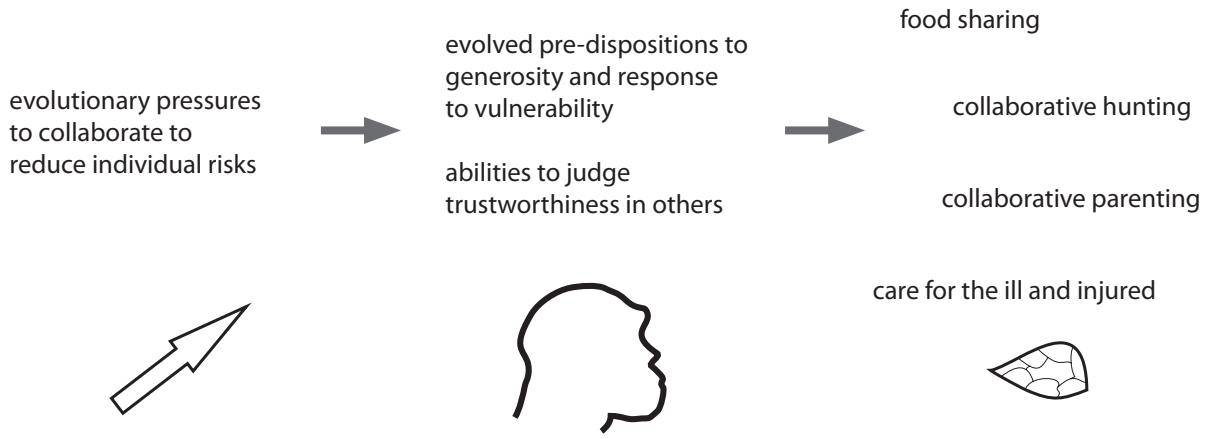


Figure 4.2. *Evolutionary pressures, motivations to share and sharing behaviours in early humans.*

those who are most generous are preferred hunting partners (Bliege Bird & Power 2015). Sharing might not yield clear measurable material benefits but as an indirect result of generosity social reputation plays a key role in survival.

This significance of sharing as contributing to social reputation over and above the practicalities of the resources being shared makes sense of sometimes paradoxical displays of generosity and sharing in modern hunter-gatherers. Gomes (2011) for example notes that amongst the Menraq and Semai of Malaysia, people frequently share identical goods with each other, such as rice, as the act of sharing is more important than the material exchange. Similar practices are also noted by Endicott (1988) amongst the Batek. Equally, the largest and most elaborate gift is not necessarily the 'best'. Wiessner notes that an overly generous gift would end a *hxaro* relationship (Wiessner 2002) presumably by placing the recipient in an uncomfortable position of obligation. Similar apparently paradoxical examples of sharing in modern hunting and gathering contexts exist in the archaeological record. Exotic Slovakian radiolarite was transported into Polish early upper Palaeolithic assemblages, presumably through gift exchange, even though this material is clearly inferior to the local chocolate-coloured flint (Gamble 1999, 333) for example. Expressing generosity (rather than functional value) was clearly the key to the gift exchange process. That 'cheating' on the sharing ethic, such as eating food out of sight of others (Berbesque et al. 2016), generally occurs in minor ways and when very unlikely to be 'found out' further underlines the significance of reputation to the dynamics of sharing. Hunter-gatherers both past and present shared a common drive to *be generous* and also to be seen as *generous* even where this might seem counter-intuitive in terms of visible returns on such generosity.

Archaeological evidence for lifestyles comparable to those we see in modern hunter-gatherers only appears relatively late in the archaeological record. Gift-giving, widespread symbolism and extensive alliances between groups as well as many complex cultural expressions seem to emerge only after around 100,000 years ago for example. However *sharing through generosity*, at least in it's simplest form, appears remarkably early in human evolution. Archaeological evidence for sharing of hunted food (see Barkai, this volume), sharing of hunting risks (Domínguez-Rodrigo et al. 2014), and shared parenting (Hrdy 2008), emerge around the time of emergence of the genus *Homo* and by at least 1.5 million years ago. This is a period where pressures to collaborate to survive will have been intense, driven by the adoption of a new predatory niche and a need to buffer individual risks. Proximate psychological mechanisms driving *motivations to share with those we trust without counting the cost* seem become strongly selected for (Gurven & Jaeggi 2015; Jaeggi, Burkart & Van Schaik 2010), including neuroendrocine changes which form the foundation from human altruism. Changes in hormones such as oxytocin, linked to male parental investment, shared infant care, a social focus to cognition and responses to vulnerability in any group members are likely to have been key to such changes for example (Trumble, Jaeggi & Gurven 2015) (Fig. 4.2).

The influence of sharing can be seen in modern psychology. We are careful to notice who responds to those who are vulnerable, and so who to trust for example (Manapat, Nowak & Rand 2013). Even though neo-liberalism may encourage a certain calculation of returns from one's efforts, we do not

trust close friends or partners who have *calculated* the benefits of our relationship to them (Silk 2003; Nesse 2009; Gottman 2011; Hoffman, Yoeli & Nowak 2015). Uncalculating generosity is taken as a signal of trustworthiness, visibly handcuffing us to another's well-being and so ensuring the high levels of give and take which a mere agreement could not (Nesse 2001; Silk 2003; Kurzban, Burton-Chellew & West 2015; Jordan et al. 2016). Starting from a young age, children prefer to share with those who have been visibly generous to them (Leimgruber et al. 2012). Over time children become generous givers, in turn building their own reputation for generosity (Manapat, Nowak & Rand 2013; Cowell et al. 2017). Moreover giving away resources or effort increases our sense of happiness (Park et al. 2017).

A fundamental *motivation to share* appearing from the early Pleistocene onwards may explain apparently inexplicable social behaviours seen in the archaeological evidence. Firstly responses to physical vulnerability explain care for the ill and injured even when it would have been clear than recovery was unlikely, and secondly responses to social vulnerability explain motivations to inclusion which provide the foundations for increasingly cognitively diverse human populations.

Sharing and care for injury and illness in the distant past

Evidence for care of illness or disability in early prehistory is usually discussed in isolation from evidence for other types of sharing, such as food sharing or childcare. This may be because the latter have been seen as directly explicable in economic or evolutionary terms, whereas care for illness and disability has been seen as something of an enigma, and subject to intense scepticism (Doat 2016; Thorpe 2016; Spikins 2017). Care for those who will not recover to repay such care, or *sharing of health*, seems at odds with a neo-liberal narrative of success in ways that food sharing or childcare are not (Spikins 2017). Even though food sharing is *effectively* sharing of health, food sharing can appear to fit more easily with a 'calculated collaboration' model of relationships than healthcare for which, in the case of severe injury or impairment, care can seem to be effort expanded with a lack of evident 'benefit'.

Any explanation for care in terms of a sharing and supportive mentality has been resisted. This is despite healthcare provisioning being key to reducing mortality in modern hunting and gathering societies (Sugiyama 2001), and support of those with disabilities in modern hunter-gatherers widely recorded (Toda 2013). As a result apparently paradoxical evidence for care for injuries, illnesses and the elderly is often sidelined in reports and receives scant attention as a topic compared with evidence for violence (Tilley 2015b; Thorpe 2016). There is much discussion about the implications for violence from the head injury of the St Cesaire Neanderthal in the published paper for example (only one of two cases of clear interpersonal violence in Neanderthals) (Zollikofer et al. 2002), however the same paper barely mentions recovery from this trauma, which will have taken many months of care. Furthermore extreme scepticism has been levelled at arguments for willing care and support from others. It has been argued that injured or impaired early hominins may have survived through foraging alone despite impairments (Degusta 2002) and in the absence of incontrovertible proof of intention of extended support from others (impossible from skeletal remains) we should accept a 'null hypothesis' that no care or support to the injured was available in past societies (Dettwyler 1991). Neanderthals as a particular case have even been described as 'callous' (Wynn & Coolidge 2011) despite demonstrably extensive care for the ill and injured (Spikins et al. 2018a, 2018b). Bizarrely survival despite severe injury and impairment in *dogs* in later archaeological contexts (such as a severely arthritic dog found at Roman Carthage, (MacKinnon & Belanger 2006)) are ascribed unproblematically to care and support, even though dogs might seem to be more able to forage for themselves, whilst similar recovery in palaeolithic humans is interpreted differently.

Patterns of survival and recovery for many recorded cases from extensive injury in the distant past nonetheless cannot be explained by self care and indicate willing care from others (Doat 2016). The earliest evidence comes from a *Homo ergaster* female (KNM_ER 1808) from East Africa who for example survived for several weeks through severe pain and loss of consciousness around 1.6 million years ago (Walker et al. 1982) which would have been impossible alone. By around 450,000 years ago we see several examples of care in a collection of pre-Neanderthal hominins, found at Sima de los Huesos in northern Spain where of around 28 individuals at least 3 would have needed help to survive, including a child with craniosyntosis (Gracia et al. 2009), a man who was deaf, and an elderly man who could only have walked slowly with a stick due to pelvic deformation (Bonmatí et al. 2010; Bonmatí et al. 2011). Care from others also seems indisputable in many cases in Neanderthals including that for the elderly man at Shanidar, who was blind in one eye, and had a withered arm and withered leg and who may have been dependant on others for at least fifteen years (Trinkaus & Zimmer-

man 1982; Trinkaus 2014). Extended care is also likely for many other individuals such as a Neanderthal from La Chapelle aux Saints and that from La Ferrassie (Tilley 2015a). Shang and Trinkaus even observe that all of the documented lesions in pre Late Pleistocene hominins show some degree of recovery (2008, p.435) and Harvati (2010) that Neanderthals would not have survived the periods of convalescence required without support from others. Yet even where care and support is indisputable there remains nonetheless a stubborn reluctance to attribute *evidence for care* to any *willing generosity* and an assumption that some calculated 'pay-off' (though difficult to envisage) must exist. Tilley (2015a, p.226) notes for example the comment by David & Underdown (2006, 148–9) that 'the extensive intragroup care needed to sustain such infirm members is surprising unless they provided some valuable service'.

What seems to be missing from the debate is an understanding of the wider context of sharing.

An understanding that motivations to support those with physical vulnerabilities are part of a wider socio-emotional dynamic of *sharing through generosity*, with long term returns lying in social reputation, provides an explanation for the apparent enigma of widespread care. We might *imagine* sharing through calculated collaboration in the distant past, and so question where time, resources or effort is shared where there are no evident 'pay-offs' (and consider for example that it would 'make sense' to care for those with minor injuries but to abandon the severely injured or impaired). However calculated collaboration doesn't provide the give and take necessary to support survival of small highly interdependent groups. In a system of sharing through generosity individuals who calculated pay-offs would lose social reputation as trustworthy allies to depend on and so lose future support when they needed it. Extensive calculated collaboration would thus undermine the socio-emotional dynamic upon which widespread sharing depends. Rather the earliest evidence for survival of severe injury/impairment coincides with evidence for other elements of sharing, such as collaborative hunting (Domínguez-Rodrigo et al. 2014), food sharing (Jaeggi & Gurven 2013; Whiten & Erdal 2012), collaborative childcare (Hrdy 2011), and in association with evidence for displays of reputation, and self-control, in stone tool forms (Spikins 2012). These different elements of sharing, alongside care for the physically vulnerable, seem intimately connected through a common dynamic of *sharing through generosity.*

Care of the physically vulnerable in the distant past can be explained through an understanding of the socio-emotional basis of sharing, and the benefits of social reputation for those who reach out to help. Rather than simply an outlying oddity within apparently rationally explicable resource transfers care for the physically vulnerable has a wide influence on human population structure, maintaining individuals who might otherwise be lost to communities and providing the basis for uniquely human social learning.

Sharing, tolerance and diversity

There are also further implications of a socio-emotional model of generosity, trust and response to vulnerability as being integral to hunter-gatherer sharing. *Sharing through generosity* also explains care for the socially vulnerable and in particular how various skills and talents which also bring disadvantages and social vulnerabilities can be maintained and supported in human populations.

Cognitive differences and mental health conditions are difficult to identify from skeletal material, however what evidence exists suggests care for these conditions was forthcoming as for physical disabilities and impairments (Spikins 2017). Craniosyntosis in a child from Sima de los Huesos at around 450,000bp was clearly supported by the group (Gracia et al. 2009), as was notable brain damage of the early modern human at Quafzeh around 90-100,000 years ago (Coqueugniot et al. 2014). Particular roles may even have emerged. For example probable epilepsy seems likely to have influenced a Mesolithic woman's position from Bad Durremberg as a potential shaman for example (Porr & Alt 2006). Similar resistance to accepting a concept of willing care is seen in such cases however. Whilst there is no palaeopathological evidence or supporting ethnographic evidence to support the argument it has been assumed that individuals with noticeable impairments in Upper Palaeolithic and Mesolithic contexts who have received elaborate burial have been given such treatment as a result of being deliberately sacrificed, rather than playing a significant social role (Formicola 2007). Once again an assumption is made that any vulnerability might be subject to a calculated assessment of benefit in the distant and potentially considered 'not worth supporting' rather than receiving support and inclusion.

Attitudes to the potential inclusion of individuals with autism in past hunter-gatherers provide an interesting example. Cross-culturally in modern contexts a significant percentage of individuals (around 2–6 per cent) within populations fit a diagnosis of autism spectrum disorder. This condition is highly heritable, has a long genetic history, and has been shown to have been subject to positive selection or active inclusion in the distant past (Polimanti & Gelernter 2017). The

presence and selection of autism in the distant past has seemed surprisingly given its characterization as a social disorder. The inclusion of individuals with autism, typically associated with deficits in social understanding, into past hunter-gatherer societies has seemed out of keeping with a classic evolutionary model (see Spikins & Wright 2016; Spikins et al. 2016). Some even argue, despite the genetic evidence to the contrary, that individuals with autism simply wouldn't have been supported in palaeolithic hunter-gatherers, with their integration going beyond what such societies would be willing or able to support (Pickard et al. 2011; Bednarik 2013; Bednarik 2016).

Autism *can* be severely disabling. Those with the most disabling autism, that associated with intellectual impairment, do frequently face severe challenges as do those who care for them. Nonetheless support and inclusion for those with equally disabling cognitive impairments have been recorded even in non-human primates. Extensive efforts to care for an infant with Down's syndrome have been recorded in our nearest living relatives chimpanzees for example (Matsumoto et al. 2016) and autistic behavioural traits are tolerated in chimpanzees (Faughn et al. 2015). Moreover it seems likely that small scale and hunter-gatherer communities are likely to have been a more supportive environment than modern societies for those with particularly disabling autism, though a lack of expectations of what 'normal' should be (Kapp 2011) as well as fewer sensory pressures and cultural expectations of behaviour (Spikins & Wright 2016). Severely disabled individuals may not have made a contribution in genetic terms, and autism with intellectual impairment is known to be typically associated with *de novo* or spontaneously occurring genes rather than selection (Robinson et al. 2014; Robinson et al. 2016). Nonetheless their presence and inclusion within hunter-gatherers of the distant past seems probable. It seems doubtful that any calculated estimate of who was 'worth' including would *commonly* take place in such contexts.

Integration of individuals with autism without intellectual impairment (formerly known as Asperger's syndrome and here termed AS) is not difficult to explain through relatively modest social support. A case for the emergence of specialized roles for such individuals can be made. In modern societies AS is not *necessarily* a disability for example (Baron-Cohen 2000) – many individuals with the condition are unaware of any 'disorder' and view their particular talents, such as in mathematics or computing, as useful (Baron-Cohen et al. 2001). Moreover rather than being anti-social, individuals with AS are typically as motivated to contribute to society, albeit in different ways, and are best seen as 'differently social' (Solomon 2010). Such individuals perceive the world differently, may take longer to develop an understanding of others, and may find complex social situations challenging however usually understand others well enough (through social rules) to 'get along' socially (Baron-Cohen et al. 2001). A perceptual focus on detail (known as local processing bias or 'weak central coherence') leads to a detail focus which can be beneficial in art (Spikins, Scott & Wright 2017a) and in technical realms. Likewise abilities at understanding the relationship between complex forms, as evidenced through enhanced abilities to interpretation of embedded figures (Fig. 4.3) are also significant in technology and construction (Happé et al. 2001; Briskman et al. 2001). Enhanced skills in several domains such as technology, engineering or mathematics, as well as a notable concern for fairness thus seem to present 'trade-off' personality characteristics. Special skills, such as in realistic artistic depiction, musical pitch, mathematics or calendrical understanding are common (Meilleur et al. 2015).

Given a motivation to contribute to a common good, and particularly enhanced skills in certain realms which can compensate for deficits in others, it isn't difficult to see that individuals with AS could have played important roles in society in the past, much as we know that they do in the present. Genes

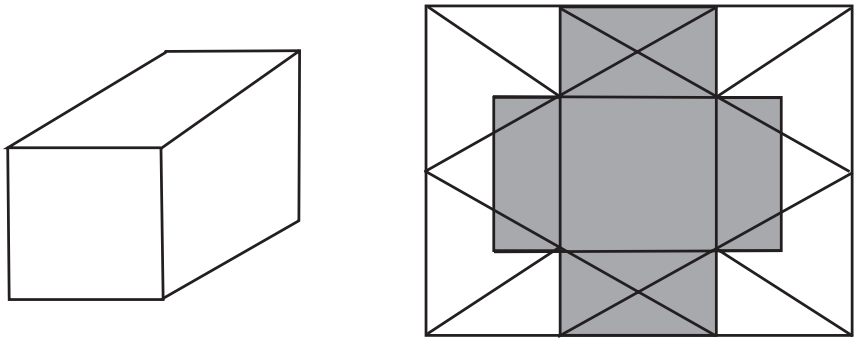


Figure 4.3. *Example of an embedded figures test. Participants are asked to identify the figure on the left within the figure on the right. Individuals with AS perform better in such tests than do those who are neurotypical.*

associated with AS are subject to normal inheritance and variation (Gaugler et al. 2014) and individuals with AS have families, with their spouses showing normal levels of marital satisfaction (Lau & Peterson 2011). AS is common in families of engineers (Baron-Cohen et al. 1998) as well as particularly being associated with STEM subjects (Wei et al. 2013) and law (Rodman 2003).

Examples of individuals with rather different skills, and tolerated social distinctiveness exist in anthropological contexts, for example Vitebsky documents a particular individual amongst Siberian reindeer herders. He remarks:

> The extraordinary old grandfather had a detailed knowledge of the parentage, medical history and moods of each one of the 2,600 animals in the herd. He was more comfortable in the company of reindeer than of humans, and always pitched his tent some way from everyone else and cooked for himself. His son worked in the herd and had been joined for the summer by his own teenage sons, Zhenya and young Sergei. (Vitebsky 2005, p.133)

Identifying individuals with autism in the archaeological record is a notable challenge. Even in modern society there are no objects unique to individuals with autism, even though preferences for valued personal possessions differ (Spikins, Wright & Scott 2017b). Technological skills are however likely to have been particularly valued in certain contexts, of which attention has particularly been drawn attention to upper palaeolithic (ice age) Europe. At this time (approximately 30–10,000 years ago) severely cold, dry and variable environments imposed substantial threats to existence, making complex technology, such as spear throwers, essential to survival. Certainly the levels of detail expressed in stone tools in this region are far beyond the merely functional (Sinclair 2015), moreover detailed recording systems exist which will have demanded notable patience and systems understanding in their production (Spikins & Wright 2016). The most *interesting* potential material evidence for inclusion in upper palaeolithic Europe comes from the art of the region however, notable for its realism, extraordinary attention to detail and prevalence of overlapping forms. The level of exceptional realism in upper palaeolithic art has been compared to the art of individuals judged to have exceptional abilities associated with the weak central coherence common in autism (Drake & Winner 2017; Spikins, Wright & Scott 2017a). Moreover embedded figures (or overlapping forms) are also a common element of the art, and easier to decipher for individuals with autism than for the neurotypical.

It isn't difficult to imagine how for such cultures, regardless of who made the art, an artform which exploits a particularly autistic type of vision of the world, and is more easily interpretable by those with more autistic perception (Figs. 4.4 and 4.5), may have played a role in the integration of *different* minds. Much as today such art draws our attention through its 'difference' from other more stylistic art forms in

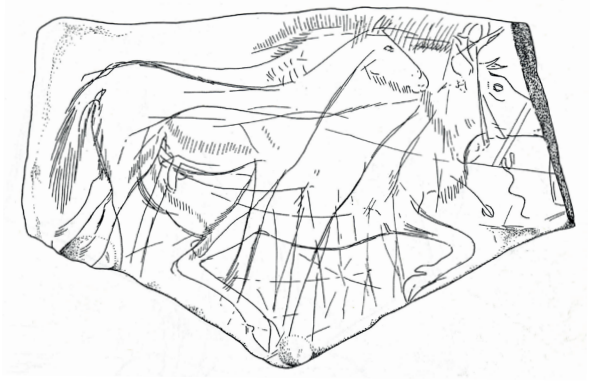


Figure 4.4. *Example of portable art showing embedded figures (or overlapping forms). Plaquette 691 from Montastruc, dated* c. *11,000* BP*, shows 3 horses (photograph above and illustration of figures below), which share a tail, hindquarters and a penis and have separate heads, overlying a reindeer (images and photographs courtesy of the British Museum). The plaquette, only of many similar pieces of art, illustrates a talent at creating and interpreting embedded figures.*

Figure 4.5. *Examples of embedded forms (or overlapping figures) in parietal art. Detail taken from engravings at Les Trois Frères, illustration by Abbé Breuil.*

other cultures, exposing the viewer to a particular a way of seeing the world would likewise have exposed contemporary viewers to a particular vision and perception. Art may thus have been, at least in part, an arena for seeing world through different eyes and a means of fostering inclusion.

Contrasting emotional schemas – sharing through generosity and calculated collaboration

If sharing through generosity, trust and response to vulnerability was as much an essential part of sharing in the distant past as today, then how do we explain the lack of motivations to share in these terms in modern industrialized contexts?

In many ways the dividing lines between a generous hunter-gatherer sharing and an industrial individualism with calculated exchanges are not as sharp as it might appear. In many hunter-gatherers calculated returns rather than responses to vulnerability or need are the mode of collaboration between distant groups for example and often organized through clear social rules (Godino et al. 2013). Equally some individuals amongst hunter-gatherers take a more calculated rather than emotionally driven approach to sharing, as illustrated by orphans amongst the Inuit (Briggs 1970). Moreover, it is easy to forget that many individuals in modern industrialized contexts share with a truly remarkable generosity, such as those who donate kidneys to strangers (Brethel-Haurwitz et al. 2017).

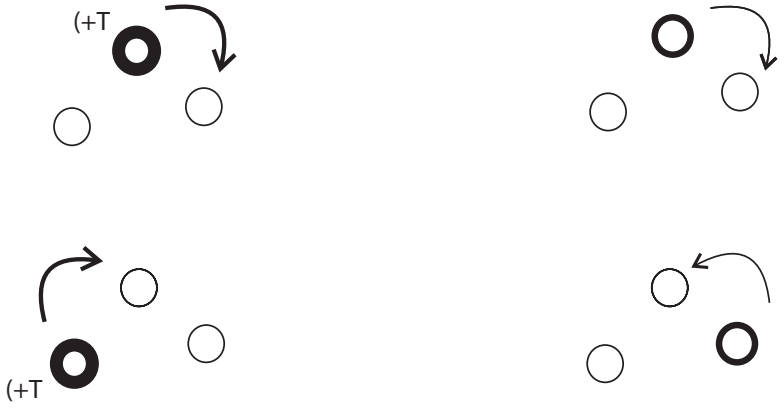
There are nonetheless marked cultural contrasts. Economic games illustrate that the propensity to share is much reduced in industrialized societies (Henrich et al. 2001, 2004). We are all capable of sharing through generosity, trust and response to vulnerability or through calculated collaboration, focusing on the potential benefits which giving up a resource might bring (Fig. 4.6). However clearly individual, social and cultural experiences play a key role in promoting (or constraining) our willingness to share.

The most obvious influences on our individual emotional motivations to share come from our personal experiences with care-givers as we develop, and our level of attachment security. These personal relationships colour our internal working models, or emotional schemas, of social relationships. Experiencing childhood as a hunter-gatherer tends to be associated with the levels of intimacy which promote the type of security which fosters trust for example (Hewlett et al., this volume; Hewlett, Lamb & Leyendecker 2000; Boyette & Hewlett 2017). A sense of trust and security within close relationships is promoted by close secure

relationships in industrialized contexts and sharing generously within a close family context if often the norm. However there is a greater prevalence of those who lack a secure loving relationship to a care-giver as children in industrialized societies (Mikulincer & Shaver 2010) and levels of insecure attachment continue to increase (Konrath et al. 2014).

There are important cultural influences on sharing. Whilst very young children in different cultures worldwide show similar tendencies to generosity, it is in middle childhood that children pick up different cultural norms and internalize these into their own internal working models of expectations for relationships (House et al. 2012; House et al. 2013; Crittenden & Zes 2015). In mobile hunter-gatherers narratives of the importance of sharing are widespread (Hewlett & Hewlett 2013) whereas other cultures may emphasize independence (House et al. 2013).

Short term and particular cultural contexts can also play a key role in influencing our emotional motivations to share, even as adults. In now famous studies, Marwell & Ames (1981), and Frank (1993) (and more recently (Bauman & Rose 2011)) demonstrated the effects of a narrative of natural human self-interest within the discipline of economics on young adults (undergraduate university students). They showed that through studying economics, a discipline founded on a concept of individual self-interest, these students become more focused on their own immediate self-interest and less able to share and develop relationships based on trust and less willing to contribute to the public good. In effect such students are changing their internal working to prepare for better survival in the type of self-oriented social environment they perceived around them. Such students can't be simply described as less moral, since as well as being more self-interested such students have also been found to become more honest (Yezer et al. 1996). Honesty is essential to certain types of collaboration, however whilst making arrangements for mutual interest based on honesty may be 'collaboration', it is not 'willing sharing'. Economics students rather seem to be developing *a different type of morality*, one in which honesty and ownership are prized and generosity and



Sharing through generosity

- response to vulnerability and need
- development of reputation for generosity (+T)
- narratives of trust and inclusion
- confidence in availability of others/ being cared for
- high levels of give and take buffer individual risks

Calculated collaboration

- response to potential for future benefits which are evident
- development of reputation for honesty and fairness
- narratives of individual autonomy/ status acquisition
- anxiety or dissociation, lack of confidence in care from others
- low levels of give and take (efforts only made where returns are evident)

Figure 4.6. *Contrasting internal working models and social behaviour between sharing through generosity and calculated collaboration.*

sharing are not important (Zsolnai 2003), something potentially workable in a world where it is possible to be independent from any help from others.

Relating to others primarily through calculated collaboration might seem like a failure of some drive to share generously however it more rightly reflects an adaptive emotional schema which works according to context. We develop such differing internal working models according to our experience. Social mentalities based on secure supportive contexts, associated with sharing through generosity in social relationships, a sense of equal worth to others, and being attuned to other's needs, are most adaptive in affiliative contexts (Gilbert 2015; Liotti & Gilbert 2011). However, survival in *unsupportive* social contexts can be compromised by sharing generously. In such cases the best chance of survival lies in being self-oriented, conceiving others within a ranked hierarchy and operating under calculated collaboration (as in the case today in many inner city street gangs, Gilbert 2005). More individual focused and competitive models fail to support trusting relationships with high levels of give and take and carry serious emotional costs (Gilbert et al. 2009). Nonetheless they come into play in particular social and cultural contexts where they help us to survive.

Clearly our *capacity to share through generosity* may be hard-wired but its expression is not. Widespread sharing based on generosity, trust and response to vulnerability depends on social and cultural effort. This significance of the cultural context to which alternative emotional schemas prevail explains many features of hunter-gatherer society – the attention to the support of children, constraining self-interest, resisting attempts at dominance and promoting a culture and narrative of sharing for example. Given a need for high levels of collaboration in small scale hunter-gatherers the narratives of trust portrayed in firelight talk (Wiessner 2014) and their influence on internal working models of generosity are as essential to long term survival as any practical resource gathering might be.

Conclusions

Sharing in the distant past has tended to be discussed in terms of transfers of resources (such as food sharing or sharing of raw materials) and through the long term economic advantages which sharing brings, with little attention to the intimate social basis and motivations for sharing. Widespread sharing in modern hunter-gatherers is however based on intimate emotional relationships of generosity, trust and response to vulnerability which emerged early in our evolutionary history. These emotional relationships help to explain apparently enigmatic features of the archaeological record such as extensive care for the ill and injured, and motivations towards inclusion.

Our distant past of sharing has had a widespread influence. In practical terms care for physically vulnerable individuals who might otherwise have been lost to communities changes the age structure of populations, keeping older individuals with valuable knowledge and skills within groups and fostering a uniquely human type of social learning. Motivations to care for socially vulnerable individuals likewise changed the structure of human populations, bringing new perspectives and talents which in many cases may have helped survival. Moreover, in emotional terms the importance of sharing within highly collaborative communities has given us alternative emotional schema through which we relate to those around us, making possible both sharing through generosity and calculated collaboration.

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Chapter 5

The demand for closeness: social incentives for sharing among hunter-gatherers and other groups

Kenneth Sillander

Sharing as a distinct type of transfer, different from exchange, and a defining feature of hunter-gatherer sociality has attracted increasing anthropological interest in recent decades. Many theories have been advanced to account for the practice, which challenges the received anthropological view derived from Mauss that precapitalistic social life was based on exchange and reciprocity, and the widespread idea that people strive to maximize self-interest through their actions. What are the reasons and incentives for transferring food and resources according to a principle that does not guarantee return for the donors or impose debt on the recipients? What explains the predominance of this transactional mode among hunter-gatherers, and what motivates individual actors to share and demand? This chapter addresses these questions by attending to the social incentives for sharing. Foremost among these, it proposes, are demands for social resources emergent from the nature of sociality among hunter-gatherers, and kinship, which as Bird-David (this volume) argues, has been marginalized in ethnographic studies of hunter-gatherer sharing.

The chapter takes as its starting points the increasingly acknowledged recognition that a rigid distinction between hunter-gatherers and other groups is untenable, and the observation that extensive sharing is found also among some of the latter. This suggests that other conditions than the hunter-gatherers' economy and distinctive subsistence pattern may cause their propensity to share (e.g. Barnard 1983; Dentan 2011; Gell 1999; Hamilton 1982; Ingold 1986). While early attempts to explain hunter-gatherer sharing mainly emphasized economic conditions, the focus in the more recent literature has shifted to social factors. The chapter continues this trend and expands on the insights in some of the landmark works on the subject to develop a distinct contribution on how sharing is socially conditioned through practical association and aspirations for closeness. It is proposed that the social conditions that hunter-gatherers have in common with other groups that practice high-incidence sharing are central in motivating their sharing orientation.

My motivation to look at social causes of sharing beyond the economy – and beyond hunter-gatherers – is partly personal, and derives from the fact that my own fieldwork has not been with hunter-gatherers, but with the Bentian, a group of shifting cultivators of Indonesian Borneo who in many ways resemble hunter-gatherers. Thus it was my field experience with shifting cultivators that attended me to these factors, as well as kindled my interest in hunter-gatherers, initially because the literature on them provided a source of insights on shifting cultivators. An additional motivation, reinforcing this interest, was my subsequent involvement in the book *Anarchic Solidarity* (Gibson & Sillander 2011), which considers a number of Southeast Asian hunter-gatherers and shifting cultivators who hold in common a set of basic principles of social life, including sharing.

Many Southeast Asian shifting cultivators, and horticultural societies elsewhere, lead a social life which features abundant sharing, and many other qualities frequently attributed to hunter-gatherers, especially those labelled 'immediate-return' by James Woodburn (for some examples, see Atkinson 1989; Frake 1960; Gell 1999; Geddes 1954; Gibson 1986; Rival 2002; Rosaldo 1980; Schieffelin 1990; Schlegel 1972; Sillander 2011; Walker 2013). These qualities include extensive personal autonomy; weakly developed kin roles and status positions; absence of corporate groups; lack of developed authority and institutional structures; classificatory or universal kinship; egalitarianism; residential mobility and organizational fluidity; and immediacy-based sociality. Apparently participation in 'delayed-return activities' through farming does not rule out sharing, and unlike what Woodburn stated in 1982, not necessarily trigger the

development of corporate and hierarchic structures involving 'binding commitments and dependencies between people' (1982, 433).

As an example we may take the Bentian, who during my fieldwork with them in upriver villages in the 1990's conducted extensive sharing, and maintained considerable personal autonomy along with other typical immediate-return characteristics, even while they owned houses and domesticated animals, claimed bilaterally inherited rights to land and plants cultivated by forebears (the latter notably including extensive holdings of rattan sold for trade), and reciprocally exchanged labour at certain stages in the cycle of rice cultivation. Sharing was considered an obligation, an exemplary form of behaviour between kin and neighbours expressive of an ideal that those who are close should provide care and mutual support for each other. Sharing occurred through donor-initiated distribution of game (wild boar, deer) and occasionally other food resources (fish, honey); offering of food and accommodation for short and long time visitors; provision of meals for the duration of frequent and often long-lasting rituals to anybody attending; and perhaps most importantly, frequent and explicit demands for various resources and services ranging from cigarettes, food, clothes, livestock, and dogs, to agricultural and other work assistance, ritual participation, and children for company or adoption. Asking someone for something (*sake*) formed a salient and framed event whereby people presented their requests in a direct and formalized way, and demands were notably never overtly rejected, even though eventually not always met, and resources often hidden.

My impression at the time was that their sharing orientation was sustained above all by concrete opportunities and constraints generated through the presence of intimate consociates and the organization of events and interaction in everyday life, combined with the recognized values of sharing and relatedness and a desire to maintain good relations. Rather than some sort of underlying economic rationality or lofty strategic scheme to obtain certain benefits (risk avoidance or equal resource distribution), the most crucial factors engendering the practice appeared to be of a more immediate and practical nature.

These observations have guided the theoretical propositions developed in this chapter. I believe that there are conditions intrinsic to the sociality of hunter-gatherers and similarly organized people that enable and motivate their sharing orientation. I concur herein with Thomas Widlok (2013, 2017) that there are certain 'situative causes' – grounded in the social process of interaction – that form preconditions for the enactment of sharing in practice. I am in agreement also with Tim Ingold (1986), Nurit Bird-David (1994), Nicolas Peterson (1993), and others, who in different ways have argued that the incentives for hunter-gatherer sharing are constituted essentially through social activity, or sociality. However, in contrast to some sharing theorists, I emphasize the importance of social values and aspirations for connection and integration as crucial factors motivating sharing. The key to why hunter-gatherers are inclined to share and demand, I suggest, is the nature of their sociality, which generates conditions of immediacy and intimacy among them, while rendering the values of sharing and relatedness compelling.

I examine how sociality is conducive to sharing among hunter-gatherers and similar groups by focusing mainly on two qualities of their sociality – open aggregation and relatedness – which I believe are particularly important in this respect. Other qualities are no doubt important too, and I do not mean to depreciate them; ultimately, sharing is probably multidetermined through the combined influence of a number of interconnected aspects of their sociality rather than caused by any single factor alone (Kent 1996, 13–14). To an extent, my focus on open aggregation and relatedness reflects my assessment of what is most meaningful to address based on what earlier contributions to the theory of sharing have shown or failed to show. The general point that considering them serves to illustrate is that sharing may largely be explained by sociality, or social conditions more generally, without recourse to economic conditions. Connected to this, I accentuate that sharing is about the management of social resources as much as of material resources, and that it forms an aspect of a generalized sharing life-style based on achieved and aspired closeness.

Open aggregation

An important concept in *Anarchic Solidarity* which I will take the opportunity to develop further here is 'open aggregation'. It highlights some of the variously lamented and celebrated 'anarchic' features of hunter-gatherer and other similarly organized societies, and represents an attempt to positively describe their social structure, which typically has been described negatively in terms of what it lacks. The term conveys a condition by means of which elements of some sort, in the manner of Lego bricks, may be attached to others in various ways to form larger composite entities, and variably detached and re-attached. Open aggregation can be defined as a state, or process, of 'flexible association and dissociation of individuals with social units, and flexible initiation and termination of interpersonal relations within and beyond them' (Sillander

2011, 141). It refers to the commonly encountered condition in the societies considered whereby social relations and groups can be established and dissolved with relative and often remarkable ease, compared to societies with more fixed and rigid group organization and relationship structures. A notable virtue of the concept is that it suggests that the same characteristics that enable autonomy, flexibility and flux also enable integration. I argue that there are conditions associated with open aggregation that are conducive to integration, and thereby, to sharing, as a means of realizing it, and an end or value in itself. In addition, I propose, it entails a patterning of social relations which may form a precondition for the viable practice of sharing, as a type of transfer which is not based on obligation or generosity, yet requires initiative and a 'willingness to let go' (Widlok 2017).

Open aggregation is closely interlinked with some other qualities of sociality. For instance, it obviously entails personal autonomy, and plausibly both promotes, and is promoted by, that quintessential feature of hunter-gatherer sociality (e.g. Gardner 1991). Ease of initiating and terminating relationships and group affiliation is recognizably much the same thing as having autonomy (although there is observably more to autonomy than this, autonomy also being about how much authority people are subjected to in their relationships, for instance). Similarly, open aggregation clearly entails – indeed in a sense *is* – a sort of social mobility, of a horizontal type, through which it is notably frequently linked up with spatial mobility. Change of residence often involves change of affiliation, and the influence goes both ways, with hunter-gatherers often moving in order to change relationships (e.g. Woodburn 1972). Similar mutually reinforcing relationships would seem to exist between open aggregation and a whole range of features of hunter-gatherer sociality, including egalitarianism, classificatory kinship, opportunism, and immediacy, all of which have been seen to exert a positive influence on sharing in their own right.

Where it occurs, the pattern of open aggregation is often replicated on several levels of scale and across many contexts. It pertains to smaller social units such as families, to medium-sized groups like camps and bands, and often also to larger, named, regional groupings, as well as the egocentric relations of individuals within and between all of them. An important example is marriage, whose initiation typically requires little ceremony or investment in hunter-gatherer societies (e.g. Morris 1982; Sellato 1994). Divorce, likewise, is usually not heavily sanctioned and frequently common, as are remarriages (e.g. Blurton Jones, Marlowe, Hawkes & O'Connell 2000; Hill & Hurtado 1996). Other common examples, often exemplifying both sharing and open aggregation, are adoption and various fostering and alloparenting practices, along with free-moving adolescents staying with various relatives (indicating limited parental authority as another feature associated with open aggregation). All these forms occur widely also among open-aggregated farmers (e.g. Gibson 1986) and in post-forager societies (e.g. Musharbash 2009) and may be every bit as pronounced there. Among Bentians they were much evident, such as through frequent adoption and remarriage (people commonly marrying four to five times or more; cf. Gibson 1985, 394). Here it was common also for adults to move into relatives' houses, in many cases following repeatedly prolonged visits, and without prior decision. Significantly contributing to Bentian open aggregation was alternating residence between houses in villages and small clusters of frequently moved farmhouses in dispersed swidden fields, where many families stayed most of the year, and often chose their neighbours based on personal preferences, and frequently changed them when moving to new farming sites.

Another Bentian practice interpretable as an instance of open aggregation – exemplifying its integrative side – is occasional polygamy, including polyandry, practiced concomitantly with dominant monogamy. Outside Himalaya and parts of India, polyandry occurs mainly among hunter-gatherers and dispersed shifting cultivators (Sillander 2011, 160), arguably testifying in these societies, as among Bentian and Paliyan (Gardner 2000), to a pragmatic and permissive stance, allowing for flexible integration of several people in a union while avoiding leaving anyone out, as does sometimes polygyny in these societies. A central quality that this example bears out, which is plausibly intrinsically associated with open aggregation, is an 'unprincipled' attitude (Guemple 1988), a commonly reported unimportance of detailed rules for social organization and interpersonal behaviour. More than unprincipledness, this often comes out as an active stance of 'antipathy to rules and regulations' (see, for example, Overing & Passes, 2000, 2, who associate it with a preference for a 'convivial sociality' among Amazonian forager-horticulturalists), or even 'principled anarchy' (Gardner 2000).

This quality may in part reflect two others, which are certainly relevant in their own right for these marriage practices, and seemingly also of general relevance for open-aggregated processes in the societies where they are prevalent. These are the low population numbers, or the small-scale, of these societies, as well as their characteristic orientation of inclusiveness. Demography and scale are clearly

crucial factors influencing the form of hunter-gatherer sociality (Bird-David 2017, and this volume), and it would seem that a tolerant, 'rule-critic', mind-set, and a flexible orientation of inclusion, are adaptive in allowing for optimal utilization of scarce social capital, including marriage partners, and of socially mediated material resources, in their small-scale settings. In respect to the occasional unions of multiple partners, the very scarcity of people motivates this practice as a means for optimizing the reproductive potential of groups (Sellato 1994, 56; barrenness notably being an important motive), although concerns with optimizing social resources more generally (sexual, emotional, economic, etc.) also motivate such flexible arrangements judging by the Bentian and Paliyan material.

A similar utility obviously pertains to open aggregation as such, in that flexible association and dissociation in itself promotes wide access to social resources. In addition, it has the added benefit, due to the 'safety valve' of easy dissociation, of reducing the disruptive risks to social harmony of this recognizably tension-generating endeavour, as effectively stated by those authors who propose that hunter-gatherer flux serves to counteract social conflict (e.g. Turnbull 1968). At the same time, however, open aggregation itself exacerbates the unpredictability of social resources by allowing for easy dissociation, and easy association, which potentially subjects people to numerous multidirectional demands. Together with inclusive kinship, bringing with it demands, it is a source of a 'socially produced scarcity' (Peterson 1993, 870), and a socially produced uncertainty, arising from what Fred Myers calls 'a lack of social closure' (1986, 166), from the negotiated character of social relations, and the impossibility of ever fully stabilizing social boundaries and relations.

This situation of social indeterminacy presumably encourages several prominent cultural orientations often reported from open-aggregated groups, suggesting 'translation' of the social condition of open aggregation into the sphere of culture. They include an orientation to the present (e.g. Meillassoux 1981; Woodburn 1982), 'opportunism' (Sellato 1994), and a quality of 'social grace', a capacity for adaptive responsiveness to social contingency (Rosaldo 1993). The much proclaimed 'forager mode of thought' of hunter-gatherers (Barnard 2002), or their generalized cultural principle of 'procurement' evident beyond natural resource foraging (Bird-David 1992), probably largely reflects social indeterminacy rather than economic conditions. As much as adaptations to an unpredictable, 'giving' environment (Bird-David 1990), or immediate-return economy (Woodburn 1982), these dispositions may be responses to an open-aggregated and 'immediate' social environment.

Inclusion and integration

As regards the orientation of inclusion, which is manifest not least through the practice of sharing itself – in principle unbounded and unqualified, often extended to anybody present – this quality may be both foundational for hunter-gatherer sociality (cf. Spikins, this volume), and constitutive of open aggregation, perhaps to the extent that the latter may first and foremost be seen as a principle of inclusion. Besides by sharing, this orientation is evinced by an ideal not to leave anyone out (as exemplified by polygamy); an unwillingness to make distinctions between people and groups; classificatory kinship; and the elasticity and inclusive character of designations for groups, observably often based on local words for 'family', 'us', or 'human' (e.g. Bird-David 1994; Gibson 1986; Myers 1986; Schlegel 1972; Sillander 2011). I propose that the orientation of inclusion and sharing in open-aggregated small-scale social formations fundamentally reflects an often marked socio-centric thrust toward integration, importantly motivated by exigencies inherent to their demographic and social-organizational predicament. Ultimately, open aggregation is perhaps best seen as expressing, not apparent disintegration and personal autonomy, but ongoing open-ended association, and the constant flow of sociality that serves to achieve it, such as through abundant multilateral visiting. This is also suggested by the often conspicuously unmarked initiation and ending of visits in open-aggregated settings, which itself expresses unbounded and continuous connection (Bird-David 2017, 71–7).

An important quality of open aggregation expressing inclusiveness is weak group boundaries, social and conceptual. Groups in open-aggregated societies are frequently ill-defined, vaguely bounded, overlapping, and not very group-like to begin with, an indication of their non-corporate nature. Thereby open aggregation conforms to a kind of social design that Ingold terms 'unbounded inclusion', and regards as determinative both of hunter-gatherer sociality and personal identity. 'The key to the difference between "tribal" and "pre-tribal" [i.e. hunter-gatherer] designs lies', he suggests, 'in the demarcation of boundaries' (1986, 236). The communities and groups that hunter-gatherers belong to are, in his view, unbounded and undifferentiated, essentially reflecting that they do not form part of an emergent encompassing institutional structure, or 'society'. While individuals and groups in 'tribal society' are organized vis-à-vis each other through the principle of 'segmentary opposition', in hunting-gathering societies they are organized through the principle of 'inclusive incorporation', meaning that 'a person derives his sense of belonging

... not through setting himself apart from others, but by drawing them into his own ambience' (1986, 236).

This at once makes for a thoroughgoing inclusiveness of identities, group and personal, and for the 'freedom of association manifested in the fluidity of composition of the band' (1986, 237), the latter entailing a condition whereby people interact autonomously in the capacity as 'particular human beings', rather than as incumbents of particular roles, positions or groups, as 'components of an instituted order' (1986, 235; cf. Needham 1959, 86). But the inclusive nature of the individual's belonging to collectivities also 'underwrites a particular kind of autonomy' (1986, 237), later described by Ingold as 'relational', which does not contrast self and other, and 'emerges through a history of continuing involvement with others in joint, practical activity' (1999, 408). This, he observes (1999, 405–7), gives rise to social relations based on the principle of 'coalescence' (after Bird-David 1994) whereby people interact not as self-contained, opposed individuals, but merge through 'shared activities' and 'joint experiences' in close, immediate 'we relationships' as outlined by Bird-David.

Two important considerations that this bears out are the nature of ties in open-aggregated communities and their construction through social practice. Charles Macdonald (2011), adopting Mark Granovetter's concept (1973), argues that open-aggregated ties, at least outside the domestic family, generally are 'weak ties', in that they can be severed and are not strictly obligatory. Ties in open-aggregated contexts are obviously often weak in this respect, entailing easy dissociation and high personal autonomy. But as Macdonald notes, they are also appropriately considered 'weak ties' in Granovetter's intended counterintuitive understanding, because of providing much integration in society, such as by facilitating transmission of information and human traffic across group boundaries, new connections, and realignments. Sharing itself is often understood as essentially based on weak ties, providing wide resource distribution while not engendering reciprocal obligations or lasting bonds, indeed by preserving autonomy and loose connections (e.g. Widlok 2013; Woodburn 1988).

Despite these observations, I have some substantial doubts about understanding open aggregation – or sharing – as being based on weak ties. Clearly, relations in open-aggregated societies, both inside and outside the domestic family, have many of the characteristics of 'strong ties', such as being intimate and important. They are obviously multifacetedly important, both subjectively (commonly being compassionate and *regarded* as vital), and objectively, by being 'multiplex' (pertaining to many aspects and contexts; Riches 1981), and by involving much interaction and mediation of material resources. While people in open-aggregated societies may seem characterized by a conspicuous orientation of immediacy, moving in and out of relations, this does not mean that relations, when active, are characterized by a lack of intimacy, or the kind of moral indifference that Woodburn (1982) attributes to Hadza. Rather, as in my experience of the Bentian, these relations may better be described through Brian Morris' (1982, 141) characterization of Hill Pandaram social relations as 'dyadic bonds of affection'. This characterization captures, I think, the importance of open-aggregated ties, even as these are often 'intermittent and somewhat fragile' (1982, 141), while appositely hinting at the importance of emotions in them, including the widely reported sentiments of trust, pity and compassion, which develop within these relationships, despite their structural openness (e.g. Myers 1986; Walker 2013; Spikins, this volume).

For several reasons, it would be erroneous to characterize open-aggregated societies as atomistic. Even though integration is not provided by the principles described for 'tribal' societies (descent, norms, reciprocity, etc.), people *are* in certain ways integrated, and in some ways strongly, although the form of this integration is of an entirely different nature. The fundamental principle through which it is accomplished, I suggest, is practical association with concrete others, which fosters attachment between individuals, and thereby motivates sharing as a means to sustain it, while making the practice compelling in itself. Thomas Gibson (1985) and Charles Macdonald (2011), respectively, have proposed the terms 'companionship' and 'fellowship' to describe the mode of association in open-aggregated groups, poignantly connoting the double aspect of the resultant relations as being voluntary, yet in some ways strong.

An important consequence of this type of organization, and a central reason why it encourages sharing, co-operation, visiting and sociality more generally, is that social relations and groups, more than elsewhere, are the result of achievement. The openness of relationship and group configuration entails a fundamental, structurally predicated, unpredictability and conditionality of social resources, and calls for active demands for them, as for material resources accessible through others (suggesting one reason for demand sharing's prevalence in these societies). Relationships and 'community' have here a markedly performative quality, coming into being through continuous enactment. Just as sharing tends to require initiation through demands (Peterson 1993), and action-established contextual framing to be situationally compelling and successfully executed (Widlok

2017), connections and integration in open-aggregated societies require realization through social action.

Sharing and open aggregation

This performative quality makes for a conspicuous orientation toward 'shared activity' (Gibson 1985), of which sharing represents a paradigmatic and influentially exemplary instance. Doing things together becomes a precondition for connection and integration, and a means for the reproduction and restoration of these conditions. Sociality in a general sense, encompassing various collective and interpersonal encounters from co-operative enterprises, meetings and religious ceremonies to visits and informal, self-purposive sociability, becomes imbued with an ongoing general social significance beyond any particular utilitarian or other concrete goal at hand. Consistent with this, sociality is intensely valued (see, for example, Lewis, this volume). Well-being, the 'good life', and happiness are often perceived to be about being in the company of others, while being alone represents a dreaded and unlucky state (Ekholy 2016; Myers 1986; Walker 2013). There is an inclination to engage in informal, convivial sociality, and a proclivity for physically close, tactile interaction, especially among hunter-gatherers (e.g. Overing & Passes 2000; Ekholy 2016; Hewlett et al. 2011; Hewlett et al., this volume).

In this setting, sharing provides access to both material and social resources. More than a means of transfer of food and things, it represents a means for and an instance of realizing relationships in practice through activity. This is both a needs-motivated pragmatic endeavour, and an activity purposeful in itself, realizing sentiments of belonging and the affirmation of relations acquired in a history of previous actualizations of shared activity, going back to early socialization events and interaction with parents and siblings.

Sharing is perhaps best seen here as an aspect of a generalized sharing life-style, encompassing various activities whereby intimately connected people share space, time and 'each other' (Ingold 1999, 408), in addition to vital or coveted material resources. It may aptly be considered, in Ingold's phrase, as 'an experience of mutual interpersonal involvement' (1986, 101), being an expression and enactment of acquired connectedness and shared lives. Consequently, sharing in open-aggregated groups prominently has the quality of 'sharing in', in the sense of the 'joining of individuals in common action' (Bird-David 2005, 203), even when manifestly being about 'sharing out', the division and distribution of resources (Ingold 1986, 233; Widlok 2017, 181, and this volume). It represents a process whereby people are 'drawn in' – become associated and acquire a sense of relatedness in and through sociality.

'Sharing in', in this respect, is to an extent a general property of sharing. Widlok (2017) argues that sharing constitutes those involved in it as a 'community of practice', and that this in principle applies everywhere, not only to hunter-gatherers' sharing, but also, for instance, to context-limited sharing in modern societies. He insightfully adopts the concept to highlight that integration among the practitioners, along with their motivation to partake in the practice, and their situated learning of the requisite skills to perform it, all essentially accrue from their recurrent participation in the activity itself. Thus the same pattern that characterizes integration in open-aggregated societies also more narrowly pertains to sharing: 'the community of practice that is created through sharing is neither held together by strategic association of free agents nor by authoritarian verdict over unfree subjects but by "performed presence" between people who share their lives' (2017, 157).

While Widlok makes an instructive case for practice being the fundamental principle through which sharing develops, it is perceivably not the case that participation in sharing alone suffices to explain its importance or emergence as a dominant mode of transfer in small-scale societies. Widlok also perceptively understands the community of practice to include not only the practitioners, but also the 'objects and the settings in which they are being transferred', and he observes that changes in the latter – in which he includes forms of kinship, conversational rhetorics and architectural infrastructure – may be enough to disrupt sharing practices (2017, 64–78). These are clearly important factors which he convincingly shows are critical for facilitating settings conducive to sharing – most essentially, it would appear, by enabling interactional conditions of immediacy and what he calls 'practical presence' (mutually recognized presence).

But apart from these 'external' factors operative in concrete sharing situations, it is crucial to highlight also some more 'internal' and enduring ones, carried along by individuals in and out of sharing situations, which Widlok either neglects or dismisses. In the first place, for the kind of broad-range sharing practiced by hunter-gatherers to develop and be viably maintained, long-term and intimate practical association achieved not only through sharing itself but through various forms of shared activity (and straightforward socialization) is arguably essential. Widlok admits that 'the training continues in a lifelong way' (2017, 192), although he generally attributes little significance to other than sharing events and the affective and rela-

tion-solidifying effects that the long-term 'training' would seem to have for the propensity to share, and demand. By contrast, I believe that intimacy, and associated sentiments and social values, which along with abilities and practical association develop in this process, are critical. Presumably of central significance are all those services afforded by close relatives outside the context of formal institutionalized sharing, through which individuals are nurtured into adulthood (Peterson 1993, 869).

Finally, it would seem that the social-organizational condition of open aggregation itself is conducive to the development of broad-range sharing in several ways. As argued, openness of relationships and social indeterminacy compel people to continually enact and cultivate relations. This motivates sharing of material resources and social resources as a means for maintaining or acquiring – and demonstrating the value of – relations, at the same time as it encourages active demands for the resources as a means for obtaining them – and 'testing' the value of the relations (cf. Peterson 1993; Macdonald 2000). But besides encouraging sharing, open aggregation observably also enables it to begin with through flexible and unbounded association of people allowing for unconstrained and open-ended circulation of resources through sharing, while conversely impeding other modes of transfer, which require relational constraints and fixity. Moreover, by encouraging practical association through shared activity as the principal mode of integration, open aggregation engenders a foundation for sharing through experiences of closeness, compassion and mutual trust which are liable to develop in this process. This capacity rests in part on the fact that this form of integration operates with minimal imposition of dominance structures and maintains 'respect for the autonomy of the other', qualities which as Ingold argues are crucial for trust (1999, 407). Yet more importantly, many of the very activities through which this integration is accomplished – visiting, non-instrumental sociability, care and nurture – are supremely conducive to these sentiments, and to an experience-based sense of relatedness, which I suggest critically motivates extensive sharing.

Relatedness

By 'relatedness' I generally mean kinship, although I use the term to indicate that what I denote is more than genealogical kinship, and essentially a form of 'kinship' based on practical association (Sillander 2011). This is a dominant form of relatedness in the small-scale open-aggregated societies considered (e.g. Bird-David 1994; Bodenhorn 2000; Guemple 1988; Myers 1986; Storrie 2003), and arguably a central factor facilitating sharing. However, it could legitimately be called kinship instead, since this form of relatedness relies on the genealogical idiom to designate people, even while it is extended to non-genealogical 'relatives' (and often non-human beings too). Thus I do not consider any kind of relatedness, but generally reserve the term for relatedness couched in the genealogical idiom.

My argument is that 'relatedness' is important for sharing, both in the capacity as idiom, and as ideology, that is, through the application of kinship terminology, and through the application of an associated 'kinship ideology', which prescribes closeness, responsibility, care, assistance, and similar values between 'relatives'. In addition, I contend, relatedness is fundamentally important through the dispositions generated through close association between concrete people perceived as kin. Kinship or relatedness in these different respects encourages sharing in several ways: by generating the values by which it is associated; by promoting connections and closeness; and by authorizing demands and motivating sharing in sharing situations. My sense, based on fieldwork experiences and the ethnography, is that sharing in indigenous conceptions is typically motivated by relatedness. Like Bird-David, I perceive that sharing, and the resultant 'levelling', is 'moved not by an egalitarian ideology, but by the force of kinship ties' (2005, 207). Woodburn's (1980, 441–2) suggestion that sharing in hunter-gatherer societies is comparable to taxation in modern societies is at odds with how it is ethnoculturally construed and experienced in most small-scale societies, in which conceptions of virtuous conduct, well-being, and good relations between 'relatives' are usually primary.

The genealogical idiom and a kinship ideology seem to be universally present among hunter-gatherers and similarly organized shifting cultivators, even as relatedness is largely based on practical association. A central quality of kinship in these societies is that it is classificatory or even 'universal' (Barnard 1978), and characteristically bilateral at root. Classificatory bilateral kinship along with bilocal postmarital residence has been identified as adaptive to hunter-gatherers' mobile ways of life and their heightened demographic vulnerabilities (Kramer & Greaves 2011). Conversely, the demise of sharing has been proposed to often result from the emergence of corporate groups and the consequent weakening of open and classificatory kinship networks (Widlok 2017, 67–8). Significantly, where other forms of kinship are reckoned by hunter-gatherers or forager-horticulturalists, such as in south India (Gardner 2000) Amazonia (Rival 2002; Walker 2013), and Australia (Myers 1986), these tend

to become simplified and modified, and more alike classificatory bilateral kinship in practice.

Classificatory bilateral kinship is consistent with the open-aggregated pattern of association and observably facilitates it, while other forms of kinship recognizably entail restrictions in movement and association that compromise it. Among hunter-gatherers and cultivator groups like the Bentian it indeed functions much like an open-aggregated system in its own right. It serves as a device for creating and multiplying social ties and resources, for drawing people into personal networks and inducing them to provide support, while maintaining a considerable degree of choice, flexibility and personal autonomy. Including non-biological relatives within its scope may thus be seen as consistent with its logic of operation, or even as an extension of its main principle. The tendency to recognize relatedness based on practical association may not be restricted to groups practicing classificatory bilateral kinship, but such kinship is observably particularly well-adjusted to facilitate it.

Kinship has often been observed to be unimportant in hunter-gatherer societies since they typically lack corporate descent groups, extensive genealogies, and well-defined kinship role obligations. Since kin categories are not 'load-bearing' (Woodburn 1972, 197), but 'empty', not 'a guide to behavioural expectations between relatives' (Morris 1982, 136), it has been assumed that kinship is inconsequential for social action. Similarly, that relatedness is often extended to non-kin, and that relationships are largely constituted through practical association rather than strict genealogical kinship, has also been taken to express the unimportance of kinship (e.g. Meillassoux 1981; Gibson 1985). Although based on valid observations, such evaluations of kinship in hunter-gatherer and like societies are arguably misguided and misleading. Reflecting conventional and anthropological preconceptions of kinship, they disguise the role and influence that relatedness, or even kinship in stricter sense, patently has in them. People in these societies do of course practice kinship, and it matters, although this is, as Bird-David (1994, 594) has asserted, kinship of 'a different order'. However, even when based on practical association, 'the resulting relationships are predominantly of kinship' (Ingold 1999, 406), that is, they are framed in the genealogical idiom, and often intimate, vital and onerous, quite like genealogical kinship relations in general.

Closeness and practice

Instead of relation-specific rules and roles, what we typically find in open-aggregated groups is a sort of generality of relationship, general principles and generalized roles, and a condition whereby 'being a relative is more important than defining what sort of kin one is' (Myers 1986, 107). This does not mean that being a relative is devoid of content or importance. As elsewhere, it still implies expectations of closeness, responsibility, care, and so on. What it does, instead of emptying kinship of content, is extend expectations generally pertaining to close family diffusely, and often widely, albeit decreasingly with increasing distance (for obvious practical reasons, but also because of a widespread perception that close kinship matters more). Arguably the very generality of kinship also serves to mark this content. As Myers remarks, 'the formal classifications are encompassed by the larger metaphor of kinship as "amity", and the categories themselves are reduced in practice to a very simple model of social life among "family"' (1986, 217).

The generality of kinship does not obviate kinship's ability to influence social action either, in so far as the values associated with it are recognized, and motivated by experience and practical association. Through common and often dominant use of kinship terms for address and reference, and frequent invocations of these values as moral guidelines for relations between 'relatives', kinship is present and operative in the life-world, salient in discourse, talk, thought, and experiences. Being addressed as a 'relative', or simply knowing one has such status from previous interaction, is influential because of this influence, which communicates the general validity of these values, and because it evokes experiences of practical association with concrete relatives which confers personal meaning to the term. Also, while expectations and obligations between relatives are largely generalized, they are widely applicable, and often invoked and difficult to ignore in many concrete situations.

Kinship matters, then, because of its importance in practice. As much as from continuous immersion in a discoursive universe of kinship terminology and ideology, however, this importance derives from what relatives have meant for people in practice, and their continuous imposing presence. The authority of kinship has here, even more distinctly than usual, an interactional basis, which, besides the open-aggregated nature of kinship and social relations, largely reflects the intimate and immediate nature of social relations and interaction in small-scale social universes. Of particular significance for sharing, the latter form a context prolific to the emanation of expectations and demands, and felicitous to the emergence of experienced closeness and relatedness through close practical association.

In Bird-David's view (1994), immediacy itself is what largely causes this sense of relatedness. Through vivid and unmediated presence and shared activi-

ties, the sociality of small-scale bands generates 'we relationships' in which people cultivate 'shared perspectives' on belongings, themselves, and the world around them, and experience an intimate connection expressed through self-reference as 'us'. The resultant condition approximates what Russell Belk (2010) calls 'aggregate extended self', a concept designating an experience of shared identity with close others and inclusion of them within one's (extended) self, with whom sharing consequently is not perceived as giving away, but rather as sharing with oneself (cf. Widlok 2017, 24, and this volume). By this Belk does not mean any deep or mystical emotional state or merging of distinct individuals, but rather a not too uncommon human experience of strong unity and compassion, whereby one's close ones' lives, and property interests, matter about as much as one's own. As he observes, this experience of extended self, like the associated pattern of 'intimate sharing' which works to augment it, is common everywhere in families (although by no means the only form of transfer in them), and he suggests it is central also for understanding the rationale of sharing more generally. Similar observations were made by John Price (1975, 5, 8) who argued that sharing is the economic behaviour characteristic of 'intimate economies' such as households and 'band societies', and that it is 'dependent upon the emotional and sentimental bonds that develop between people' (while reciprocity, by contrast, is based on 'intellectual calculation of returns' and inimical to intimate personal relations) (see also Spikins, this volume).

I believe these observations deserve greater attention than generally afforded in the sharing literature. They highlight a continuum between sharing in the family and sharing more widely within the community which may be fundamental to hunter-gatherer sharing. They point to the importance not only of immediacy and proximity but also of relatedness and intimacy, as cardinal dimensions of a 'sociality of closeness' to which a sharing orientation is integral. Importantly, I propose, sharing in the societies under consideration is, as Bird-David notes for the Nayaka, construed as conducted 'as among family', or 'as among siblings' (1990, 189, 191). Close-kin metaphors, extended widely in social relations and beyond to non-humans in the environment, are, as she notes (1990, 194), central in hunter-gatherer societies, and I suggest that they also provide the tenor and much of the force of sharing in them (see also Bird-David, this volume).

A widely reported motivation for small-scale society sharing is maintaining close relations with relatives or close consociates, and pre-established closeness is often a precondition for making demands or eliciting shares (e.g. Macdonald 2000). This motivation is particularly pressing in societies where kinship is largely achieved and based on practical association, in which, as Widlok notes, 'sharing receives central importance as part of the attempt to redefine kinship on the basis of performative, constitutive acts of sharing' (2017, 64). The inclusive relatedness typical of these societies fundamentally requires achievement, since not only non-biological, but also biological, relatives need to be affirmed through practice to emerge as important from among the multitude of biological and other potential relatives (Bodenhorn 2000; Bird-David 1994; Sillander 2011; Walker 2013). Much sharing that goes on in them presumably serves the elementary purpose of reproducing the social conditions that facilitate an ongoing sense of relatedness. As Bird-David observes, 'the cultures of sharing which are common to these peoples ... may at least in part be about sustaining the flow of joint experience, the mutual sense of immediacy, that keep people in a (near) we-relationship' (1994, 599).

Sharing and kinship

There is an important two-way relation between sharing and relatedness which is crucial both for family sharing and broad-range sharing in small-scale societies, and for understanding why the latter is typically linked up with invocations of kinship. Sharing lends substance to kinship, and kinship – both as value and through experiences of relatedness – provides an incentive for, and legitimates, sharing and demanding. That sharing is central to kinship, especially when the latter is to some extent elective and possible to acquire without genealogical connection, perhaps goes without saying. Sharing, whether of material resources, or of residence, company, activity, and so on, tangibly demonstrates closeness and importance of relationship. It is appreciably eminently qualified to realizing and expressing the solidarity quite universally expected in close kin relationships. This helps elucidate, among other things, why demonstrative 'redundant sharing' (beyond needs) is often especially motivated in more distant (or less regularly maintained) kinship relations, whose maintenance cannot rely on the taken-for-granted everyday sharing solidifying close relations (Riches 1981; cf. Bird-David 1994, 595).

How kinship conversely legitimates and encourages sharing may be less obvious, although the nature of the genealogical idiom and its use suggests some answers. One is that the 'concrete natural symbolism' of the genealogical idiom 'convey[s] the idea of there being some social locus of unquestioned obligation' (McKinley 2001, 143). Made available by nature and bodily existence through birth, sex, age, etc., and

retaining an association with nurture, reproduction, and early childhood experiences, it naturalizes the demands expressed in the idiom by rendering the relations that it designates as given and uncontestable.

More important than naturalization as such, however, may be that the genealogical idiom – symbolically and experientially – signifies closeness and importance of relationship, *because of* being modelled on the 'natural relations ... founded in the family' (Riches 1981, 218). In David Riches' understanding, kinship is endowed with a facility to legitimate sharing because it denotes multiplex relations – relations of multistranded importance, which one cannot afford to jeopardize – and it can credibly do so because the 'family of procreation is ... , *par excellence*, the location of multiplex connection' (1981, 217). In other words, the invocation of kinship in sharing may reflect the experienced importance of kinship in close kin relations which attributes to it an authority, and value, that may be extended to kinship in general – and to non-genealogical relations designated with the idiom that have, or are expected to attain, a similar importance.

Accepting this notably does not entail entertaining a notion that the morality of close kinship has intrinsic strength, since it too, like the morality of distant kinship, rests on 'continuous social interactions' (Riches 1981, 218). In many small-scale societies with performative kinship, the foundation of kinship, even in close-family relations, is thoroughly social. However, relative closeness, whether measured by genealogical or social proximity, does matter – although ultimately has the same interactional basis in both instances, making close genealogical kinship more valued than distant kinship essentially because it matters more in interaction. Due to their 'givenness' and intimacy developed through childhood familiarity, especially important are often sibling relations, which as Bird-David has recently shown for the Nayaka, may provide a matrix for the organization and expansion of residential and marriage relations, such as through a process, evident also among the Bentian, 'of sibling visits leading to intersibling marriages' (2017, 108). Sharing often follows an egocentric pattern isomorphic with the so-called Eskimo system of kinship, diminishing outward from ego (Testart 1987). Although frequently informed by an ideal of equal distribution to all, sharing in practice is often not entirely communal and unbiased. Certain close relatives (e.g. parents, siblings, spouse's parents) are often given priority or at least ensured a share (often in one of the so-called waves of sharing; Widlok 2017, 60–3). When sharing is not institutionalized wide-ranging distribution, these relatives, or other consociates who are particularly important or proximate because of close practical association, are often the only ones to receive shares (e.g. Altman 2011, 189–90; Bahuchet 1990, 33; Headland 1987, 264; Chan 2007, 131–3; Endicott 1988, 116).

While kinship here – given its ultimately social foundation – may appear as a 'rhetoric' for what is essentially social relatedness, as Lee Guemple (1972, 107) argued, as such it is not spurious, but genuinely and intimately felt, and substantiated by concrete important relations which often meet the qualifications of ideal kinship. While achievable, the social relatedness established through practical association which the kinship rhetoric expresses is no less important than biological relatedness. Rather, such evidently active kinship is what matters most to people, as indicated by the fact that it may be distinguished, as among Bentian, from other kinship as 'true kinship'. Defined and constituted by networks of shared activity, it constitutes 'effective kinship', involving solidarity. It is typically also relatives unified through practical association that most often make sharing demands, and among them that these are most effective (e.g. Macdonald 2000; Myers 1986; Sillander 2011; Walker 2013). This may reflect that 'true kinship' is especially effective in generating sentiments of trust, compassion, and pity in relations, thereby creating important 'affordances' for sharing.

Besides presumably being imperative for long-term motivations to engage in sharing, these sentiments – and the particular relationships they pertain to – are important in the immediate sharing context because eliciting a positive response to demands often involves deliberate attempts to awaken compassion or pity (e.g. Myers 1986; Walker 2013). They also illuminate the common observation in these societies that people want to be with their relatives, and preferences for endogamy and other marriage practices such as sororate, levirate and polygamy when found. As for the Bentian, these preferences may primarily reflect a desire to hold on to prior relations, motivated by the fact that they are relations that one already knows and trusts, and has invested a lot in emotionally and materially.

This raises some doubts over an understanding of sharing according to which it does not rest on intimacy, affection, or relations with particular others (e.g. Widlok 2017, 86, 129; Woodburn 1982, 434, 448). I believe this understanding is unduly schematic, and does not provide the full picture of how sharing works in practice. It does not allow sufficiently for the fact that the participants are 'real people', that is, individuals responsive to specific persons and experiences in particular situations, constrained by their affective dispositions and personal predilections, their pragmatic needs and horizons of relevance. Hunter-gatherers, too, if we are to believe Ingold (2000, 71), are

'enmeshed in highly particularistic and intimate ties'. Although sharing networks may include individuals with whom people are not closely associated, most are intimately known and their personal qualities and relational histories presumably not only affect but provide critical motivation to share with or demand from particular others. Notwithstanding commonly found categorical imperatives for sharing in broad-range sharing societies, it is also often not really expected that sharing is to be extended to everyone (e.g. Altman 2011; Macdonald 2000). I suggest that sharing in them has to be understood within this framework of intimate and personalized relations, in which aspirations for closeness, nourished by past experiences, and relatedness and associated values, are central.

The existence in these societies of the imperative to share, and ubiquitous invocations of kinship in sharing, attest to the importance for sharing in practice of social values, which have been somewhat neglected in the sharing literature, perhaps because of a zeal to demonstrate that sharing, unlike reciprocity, is not a function of interpersonal dependencies or normative obligations, and a certain fixation with personal autonomy. By contrast, I propose that the attribution of value to sharing represents a necessary component of sharing transfers – and where sharing is extensively practiced, it is quite universally considered an obligation too. An important aspect of real life sociality which applies no less to sharing than to other social action are the meanings and values infallibly attributed to it. Human sociality is notably never immanent to itself, but profoundly shaped and informed by cultural imaginaries and ethical and ideological valuation.

Unlike Widlok (2017, 75–6), who proposes that mere co-presence is tantamount to a (silent) demand, based on a supposedly universal human disposition to interpret the other's presence as a legitimate request for intrinsically valued resources, I assert that letting go of resources and making legitimate demands is predicated on active recognition of the value of sharing and of the social relations involved. Moreover, I suggest that the evidently strongly recognized value of sharing in extensively sharing small-scale societies is fundamentally encouraged and qualified by the value of relatedness and associated pro-social values (care, help, affection, etc.), which is an important reason why what Widlok calls 'kin talk' (2017, 64–8) is associated with the practice. Sharing observably is not conducted everywhere; it requires culturally contingent valuation, which in turn emerges from practice through participation in particular social contexts, social constellations, and activities, through which its validity and cogency is demonstrated and established. Without such a framework and history, demands are unlikely to elicit sharing. The basic reason why hunter-gatherers and some other groups share lies in the conjunction through practice of these conditions of social interaction and moral interpretation.

Conclusion

The principal conclusion of this chapter is that the preconditions and incentives for sharing of hunter-gatherers and similarly organized shifting cultivators are largely social, reflecting other factors than their different modes of subsistence. Practice, encompassing patterns of social interaction and moral interpretation, is in a sense the ultimate source of their sharing dispositions, with participation in 'cultures of sharing' recognizably being central in inculcating them. But equally important are various less obvious, informal everyday practices of providing help, care, and sustenance, and different forms of 'shared activity', which effectuate the 'sharing in' of consociates within social fields of immediacy and affective closeness, and confirm the practical authority and continuing validity of the values of sharing and relatedness.

Beyond practice as such, there are specific conditions intrinsic to the particular mode of sociality and organization of relationships in these societies, which encourage sharing more than in others. Small-scale society demographic exigencies and social indeterminacy resulting from open aggregation motivate a basic socio-centric thrust toward inclusion and solidarity, and compel active enactment of social relations through shared activity, including sharing itself as a congenial and tangible marker of social closeness and materially substantiated solidarity. Recurrent discoursive invocation of classificatory kinship terminology applied flexibly to consociates along with generalized 'kinship values' prescribes and naturalizes an expansive moral framework of personal identity and social action. Relatedness acquired through 'practical association' and a 'sociality of closeness' authorizes the kinship values and establishes structures of intimacy conducive to experiences of trust, 'we relatedness', and 'extended self', which endow sharing with a distinctively moral quality, and makes it a personally motivated positive injunction. Sharing emerges in this context both as a practically motivated means for acquiring relationships and resources from others, imposed by 'structural' conditions in society, and a 'virtue', an intrinsically valued act (Widlok 2004), arguably perceived as purposeful in its own right mainly because of entailing affirmation of valuable social relations, and internalized social values and sentiments of affection and compassion developed in them.

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Chapter 6

An ethnoarchaeological view on hunter-gatherer sharing and its archaeological implications for the use of social space

David E. Friesem & Noa Lavi

In the context of this volume, the practice of sharing as a foundational schema of contemporary hunter-gatherers (Hewlett et al. 2011), is discussed beyond the distribution of food to include the sharing of selves (Bird-David, this volume; Widlok this volume), space (Hewlett et al., this volume), social identity (Lewis, this volume; Sillander, this volume), knowledge (Gardner, this volume; Boyette & Lew-Levy, this volume) and things (Lewis, this volume; Quintal-Marineau & Wenzel, this volume). Unfortunately, too often it is remarkably hard to find evidence of these aspects of sharing within the archaeological record, especially as we go back in time. As presented in the introduction to this book (see Lavi & Friesem, this volume), sharing is a social practice, but one with the potential to leave an archaeological signature. As such, it may shed new light on intangible social aspects of past hunter-gatherer societies. However, hunter-gatherer sharing did not receive the same amount of attention in the archaeological research as in ethnographic studies of contemporary hunter-gatherers (see Kelly et al., this volume for a discussion on the different scholarly scales of anthropology and archaeology). The few archaeological studies which found evidence of sharing among hunter-gatherer groups mostly focused on distribution of food (e.g. Bunn & Kroll 1986; Enloe 2003; Isaac 1978a, 1978b; Stiner et al. 2009). This volume offers pioneering attempts by archaeologists to detect sharing of selves (Barkai, this volume; Spikins, this volume), identity (Honoré, this volume; Osborn & Hitchcock, this volume), knowledge (Tostevin, this volume) and landscapes (Kelly et al., this volume; Osborn & Hitchcock, this volume). Yet, as the archaeological record is limited to material residues, it is still a great challenge to identify and reconstruct mundane social behaviour. What should we look for, for example, in order to identify evidence of the intimacy of living-together and the co-presence in each other's lives that initiate and structure sharing, in its broadest meaning, as reported among contemporary hunter-gatherers (see Bird-David, this volume; Widlok, this volume; Hewlett et al., this volume)?

First, it is important to discuss the limitation of drawing analogies between contemporary communities and prehistoric foragers and the caution required when dealing with such issues. Clearly, there is a significant diversity among contemporary hunter-gatherer societies as well as fundamental differences between past and present societies. Among other things, the climate and the social and physical environment can impact the choice of exploited resources, group size, site structure and different individual choices. While we do not consider direct analogies to be valid, we suggest that the contemporary context can elucidate how specific ways of living, which we cannot observe among agrarian or industrial societies, may form patterns of material deposition and leave an archaeological signature. Therefore, we use the ethnographic prism and its fine grain data (see Kelly et al., this volume) as a methodological exercise to understand the relationships between the social, the spatial, and the material. Moreover, we show that there are similarities in the mechanism of sharing and its social implications which override the differences among contemporary hunter-gatherer societies inhabiting different environments. This ethnoarchaeological approach can help us decipher intangible social aspects of the archaeological record by offering an interpretive framework for the human agency behind the formation of material distribution in archaeological sites (see David & Kramer 2001; Friesem 2016 for a review on ethnoarchaeology).

Here we focus on how the practice of sharing selves, space, actions and things is manifests through people's use of space. We draw mainly on our ethnographic work among the Nayaka in South India. While the Nayaka live in a tropical environment, their notion and practices of sharing appear to be shared

by many other hunter-gatherers inhabiting different environments around the globe. By integrating our work among the Nayaka with relevant examples from other ethnographic studies, we provide a limited and focused interpretive framework for examining the archaeological record in search for social practices such as sharing and co-presence. To do so, we examine the architectural design of dwelling units, site structure, construction materials and the spatial distribution of activity remains in- and outdoors. We argue that by examining the above aspects, archaeologists can learn more about the intangible aspects of the dwellers' social world.

Ethnoarchaeology of hunter-gatherer use of space

Studying the use of space and the spatial distribution of materials is a common practice in archaeological research, as it holds a key for understandings patterns of human behaviour, organization and perception of oneself and the world (Clarke 1977; Hodder & Orton 1976; Kent 1993; Kroll & Price 1991). The value of ethnoarchaeological research lies not only in its ability to link between social and ontological notions and people's use of space, but also in the association of behaviours with specific processes that may form or alter an archaeological record (David & Kramer 2001; Friesem 2016). Within the ethnoarchaeological studies conducted among contemporary hunter-gatherers, many look at the relationship between people and space manifested through mobility, settlement patterns, site structure, hunting strategies and different activities such as: knapping, butchering, hunting, processing of meat, building huts etc. (e.g. Binford 1980, 1978b, 1978a; Fisher & Strickland 1989; Friesem et al. 2017, 2016; Friesem & Lavi 2017; Galanidou 2000; Gould 1980; Gould & Yellen 1987; Kent & Vierich 1989; Kroll & Price 1991; O'Connell 1987; Whitelaw 1989; Wiessner 1982; Yellen 1977). Investigating hunter-gatherer use of space in a single residential site, the seminal studies by Yellen (1977) among the !Kung San in the Kalahari desert in Botswana and Binford's (1980, 1978a, 1978b) work among the Nunamiut Caribou hunters of Northern Alaska were the first ones to provide clear models for patterns of material deposition resulting from hunter-gatherer use of space and site structure. Binford (1978b) built a spatial model for site structure according to the scale and content of the activity preformed in the site divided into zones (e.g. drop zone, toss zone, sleeping area, hearths etc.). Binford suggested that site structure is a result of human body and activity response to environmental conditions and functionalism and therefore the material deposition patterns may reveal the type of activity, number of participants and environmental conditions such as wind, cold, heat and light (Binford 1983, 1978b). One of the major criticism about Binford's work, as laid out by Wiessner (1982), focuses on Binford's emphasis on environmental factors and not taking into account the human agency and the cultural factors which affect people's perceptions, decision making and behaviour. Yellen (1977) suggested a ring model for the !Kung dwelling site in which the centre of the site is a communal area surrounded by huts and an outer ring beyond the huts is where other activities are held. However, he also notes that social reasons have a major role in the !Kung's movements and other decisions and that people's manufacturing activities are so diverse that the patterns of material deposition in their sites cannot be predicted. He argued that, except for their largest camp site, any other site of the !Kung activity will not leave enough residues to allow an archaeological identification of such an ephemeral activity (Yellen, 1977). Joining this argument, Fisher & Strickland (1989), who worked among the Efe Pygmies in the forests of Zaire, argued that the Efe have a flexible perception of their spatial requirements resulting in materials being deposited without a defined spatial pattern. Several ethnoarchaeological works tried to link between hunter-gatherer use of space and key social practices. Kent (1991; see also Kent & Vierich 1989) argued that the spatial organization of hunter-gatherers does not reflect ecological conditions; rather, it is dictated by the anticipated mobility – how long people expect to occupy the site. It also has been suggested that the location and distance between dwelling units can be used as an indicator for kin relationships among the group (Gargett & Hayden 1991; O'Connell 1987; Whitelaw 1989). Overall, sharing, mobility and egalitarity were reported as the main factors behind the distribution of materials and the ever-changing site structure (Fisher & Strickland 1989; Friesem & Lavi 2017; Galanidou 2000; O'Connell 1987; Whitelaw 1989; Wiessner 1982).

Social dynamics and their archaeological implications

Ethnoarchaeological studies unanimously argue that the spatial deposition and distribution of materials in hunter-gatherer sites are dictated by their social notions and practices. Therefore, it is essential to first dwell upon the dynamics behind hunter-gatherer social use of space before attempting to understand its material reflection.

Woodburn, in his famous paper '*Egalitarian Societies*' (1982), defined two types of social and economic systems: the immediate-return system and the

delayed-return system. The social organization of immediate-return societies was classified by Woodburn (1982) based on the following basic characteristics: (1) social groupings that are flexible and constantly changing in composition; (2) individuals that have a choice of whom they associate with in residence, in the food quest, in trade and exchange, in ritual contexts; (3) people that are not dependent on specific individuals for access to basic requirements; and (4) relationships between people, whether relationships of kinship or other relationships, that stress sharing and mutuality but do not involve long-term binding commitments and dependencies (Woodburn 1982, 434). Woodburn's classification of immediate-return hunter-gatherers has been refined and elaborated in the decades that followed. However, many of the characteristics discussed above are still central to the way hunting and gathering people are described by anthropologists even today.

Bird-David (1994) elaborated on how the concept of 'immediacy' is useful to describe hunter-gatherer social life. The immediate social environment – the composition of people at a given moment within the dwelling site – constitutes a kind of immediate kinship system in which people view as kin all those with whom they live and share (Bird-David 1999; and in this volume). In order to maintain relationships, a person is expected to share with everybody as and when present and to give others anything they ask for (Bird-David 1999; see also Widlok, this volume; Sillander, this volume). People are not only expected to share things but also spaces and actions (see also Hewlett et al., this volume). Thus, the practice of sharing exceeds the mere distribution of material resources. The sharing of things, spaces, actions and time, and literally 'being-together' form the kinship system (Bird-David 1999, 1994; see also Myers 1986 for similar ideas among the Pintupi in Australia). Relations are therefore not 'pre-given' but must be worked out in a variety of social processes (Myers 1986). Without the constant maintenance by acts of sharing and being-together, kinship relations would fade away. The constant flow of coming and going people created what was defined by Alan Barnard (1981) as a 'universal kinship system', in which everyone within the community related to everyone else as kin and through kinship terms (which include both human and non-human persons; see Bird-David 1999; Lavi 2018; Naveh 2007 for the Nayaka; for more examples of such 'extended family' categories among other hunter-gatherers around the world, see also Fortier 2009; Ingold 2000; Kohler 2005). This is a social concept that describes 'relating' as something one does when one shares a place and cooperates with others.

Furthermore, the common experience of sharing also contextualizes the knowledge one makes of others (Bird-David 1999). Based on her work among the Nayaka, Bird-David (1999) argued that knowledge does not involve the separation of knower and known but rather developing the skill of being in the world with others and knowing them through this experience of togetherness (Bird-David 1999). She referred to this relational framing of the social environment (which, in the Nayaka case, included both humans and non-humans) as relational epistemology (later she also termed it 'relational ontology'; Bird-David 2008). This way of knowing the world plays an important role in many hunter-gatherer societies (Bird-David 1999; for North American Rock and Waswamipi Cree and Ojibwa, see also, respectively, Brightman 1993; Feit 1994; Hallowell 1960). Thus, hunter-gatherer epistemology, relatedness, kinship systems, social identify, knowledge and economy are fundamentally rooted in people's practice of sharing space, time, actions, selves and things with their immediate and dynamic social environment.

Activity areas and spatial patterns of material deposition

In our previous geo-ethnoarchaeological study carried out among the Nayaka, a forest-dweller forager society in South India, we argued that the distribution of materials in their dwelling sites can be classified as a dynamic deposition pattern, reflecting the Nayaka's social dynamics (Friesem et al. 2017, 2016; Friesem & Lavi 2017).

Activity areas were formed according to the social dynamics in a given moment. People chose the location of their activity according to the ever-changing composition of the people around them in order to be with some or to avoid others. Every task or activity took place in a different location according to people's social choice of persons with whom they wished to share their space and actions at that specific moment. Just as social relations and social grouping were flexible and changing, so were the locations of people's activities, which changed frequently along social considerations. Overall, there were no designated areas for specific activities in the site. People cooked, made crafts, socialized and even built light structures in different locations around the site, according to their immediate social relations and the ever-changing composition of people going from and coming to the site (for more details on our ethnoarchaeological observations see Friesem & Lavi 2017).

This dynamic use of space and the ephemeral nature of activity areas within a dwelling site are not unique for the Nayaka. They are, in fact, quite typical among hunter-gatherers (Fisher & Strickland

1989; Myers 1986; O'Connell 1987; Wilson 1988; Yellen 1977). From the archaeological perspective, the question is what could be preserved as a signature considering such a dynamic and ephemeral deposition pattern. Mallol et al.'s (2007) pioneering geo-ethnoarchaeological work among the Hadza, presented one of the first systematic studies into the archaeological formation processes related to hunter-gatherer activity. They showed how, while the Hadza's use of fire does result in deposition of fire residues, those are not preserved long after abandonment as the fire residues (e.g. ashes, charcoals and burnt substrate) are easily removed or deteriorate due to wind, rain and trampling. Mallol et al.'s (2007) conclusion echoed the argument previously made by other ethnoarchaeologists (e.g. Fisher & Strickland 1989; O'Connell 1987; Yellen 1977) regarding the low probability of hunter-gatherer activity leaving markers that would be visible in the archaeological record. Nevertheless, our recent geo-ethnoarchaeological study among the Nayaka, which included the analysis of microscopic remains found within sediments collected from both living and abandoned sites, showed that while this pattern is generally true for the main areas of primary activity, but that waste areas tend to better preserve an archaeological signature of the activity that took place at the site (Friesem et al. 2017, 2016). Among sites abandoned for *c*. 30 years only scarce macro- and microscopic residues were found to indicate the activity that once took place in this area. However, waste accumulating at the edge of the activity terrace of the Nayaka's sites showed clear evidence for fire residues and plant remains (Friesem et al. 2017, 2016). Thus, our argument was that if we can witness the residues of human activity within waste areas but not within the adjacent primary activity areas we are probably dealing with a more dynamic and ephemeral activity of the kind that is commonly observed among contemporary foragers with their associated social behaviour (Friesem & Lavi 2017). Similar observations on the potential of waste areas to evince hunter-gatherer activity were reported in several ethnoarchaeological studies (see Binford 1978 for the Nunamiut in Alaska; O'Connell 1987 for the Alyawara in Australia; Fisher & Strickland 1989 for the Efe in Zair; Gargett & Hayden 1991 for the Pintupi in Australia; O'Connell et al. 1991 for the Hadza in Tanzania). The potential of waste areas to better preserve activity residues is connected with the rapid burial of the materials (Friesem et al. 2016). But the deposition patterns of refuse materials in waste areas can be affected by different factors such as group size and length of occupation. In addition, the availability of resources (for example the use of degradable organic matter such as timber as opposed to the use of a durable material such as a stone) and environmental conditions will significantly affect the preservation of activity residues within sites as well as in waste areas. Thus, the spatial behaviour that stems from the practice of sharing, living-together, high mobility and immediacy result in patterns of material deposition that pose a serious challenge for archaeologists. Such ephemeral spatial behaviour does not result in large amount of activity remains being deposited in one particular spot, making it very hard for archaeologists to detect a distinctive archaeological signature that would help them to make inferences about social behaviour.

Dwelling units and use of dwelling space

Hunter-gatherer dwelling units were often regarded as 'huts' rather than 'houses' exhibiting an ephemeral architecture (Bird-David 2009; Wilson 1988). Furthermore, these societies were described, among other aspects, as not interfering with their environment and not transforming it into a built or domestic one (Ingold 2000; Wilson 1988). Generally, many foraging societies exhibit dwelling units composed of light materials abundant in their immediate vicinity. They are mostly made of grasses, leaves and timber. Among the Nayaka, these structures are often open, lacking any walls and made only with posts supporting a thatch roof, or at least semi-open with parts of the walls missing (Bird-David 2009; Lavi & Bird-David 2014). Of course, to a certain extent the environment and the availability of resources influence the design and construction materials of the house (Friesem & Lavi 2017). For instance, among forest-dweller foragers where bamboo is available it will be used more than any other construction material (e.g. Bird-David 2009). On the other hand, among foraging societies living in arid regions, grasses and bush branches will be more frequently used (e.g. Yellen 1977), and obviously among Arctic foragers construction materials will reflect their environment and may differ significantly on a seasonal base (e.g. Briggs 1970). Nevertheless, it seems that forager architecture has to do more with a social preference than lack of materials, knowledge or skills. The Nayaka, for instance, occasionally build houses walled entirely, from ground to roof, with mud bricks, either as a wage labour for neighbouring societies (Lavi & Bird-David 2014) or to partly strengthen their own buildings (Friesem et al. 2016; Friesem & Lavi 2017). Even so, when building their own houses, they tend to opt for partly walled constructions and lighter wall material such as splitted bamboo. In general, it seems that the rule of thumb among hunting and gathering societies is that houses are open or semi-

open structures, built with very light and easily modified materials. Above all, the house design and site structure among foragers seems to manifest a social preference to ensure maximum sharing, co-presence and living-together (Bird-David 2017, 2009).

From an anthropological and archaeological perspective, houses are particularly interesting to look at as they are a part of the material environment that may be preserved in the archaeological record and be used as a proxy of the dwellers social world (Kent 1993). Houses form an important part of the objective reality in which dwellers grow up and acquire their taken-for-granted and often unconscious habits of acting in the world and thinking about it (Bourdieu 1977; Carsten & Hugh-Jones 1995). Some scholars suggested that the built environment reproduces the same notions that shaped its building (Duncan 1985; Korosec-Serfaty 1985). The design of the house, it's orientation, the location of objects in it and the points of views and social interactions it allows are direct and indirect statements about proper conduct, which dictate patterns of behaviour and meanings (Saegert 1985). More specifically, re-thinking of forager architecture and site structure, beyond the once used terms of 'primitive' or 'ephemeral', may reveal how dwelling units reflect foragers' social world and senses of self, relations, and community (see also Bird-David 2009).

Examining indigenous architecture, based on her work among the Nayaka, Bird-David (2009) showed how the light and open structures the Nayaka built out of bamboo, branches and grasses allowed people to act inside and outside the houses in full visibility of the others. As opposed to opaque walls made of mud or stones, the light vegetal walls enabled people to continue taking part in conversation even behind these walls. This architectural preference allows a continuous co-presence in each other's lives through sharing of space, actions, selves and things (Bird-David 2017, 2009). Another important aspect of the dwelling units lies in their plasticity. Built from light materials, the structures could be modified rapidly. This feature enables an exceptional practice in which the house's orientation and even location can be adjusted according to the ad hoc social dynamics, sometimes within the scale of days.

In his work among the Hadza, Woodburn (1972) provides a rare description of the orientation of dwelling units within a single dwelling site and how they express social dynamics. He mentions that among the Hadza it is very common for young married women to stay close to their mother while their male spouses tend to avoid relations with their mothers-in-law. As a result, Woodburn (1972) showed that houses of married women are located close to their mothers but their openings do not face their mothers' houses. In case of married sisters, their houses are built in close proximity and their openings are oriented towards each other, exhibiting the intimacy and close relationships between the sisters; however, their openings will never be oriented towards the mother's house. The only exception reported by Woodburn (1972) of a house opening oriented towards the mother's house was a case of an unmarried daughter who was pregnant and lived on her own. Woodburn (1972) concluded that since the work of building the dwelling units among the Hadza is done by women, the site structure reflects the social relationships between women more than the one between men.

Turnbull's (1965) work among the Mbuti is another example of the dynamic nature of forager dwelling site structures. He describes how houses were spatially modified, almost on a daily basis, and how even the minor changes in the dwelling units resulted from the immediate dynamics in the social relationships between the group members.

> When Amabosu saw Ekianga occupy the hut built by his youngest wife, Amabosu's sister, he took action. His own wife, who was Ekianga's sister, built an extension to the house facing it almost directly away from her brother, looking right into the entrance of to the hut of Ausu, her husband's kinsman. The reason was that Amabosu felt Ekianga should not be sleeping with his youngest wife at that time, and wanted to show his displeasure. Ausu, not wanting to take sides, carefully projected the entrance to his hut so that it no longer looked directly at Amabosu's, which would have been taken as indicating extreme intimacy, but instead faced narrowly across to the hut of his wife's uncle, Masisi: Masisi's son's wife, who was not only kin to Ekianga's young wife but close friends with her, promptly added to her hut, despite her husband's protests, and faced it boldly toward Ekianga. Ekianga's young wife, Kamaikan, responded the next day by facing her hut of the direction of her friend, at the same time deflecting it away from her co-wife's hut, Arobanai, next door. Arobanai had on the day of her arrival made an addition facing toward Kamaikan as a conciliatory gesture, but in face of this rebuff she turned the entrance of her hut away again. Meanwhile Maisisi's lineal cousin, Manyalibo, made no effort to enter the dispute, but rather turned

> slightly toward the rest of the camp. Masisi contented himself with completing the entrance to his hut on the second day, leaving it facing the way it was. An extension he built several days later, as did Ausu, was merely to provide separate accommodation for young girls who were approaching puberty (Turnbull 1965, 102–3).

Today, many contemporary foraging societies are experiencing significant change in their built environment due to development and aid intervention in the form of housing projects, restrictions on mobility and encouragement of individual property (Lavi 2018). The context of such contemporary interventions may seem less relevant for deciphering the archaeological record; however, in a fascinating way, it shows how people modify their physical environment to fit their social environment instead of the opposite. This further supports the argument about the association between the formation and modification of dwelling units and forager social world. Nowadays, dwelling sites become permanent and dwelling units are built for forager communities using durable materials such as cement, bricks and mortar (Lavi 2018; Lavi & Bird-David 2014). Lavi & Bird-David (2014; see also Lavi 2018) show how among the Nayaka, instead of being confined to closed spaces of the cement houses built for them by the state or non-governmental organizations, people not only continued to act outside, but also added large and open porches to their brick and mortar houses. These added architectural features, built from light materials, allowed people to act under the roof, protected from the monsoon rains and winds, but within full visibility of others and thus not compromising on sharing the co-presence in each other lives.

This reading of hunter-gatherer dwelling units highlights the cultural processes associated with the formation and use of these structures. However, archaeological formation processes are not limited to the time of use. Post-abandonment and taphonomic processes acting on different artefacts greatly influence their preservation in the archaeological record (Schiffer 1987; Shahack-Gross 2017). In contrast to structures built from more durable materials, for instance earthy construction materials or stones, structures built from degradable vegetal materials pose a serious challenge for their preservation after abandonment (Friesem & Lavi 2017; Wilson 1988; Yellen 1977). Nevertheless, examination of the archaeological record reveals few cases where materials have been preserved permitting the reconstruction of dwelling units made of perishable materials. Even if these cases represent the exception rather than the rule in terms of archaeological preservation, they can be still used as an important window into the social world of past societies.

Archaeological implications

Given the aim and scope of this article, we do not provide a comprehensive archaeological review, rather we chose few well-studied archaeological cases in order to serve as examples for how the approach we lay out above can illuminate our understanding of sharing, in its broader sense, during prehistoric times. We focus on few examples from the Near East ranging from the Upper Palaeolithic (UP) to the Pre-Pottery Neolithic (PPN), when the transition to farming (i.e. the transition from foraging to agriculture and animal husbandry) took place *c*. 11.5–10 thousand years ago [ka].

The site of Ohalo II presents a habitation site dated to the Late Upper Palaeolithic (*c*. 23.5–22.5 ka) during the Last Glacial Maximum (Nadel 2002; Nadel et al. 1995). This site was submerged under the southwestern part of the Sea of Galilee, Israel. It was exposed and excavated during two events of dramatic drop in sea level during 1989–1991 and 1999–2001. Being covered by water rapidly after abandonment, the site presents exceptional preservation exhibiting the remains of six brush huts with several concentrations of hearths, a human grave and large quantities of archaeological materials such as flint and groundstone tools, a broad spectrum of animal remains, such as mammals (including rodents), birds, fish and molluscs (Belmaker et al. 2001; Nadel 2002; Nadel et al. 2006, 2004; Rabinovich & Nadel 1994; Simmons & Nadel 1998; Weiss et al. 2004). The site is mostly famous for its rich plant assemblage which shows that the inhabitants of Ohalo II processed wild cereals using grinding stones, consumed plants after cooking on hearths, made grass bedding and built their huts using branches and leaves (Nadel et al. 2012, 2004; Snir et al. 2015; Weiss et al. 2008, 2004). The investigators of the site reconstructed the site's huts as oval structures of *c*. 11 sq. m with a frame made of branches and covered with leaves. Integrating different lines of evidence, they suggested that people constructed and re-used a series of successive floors which were occupied for a long time and that the internal hut space was divided into different activity areas. A food preparation and consumption area was associated with the hearth at the centre of the hut. The site's investigators also reconstructed a flint-knapping area and a sleeping area with grass bedding (Nadel et al. 2012, 2004; Snir et al. 2015; Weiss et al. 2008, 2004). Similar evidence

has been reported from Kharaneh IV in the Azraq Basin in Jordan where the remains of large huts were dated to 20 ka (Maher et al. 2012). A micro-botanical analysis of sediments from Ohalo II and Kharaneh IV has helped in those sites' reconstruction, suggesting that a variety of grasses, wetland reeds and sedge resources were used in both sites as part of the hut superstructure, perhaps as bundled thatching to cover the frame made of wood and shrubs. These wetland sedges were also used to form a loose floor covering or matting (Ramsey et al. 2018). The floors of the huts in Kharaneh IV revealed a high density of artefacts, including stone tools, bones, shells and ochre. These were interpreted to represent a long-term occupation (Maher et al. 2012). It has also been suggested that in both Ohalo II and Kharaneh IV the accumulation of artefacts on the floor represents a long-term occupation during which there was no sweeping or cleaning of the floors (Nadel 2003; Ramsey et al. 2018).

The interpretation of the floor assemblages from Ohalo II and Kharaneh IV stands in contrast to ethnoarchaeological reports that describe the practice of sweeping and cleaning of floors as a common and frequent action among contemporary hunter-gatherers (Fisher & Strickland 1989 for the Efe; Friesem & Lavi 2017 for the Nayaka; O'Connell 1987 for the Alywara; O'Connell et al. 1991 for the Hadza). In addition, in order to assess the use and division of space among the inhabitants of Ohalo II and Kharaneh IV it is crucial to understand the resolution of the archaeological record and the time frame it may represent. As opposed to ethnographic observations that allow observing human behaviour as it happens, rarely does the archaeological record, especially in a Palaeolithic context, permit a resolution that is within the timescale of human action (see Kelly et al., this volume for discussion on the scale of analysis in archaeology as opposed to ethnography). Thus, it is very challenging to unequivocally determine the exact timescale in which activity remains were deposited on the floors. In other words, it is unknown whether the division of space and the activity areas reported for each floor sequence in Ohalo II and Kharaneh IV represents few days, months or years of occupation. While the former scenario could be associated with a shorter time of occupation exhibiting a dynamic use of space, similar to the one we report from our work among contemporary hunter-gatherers (see also Bird-David 2009; Friesem & Lavi 2017), the latter suggests a longer term of occupation with a divided and designated use of space. In the latter case, this may imply a difference from contemporary hunter-gatherers not only in patterns of use of space but also in the social practices, in particular, in the notion of sharing. Furthermore, we should bear in mind that activity remains tend to better preserve indoors than in outdoor spaces (see Friesem et al. 2014 and Mallol et al. 2007 for discussion on the differences in preservation between roofed and open areas), thus often the archaeological record provides only a partial image of people's use of space in a site obscuring the evidence for outdoor activity.

Regardless of the limitations imposed by the nature of the archaeological record, the dwelling structures from Ohalo II and Kharaneh IV do show high similarities to contemporary hunter-gatherer dwellings (see, for example, Hewlett et al. in this volume for the Aka forest-dweller, and Mallol et al. 2007 for similar description of huts among the Hadza in Tanzania's savannahs). The site structure in both Ohalo II and Kharaneh IV, in which several huts stood in close proximity one to another and were constructed from light organic matters, suggests that even when people were inside the dwellings, they were still able to hear, talk and maybe even see other people standing outside, thus continuing to share space and actions with other members of the small group, emphasizing co-presence.

The transition from forager to producer lifeways, associated with the Palaeolithic-Neolithic transition in the Near East *c*. 11.5–10 ka, is considered to be one of the most fundamental transformation in human culture marked by the emergence of a new economy, technology, architecture, social order, etc. From the earliest phases of the Neolithic, the majority of habitation sites are strikingly different in their architectural design from the previous Epi-Palaeolithic dwellings. Many Neolithic sites exhibit durable mud brick structures with closed and opaque walls, forming a relatively fixed village plan made of multiple houses, streets and public areas. The early phases of this architectural plan and design are perhaps best known from two of the most famous early Neolithic sites in the Near East, situated in Central Anatolia: Aşıklı Höyük and Çatalhöyük dated to the PPNA (*c*. 10.5–9.4 ka (Stiner et al. 2014)) and PPNB (*c*. 9.1–8 ka (Bayliss et al. 2015)), respectively. Although the two sites have many differences in their architecture and structure (Cutting 2006), single-room houses made of mud bricks were built attached to one another in both of them, permitting entrance to the houses only from the roof and leaving almost no outdoor spaces between the houses. In both sites, the majority of the buildings duplicate a similar inner space division with a built hearth or an oven either in the centre or corner of the house, and other activity areas mainly for storage and processing food and tools. As opposed to Palaeolithic dwellings, houses in Aşıklı Höyük and Çatalhöyük provide clearer evidence for long-term

occupation; it includes not only the durable nature of the mud brick walls but also radiocarbon dates and stratigraphic evidence (Düring 2005). For instance, in Aşıklı Höyük's deep sounding a sequence of several mud floors one on top of the other evinces the continuous construction of houses in the exact same location over a long period of time. The remains of combustion features indicate that they, too, were placed in the exact same location, adjacent to the right wall of the house, in every construction episode (Friesem, personal observation 2010).

It seems that since houses in Aşıklı Höyük and Çatalhöyük were built attached or at least very close one to another, the only remaining outdoor space available for activity could have been on top of the houses' roofs. Unfortunately, roofs rarely preserve in the archaeological record as they tend to collapse and decay after abandonment (see Friesem et al. 2014 for a discussion on archaeological formation processes of roofs in mud structures). It is possible that people spent most of their time on the roof, working in full visibility of their neighbours. But due to the absence of activity spaces on top of roofs in the archaeological record, such a possibility is almost impossible to trace. Thus, again, this situation leaves us with only a partial image of the activity and use of space in these sites.

The implications of the architecture and use of domestic space to understand the social organization of early Neolithic societies is a widely studied topic (e.g. Baird et al. 2017; Banning 2003; Banning & Chazan 2006; Byrd 1994; Flannery 1972, 2002; Goring-Morris & Belfer-Cohen 2008; Hodder & Pels 2010; Kuijt 2018; Kuijt & Goring-Morris 2002). For instance, in case of Çatalhöyük, there is an ongoing debate on whether each house represents a household, possibly of a single nuclear family, or whether several houses were shared by an extended household composed of several nuclear families (see Kuijt 2018 for the latest review of this debate). In addition, it has been argued that the variation in building size and in the richness of interior decoration indicate the existence of differences in household wealth or status in Çatalhöyük while the absence of these features in Aşıklı Höyük point to the lack of social stratification (Cutting 2006). The close proximity of the dwelling units and their small size, as well as the possible social organization in form of multi-family households or extended households do hint on some sort of sharing between people, both within a single dwelling unit and between several units shared by a defined social unit (e.g. Bogaard et al. 2009). The fact that this sharing was carried out between immediate kins is not significantly different from the situation among contemporary hunter-gatherers (see Bird-David, this volume). However, the opaque walls, closed spaces and designated and affixed activity areas in each dwelling unit, reproduced through several construction episodes, implies that at least when indoors, people were secluded from co-presence and sharing of actions and space with most of the other individuals in their extended household and settlement. Relaying on the current interpretation and understanding of the archaeological record from Aşıklı Höyük and Çatalhöyük, we can suggest that the architectural design and preferences in both sites, while exhibiting some degree of sharing, are still a far cry from hunter-gatherer sharing as witnessed among contemporary societies. Yet, it is important to note that a better understanding of people's use of the outdoor space, particularly the roofs, might significantly change our interpretation of their social behaviour.

Contemporary circumstances of many hunter-gatherers today, with the intervention of development agencies in their everyday life, are not directly applicable to ancient societies, but they are nevertheless interesting to note. The Nayaka, for example, were recently given brick and mortar houses with opaque walls and closed spaces, built for them by development agents (Lavi 2018; Lavi & Bird-David 2014). Yet, despite the availability of such houses, and due to the cultural requirements for sharing and co-presence, people still preferred to avoid being indoor and continued to cook, eat, sit, and perform other mundane acts outdoor, in full-visibility of each other (Lavi 2018; Lavi & Bird-David 2014). And, when building their own houses, they still opted for open structures, despite having the experience of dwelling in fully walled houses. To build your own house with closed, opaque walls, therefore, is a conscious choice. If nothing else, we can say that the Palaeolithic-Neolithic shift towards dwelling structures that even allow the option of seclusion in fully closed spaces, point to a shift in how people construct their daily routines and the social expectations about them.

The Natufian culture, dated to 15–11.5 ka, stands at the crossroad between the Palaeolithic-Neolithic transition (Bar-Yosef 1998; Belfer-Cohen 1991; Grosman 2013). In terms of dwelling units and use of space, Natufian structures exhibit a hybrid between durable foundations, usually of 1–5 courses of stones, and superstructure that archaeologists argue to be made of organic materials (Goring-Morris & Belfer-Cohen 2008). To date, no remains of a Natufian house superstructure has been preserved to inform us whether it was closed and opaque (e.g. built with mud walls) or allowed visibility and interaction between indoor and outdoor spaces (e.g. built with loose plant material). As opposed to previous Palaeolithic sites,

among Natufian sites it is more common to find large installations made of durable materials (e.g. rocks, lime plaster and earthen construction materials) that cannot be mobilized (e.g. Arranz-Otaegui et al. 2018; Grosman et al. 2016; Power et al. 2014; Rosenberg & Nadel 2017; Weinstein-Evron et al. 2013). The Natufian installations can be found in both the interior parts of a structure as well as in public spaces. The latter case suggests either a more communal use of those installations or a spatial preference for more visible working spaces. A recent evidence of a plaster cover of a burial grounds found in Nahal Ein Gev II dated to 12 ka (Grosman et al. 2016; Friesem et al., accepted), alongside houses with wall foundations of several courses of stone, suggests long-term occupation of the site and a planned division of space within the site. The Natufian division and use of space present a distinctive difference from the dynamic use of space reported among contemporary foragers. Yet, communal activities seem to have taken a central role in the Natufian culture (e.g. Grosman & Munro 2016; Power et al. 2014) and it is not clear whether dwelling units undermined co-presence and sharing of things, spaces and actions among the site dwellers. Thus, the interpretation and extent of co-presence, living-together and sharing among the Natufians still await to be deciphered.

Concluding remarks

This volume provides a critical mass of data and theory regarding the value and meaning of sharing among contemporary hunter-gatherers which goes far beyond the distribution of food or material items. The practice of sharing manifests the ways people relate to one another, identify, acquire knowledge and perceive proper social conduct. But while this notion of sharing is well evident from ethnographic data, it is still almost impossible to get into such analytical resolution when we approach the archaeological record. In this chapter we suggest an interpretive framework for examining the archaeological record in search for social practices such as sharing and co-presence, by focusing on the architectural design of dwelling units and the architectural plan of the habitation site. We argue that by examining construction materials and the spatial distribution of activity remains in- and outdoors, archaeologists can learn more about people's social preferences in their use of space, which in turn will illuminate intangible aspects of the dwellers' social world. While this approach is by no means new to the archaeological research, we hope that the ethnographic data and anthropological theory on which we base the proposed interpretive framework will help to illuminate new aspects in the research of past societies.

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Part II
Senses of connectedness beyond the horizons of the local group

Chapter 7

Sharing pleasures to share rare things: hunter-gatherers' dual distribution systems in Africa

Jerome Lewis

Most research on the economic institutions of what James Woodburn defined as 'immediate-return' egalitarian hunter-gatherers has focused on demand sharing as the primary mode for ensuring the distribution of food and goods amongst group members. Although Woodburn mentioned the importance of parallel systems for distributing non-local goods – such as gambling among Hadza and *xaro* exchange among the San – in his seminal article 'Egalitarian Societies' (1982), no work has examined these systems cross culturally. Based on recently published research into a system shared by Western Pygmies in Central Africa that circulates things, including non-local goods, through ritual initiations (Lewis 2015), this chapter seeks to make some preliminary observations of similarities and differences between these systems for sharing non-local products across three African groups: the BaYaka (represented by the Mbendjele), the San (represented by the !Kung) and the Hadza. In contrast to similarities in demand sharing, each of these parallel systems for circulating non-local products has a different model: ritual performances (*massana*) among BaYaka, gift-giving (*xaro*) among San, and gambling (*lukuchuko*) among Hadza. Despite structural differences, each system is primarily driven by culturally determined pleasure-seeking and produces a sense of group that extends far beyond those with whom each is daily present in camp.

Since it is less well known, I shall begin by outlining the system of the BaYaka Pygmies of the Western Congo Basin, to contrast daily demand sharing with their ritual economy (see Lewis 2015 for more detail). The ethnography is summarized selectively to emphasize economic aspects and emic perspectives for cross-cultural comparison with San and Hadza.

Pygmies today

The greatest number of contemporary and former hunter-gatherers in the world live in the forests of the Congo Basin and estimates of their overall numbers range from 220,000 (Bahuchet 2014, 08) to a possible 900,000 (Olivero et al. 2015). They are composed of groups speaking different languages – mostly Bantu languages but also Ubangian and Central Sudanic languages, and who today seek out 'hunter-gatherer situations' (Widlok 2015) by practicing a range of subsistence activities from hunting and gathering, to fishing, farming, entertaining, day labouring, and begging. They have a range of different relationships with farmer neighbours belonging to many different ethnic groups. Despite this diversity, all groups define themselves as current or former forest hunter-gatherer specialists and recognize their shared origin as the indigenous forest peoples of Central Africa.

To illustrate the dual economy present among BaYaka Pygmy groups living in Western Central Africa I will focus on the ethnography of Mbendjele, where I have conducted most of my ethnographic research since 1994. The BaYaka are comprised of several groups: notably the Aka, Baka, Bofi, Gyeli, Luma, Mikaya, Mbendjele and Ngombe mostly living in Cameroon, Central African Republic, Congo-Brazzaville, western DR Congo and Gabon. BaYaka people across this region say that they share the same forest hunter-gatherer ancestors, and the same economic, ritual and musical systems. Mbendjele more often refer to themselves as *Bayaka* or *Baaka* than Mbendjele. 'Mbendjele' is used to distinguish themselves from neighbouring BaYaka groups such as the Mikaya, Ngombe or Luma. The term 'BaYaka' is contracted to different extents by these groups to be spoken as *bayaka, baaka,* or *baka*. Since some of these groups speak Ubangian languages (e.g. Ngombe and Baka) while others speak Bantu languages (e.g. Aka and Mbendjele) I write this regional ethnonym as BaYaka.

Although there are important cultural differences between BaYaka groups (e.g. Bahuchet 1996, 2012), differences also exist within each of the constituent

groups depending on where they live. For instance, some Mbendjele near the Central African Republic speak Mbendjee with many Sango loan-words, are evangelized and although relatively sedentary do not farm. Further south in Congo-Brazzaville, Mbendjele speak Mbendjee mixed with many Lingala words and have local variations in vocabulary due to loan words from diverse neighbouring groups. Those Mbendjele living in or near logging towns may spend long periods working outside the forest and practice regular farming. Others further south spend most of the year in the forest, with some groups not coming out to villages for years at a time. But in general, many Mbendjele spend about two-thirds of the year hunting and gathering in forest camps and some part of the year near agriculturalists' villages or the activities of logging companies. Although continuing to hunt and gather, here they will also trade, labour or perform services for villagers and others in return for food, goods, alcohol or money.

There is much variation in the living conditions of BaYaka groups today as they are differentially affected by the global forces of development, market expansion, conservation, logging, mining and chronic armed conflict (Bahuchet 2012, 2014; Ichikawa 2014). Industrial, road and market expansion into remote forest areas have drawn outsiders in to exploit resources. Discrimination by majority groups has led to BaYaka land and resource rights being ignored, their violent exclusion from large areas of forest by conservationists, and their persecution for hunting (Lewis 2016). Many now do some farming and serve as a labour force for other groups, often in return for alcohol and food. These forces combine with aggressive government sedentarization policies since the early 1990s, and earlier in Cameroon and Gabon, to have a negative impact on many BaYaka groups' ability to maintain their autonomy, hunting and gathering lifestyle, and culture.

BaYaka cultural area

Despite the diversity of interaction and experiences with many different outsiders over several centuries, BaYaka, like !Kung, G/wi and !Xo San (Wiessner 1986; Lewis-Williams 1984), demonstrate long-term cultural continuity in their shared material culture adapted to their distinctive forest-focused economy, their egalitarian political order, and in their shared musical style until very recently. The Pygmies' shared material culture is comprised of characteristic dome-shaped marantaceae leaf and liana huts, honey collection implements, some yam digging tools, bark cloth and axe styles (Bahuchet 1996, 2012). These shared material solutions to forest living, similar political organization and musical style identify forest-dwelling Pygmies in contrast to their non-Pygmy neighbours across the Congo Basin, and are evidence of a highly resilient and successful forest adaptation.

BaYaka are explicit about their connections and aware of their cultural unity, even beyond the western Congo Basin. In 2010 I played recordings of Mbuti music made by Colin Turnbull in the 1950s to Mbendjele over a thousand miles to the west of Mbuti forest. Almost immediately they exclaimed that 'They must be BaYaka to sing like this!' Indeed, BaYaka view the remarkably similar vocal polyphonic singing style they share as evidence of shared culture (Furniss 2014; Lewis 2014a) and origins (Lewis 2013, 2014a). Genetic studies now confirm this (Verdu 2014).

BaYaka are familiar with the other Pygmy groups around them because they visit each other and intermarry. Members of the different BaYaka groups, notably young people, visit neighbouring BaYaka groups to explore, participate in commemoration ceremonies (*eboka*), establish friendships, meet potential spouses, and seek or find work with farmers and other outsiders. Such voyages are made possible by their cultural similarities – their egalitarian political ideology; a mimetic and predatory approach to non-Pygmy outsiders and their languages; a ritual and religious system focused on the forest and calling forest spirits into camp with polyphonic singing; a set of taboos (*ekila*) defining proper sharing and driving a gendered division of labour premised on keeping menstrual blood and the blood of killing animals apart; dynamic egalitarian gender relations in which each gender undermines special claims to status by the other; a rich sung fable story-telling tradition; an economic ethic focused on demand sharing, immediacy and the superiority of wild food; and a similarly broad binary classification of people into (Pygmy/BaYaka) 'forest people' (*bisi ndima*) and (*Bilo*/non-Pygmy) 'village people' (*bisi mboka*) (Lewis 2014b).

Mbendjele consider the status and property-obsessed *Bilo* village people in their region to be reborn as 'gorillas' because, like gorillas, they do not share on demand, they fight for status, power and authority between themselves, and make aggressive efforts to claim parts of the forest, in this case their fields, as their own exclusive property. In normal speech *Bilo* are simply referred to as 'gorillas' (*ebobo*) because of this. Europeans are called 'red river hogs' (*bangwia*) due to their extraordinary accumulation of wealth (fat) despite sharing the same forest as everyone else. Such labels cast non-Pygmies as 'prey', and make deceit, trickery and the application of hunting techniques in order to get goods from them legitimate.

In contrast to Ingold's claim for hunter-gatherers (1986) or Sillander's similar characterization of South East Asian 'open aggregation' groups (this volume), Pygmies in this region are clearly defined, and self-define as distinct from acephalous, segmentary shifting cultivators, articulating clear social boundaries, contrasting political ideologies and economic practices. BaYaka share with anyone present, but non-forest *Bilo* people are defined by their 'hard hands' (*mabo budi*) that do not easily share on demand. While there exists the possibility of marriage relations between BaYaka groups, most *Bilo* villagers refuse to marry BaYaka, many will not eat together with BaYaka nor allow them to stay in their homes or villages. While BaYaka share and do not trade goods with one another, relations with *Bilo* 'village people' are predominantly based on trading and exchanging goods. Rivers divide the territories of different BaYaka groups ensuring they do not overlap, however villagers superimpose their land claims over parts of BaYaka land.

BaYaka egalitarianism and demand sharing

BaYaka individuals might achieve different outcomes from time to time – by hunting more, being charismatic and persuasive, and so on, but a range of 'levelling mechanisms' (Woodburn 1982) ensure that these inequalities do not last. Such mechanisms include demand sharing, avoidance, mockery, direct individual access to resources, to the means of coercion and to freedom of movement. To emphasize the active nature of maintaining an egalitarian society James Woodburn labelled them 'assertively egalitarian' (1982). Such groups are actively fashioning their worlds in similar ways that ensure that normal differences between people are not culturally converted into differences in status, authority or rank.

Practices such as hunting that result in differential outcomes between people are carefully handled by a combination of popular vigilance and ideologies of taboo that broadly support the principle that resource abundance is ensured through correct sharing with all present of what is extracted from the environment (Lewis 2008). Here there is no pressure to produce, but huge pressure to share anything that is produced. Demands for a share are imposed on the producer by the group with such insistence that it is impossible to ignore. Individuals may hide produce they do not want to share, but others will be suspicious and insistently demand from them, or trick them into revealing what they have hidden in order to take some of it. They will be mercilessly mocked for trying to avoid sharing. This is *assertive* egalitarianism.

The Mbendjele's system for distributing material property through demand sharing resembles similar practices among immediate-return hunter-gatherers (e.g. Blurton-Jones 1987; Ichikawa 2005; Peterson 1993; Woodburn 1982, 1998). In contrast to the donor-organized sharing familiar to most people, where the person owning the resource dispenses it according to their choice, demand-sharing is recipient controlled. Potential recipients constantly demand shares of things they suspect may be around. It is the possessor's duty to give whatever is requested of them, rather than being entitled to refuse the request. Such demands are not perceived as a burden, but as an opportunity for demonstrating care and affection, and that one is a properly moral person.

For most material items need determines who can claim them, especially when they are consumable. Possessing something here is more like a guardianship or caretaker role until someone else needs it. Certain personal possessions, such as a woman's basket, her cooking pots, and machete, and a man's bag, his spear, knife and axe, are recognized as belonging to named individuals, often the person who made, found, or bought the item. These individuals have priority over others' claims to the item. But when not in use by them, these objects may be shared on demand with someone who asks.

Certain foods, such as the meat of game animals that may be obtained in large amounts, must be carefully shared out (*bwɛdye*) among all present according to detailed rules generically referred to as *ekila* (Lewis 2008). These determine exactly how each species should be butchered and to whom different parts must be given. So when a pig is killed, the hunter gets the heart, the men get the liver and kidneys, a dog that participated would get the lungs, and so on. The remaining meat must be fairly shared amongst all present or the hunter's luck will be ruined. If sharing is not conducted according to these rules it jeopardizes future success.

Unlike meat, gathered foods such as wild yams, honey, vegetables, fruit and small fish are dependable food sources that regularly provision camp. When more than can be immediately eaten is gathered, the food is shared among all present in the forest before returning to camp. Once in the camp women prepare and cook the food and share it again by sending plates (*djalo* or *gabo*) to the men's area in the middle of camp, and to their female friends and relatives at other hearths. In contrast, game meat is always publicly redistributed on arrival in camp before being cooked and redistributed by the women's *djalo*.

In such a society all people are encouraged to contribute according to their ability, but if you are very young, old, physically or mentally challenged in some

way and only rarely contribute, your entitlement is not diminished. You have just as much right as anyone else to a share of whatever comes into camp. The principle is that if someone has something that you need just ask them for it; and, as Mbendjele often say 'we have easy hands, we always give'.

Contradicting models of economic behaviour which assume producers' require rewarding, or that those who are good producers will get recognition, status and fame, here it is not the case. Men are very sensitive to who is provisioning the camp with meat. Rather than gain prestige or girlfriends, men who hunt a lot become the target of teasing and mockery if people think that the group is eating their production too often. Such men should stop hunting for a while; otherwise they risk being cursed, or exiled if they persist. This occurred in the case of a famous elephant hunter (*tuma*) in the early 1990s (Lewis 2003). Despite repeated calls for him to stop hunting so often, he continued. First, he was cursed to meet silverback gorillas when he went hunting. But this did not stop him. Eventually the women of his camp forced him into exile by refusing to cook any meat that he produced. He moved to the neighbouring Luma Pygmy area and married a Luma woman. In 2012, I met him again, now single, in a Mikaya Pygmy village even further away from Mbendjele forest.

What is not shared on demand

As just described, when sufficient gathered or hunted food is 'taken out of the forest' (*benda o bila ndima*) it is carefully shared with all present. Other material items such as clothing or tools are shared on demand if not in use. However, some of the most valued forms of cultural knowledge – the songs, dances and ritual procedures related to named forest spirits *mokondi massana* (spirit-play) – are not shared on demand, but accessed through initiation requiring payment.

There is a cultural logic to this seeming inconsistency. Komba, the creator, made the forest for all creatures to share. The rules of *ekila* that determine how forest produce is shared are said to originate from this time. No individual or species has any greater right than any other to the forest and its resources. For instance, Mbendjele resent silverback gorillas' territorialism, and will insult them angrily. No animal can claim part of the forest as his own. This is why Mbendjele view villagers' claims to own forest and fields as illegitimate, and so refer to villagers simply as gorillas (*ebobo*). Since Komba created all material things for creatures to share, anyone can take what they need, or demand it from someone who already has it. By contrast, products of human inspiration or dreams belong to their creator. Since they are the product of human creativity, their creator can decide whether and how to circulate them.

This has resulted in the emergence of a shared set of rules among the different BaYaka groups for sharing spirit plays. One set of rules organize local level participation, the other set, regional exchanges of the rights to call different spirits from the forest. At the local level within the community, every eligible member will be initiated for a fee into the spirit-plays appropriate to their gender and activities (Table 7.1). Since there is innovation in the generation of new spirit-plays, even elders will find themselves as neophytes from time to time when new spirit-plays are introduced to their local area. To have the right to organize a spirit-play, one must be a spirit guardian. A parallel, regional distribution system operates to circulate guardianship rights to new spirit-plays between clans and between communities across national and linguistic boundaries (Lewis 2015 provides further details).

Each spirit-play belongs to a named class of forest spirit (*mokondi*) with its unique identifying songs, costumes and dances that can produce a distinctive affect among participants. It is reliably reproducing this affect that is the objective of performing spirit-play. Initiates also learn secret knowledge and sacred lore associated with that particular class of forest spirit.

Table 7.1. *Southern Mbendjele* mokondi massana *(spirit plays) organized according to context of use (Republic of Congo).*

Elephant hunting *Mwaka ya baito*	**Food quest** *Beke yoma*	**Male power** *Mendo ya batopai*	**Female power** *Mendo ya baito*	**Funerals, sorrow** *Eboka, mawa*	**Fun** *Biseŋgo*
Niabula *Moshunde* *Malimbe* *Yolo* *Minyango* *Eya* *Yele* *Ejɛngi* (once feasting)	*Yele* *Malobe* *Sho* *Eya* *Bonganga* *Ejɛngi* (once feasting)	*Ejɛngi* *Niabula* *Mabonga* *Sho*	*Ngoku* *Yele* *Djeŋguma*	*Ejɛngi* *Ngoku* *Yele* *Djeŋguma* *Monano* *Bibana* *Enyomo* *Sho* *Niabula* *Mabonga*	*Mombembo* *Longa* *Djoboko* *Bolu*

For instance, *Ejɛngi*, one of the most widespread and important classes of forest spirit, protects his male initiates from charging animals and helps them to see forest paths. Only initiates into *Ejɛngi* can enter the secret path (*njanga*) to organize an *Ejɛngi* spirit-play, and the ceremony is called *Ejɛngi*. Each clan has its own named *Ejɛngi* and so there are many individual *Ejɛngi*. Each one has an acknowledged spirit-guardian (*konja mokondi*) responsible for calling it from the forest. This is done on the secret path (*njanga*), where the initiates come together to prepare key aspects of the spirit-play such as the spirits' clothes. Initiates ensure that the ritual follows the correct procedures in order that the forest spirit is drawn into the human group and so generates the characteristic pleasurable-euphoric states associated with its spirit-play.

Access to the secret *njanga* path is governed by initiation. Initiations can occur whenever a spirit-play is performed. There is no fixed age for this to occur, it depends on an individual's circumstances at the time of a ceremony. Fees can be paid in kind with desirable goods such as alcohol, smoke, meat or honey if for a man, and as stingless bee honey (*koma*) and wild yams if for a woman. Today, most initiation fees are simply paid in cash. Although given to the spirit guardian, as soon as the fee is received it becomes subject to the rules of demand sharing and is distributed among all present, including the neophytes (*mboni*) that just paid it. Cash will be converted into alcohol or smoke for immediate consumption. In this way, the fees feed the spirit by fuelling celebrants to sing and dance more enthusiastically. The Mbendjele are proud of their ability to make such fun immediately produce so many desirable goods and contrast this with the 'empty' ancestral rites of Bilo that project promised benefits into the future.

This local level system instituted by spirit-plays circulates desirable and hidden goods such as smoke or cash among all present. In conjunction with the local system, a regional system circulates the right to call a spirit to play – to become a spirit guardian. This right is obtained by inheritance or purchase if you are not the original founder (see also Tsuru 2001). The regional system trading spirit-plays exists amongst all BaYaka groups across all five of the Congo Basin countries they inhabit. Although items paid will vary according to the demands made by the original spirit guardian, it is generally composed of consumables (alcohol, smoke), cash and iron objects.

Old spirit-plays, such as *Ejɛngi* and *Yele*, are widely distributed among BaYaka groups and so rarely traded. However, newer spirit-plays are unevenly distributed, even between clans living in the same forest area. These newer spirit-plays have a variety of histories. Some were traded from other BaYaka (Mbendjele in RoC say they got *Malobe* and *Niabula* from Baka in Cameroon), some came from Mbendjele in other areas, and others, such as *Monano*, were recently captured in the forest, others were encountered in dreams (for examples see Furniss & Joiris 2011; Lewis 2015; Tsuru 1998). BaYaka love to discuss which spirit-plays different groups have rights to perform, comment on the accomplishment of specific songs and the dances employed, and compare each other's performances. These are a key way that Mbendjele identify, discuss and judge the extent to which other Pygmy groups are real 'forest people'.

The regional economy exists because the distribution of spirit-plays across the BaYaka region is uneven. This matters when performing their most important rituals – commemoration ceremonies for the recently deceased (*eboka*). These large dry season gatherings are the highlight of the social calendar, lasting between one and six weeks. Young people get to meet each other, marriages are agreed and friends meet again to share news from the forest. These events draw groups from far and wide, and participants expect a variety of spirit-plays to be performed. During *eboka* BaYaka experience their kinship networks and extended selves at their maximum. Sharing such moments together materializes and makes palpable their sense of themselves as a large-scale society across the forest.

Due to their immediate-return economy, when Mbendjele organize commemoration ceremonies it is challenging to provide for all the guests that turn up. Although strong families will organize net-hunting expeditions and tap palm trees for wine to share, the requirement to give whatever guests demand is always difficult to fulfil. In this context having some new spirit-play rituals to perform will reduce the burden by generating desirable goods such as alcohol, or money to support the ceremony since many will be eligible for initiation. Neophytes pay an initiation fee. If not already in kind, fees are immediately spent on alcohol and other consumables to fuel the performance. During large commemoration ceremonies several dozen neophytes can be initiated generating significant amounts of consumables for several days of performance. This is an important source of sustenance during these long ceremonies.

If the hosting clan entertains their guests with a wide variety of spirit-plays this is appreciated and will be a favourite topic of conversation for years to come. However, if the hosting clan does not own the spirit-play that their guests are expecting, they will be obliged to find and possibly pay a spirit-guardian to call the spirit-play for them. This can become a source

of conflict: Since Mbendjele have so little they may be tempted to do the ritual without following this protocol. At its least problematic, this can simply involve doing the spirit-play without a spirit guardian present, or more seriously, as I have described (Lewis 2015), by stealing a spirit-play witnessed elsewhere among other groups. This is done by changing its name and claiming to be its creator. Now the thief can attract as many neophytes as possible and 'pull-out' (*ulua*) goods. If discovered by the original spirit guardians – as it inevitably does – this provokes serious and occasionally violent conflict.

Past conflicts led each clan to want its own spirit guardians for those spirit-plays performed at their commemoration ceremonies. My close friend Emeka told me that the ancestors have bought and sold spirit-plays since ancient times. He knows which spirit-plays his ancestors bought and from whom, as he knows which people his ancestors initiated as spirit-guardians. Some of these transfers occurred two or three generations ago. Like Emeka, most elders know who legitimately owns what.

Among Southern Mbendjele groups I recorded over 20 different spirit-plays, Tsuru describes 53 among Baka living along the Yokadouma – Moulourndou road in Cameroon (1998, 54–5). Furniss & Joiris (2011) analyse the creative process by which Baka re-combine key musical and costume elements in the generation of new spirit-plays in a constant but structured innovation process. While the Baka tradition is possibly the most creative, the Mbendjele system seems the most conservative because it continues to dance all of the most widespread spirit-plays: *Ejɛngi*, *Niabula, Ngoku* and *Yele*, and is especially appreciated by other BaYaka groups who make long journeys to learn from them. Kisliuk (2001) describes how BaAka in eastern CAR walk to northern RoC to buy spirit-plays from the Mbendjele. Louis Sarno (pers. comm. 2014) explained that Mbendjele in the southwest of CAR also make special journeys to visit Mbendjele in RoC to buy spirit-plays. They love to watch footage of Mbendjele spirit-play performances that he filmed in RoC. They integrate what they see, and revive forgotten elements to enhance their own performances.

The wide distribution of this spirit-play economy is testimony to substantial networks of interaction between diverse BaYaka groups of such antiquity that participating groups now speak different languages and interpret and perform the same named spirit-plays differently. For instance, whereas the Mbendjele *Ejɛngi* is concerned with the creation of contemporary society when men and women first came together, Baka *Ejɛngi* now celebrates elephants and elephant hunting.

Economies of joy

Spirit-plays are by far the most valued and expensive items that BaYaka will purchase. While Toma's younger brother was working for a logging company prospecting for trees he bought the spirit-play of *Enyomo* for an anvil (costing about 120 Euros) and cash equivalent to about 150 Euros from an Mbendjele co-worker. These men probably earned 70 or 80 Euros a month, so the price paid represented four months' worth of wages. The only other item of similar cost that Mbendjele would consider buying would be a shotgun, then costing around 150 Euros. But since shotguns can be borrowed from other people fairly easily Mbendjele men prefer to spend their hard-won earnings on the rights to perform a ritual.

Introducing a new spirit-play to one's clan after a long voyage (*molongo*) is highly appreciated, as one of the spoils of the journey brought back for others to enjoy, like smoked meat or fish. Most often it is men who travel to do brideservice in a distant community, or who seek work outside their traditional forest area that encounter new spirit-plays. If accepted by the original spirit-guardian, and he pays, he is initiated to become spirit-guardian of a spirit child of the original guardian's forest spirit. Then he can begin producing joy by initiating the eligible but uninitiated of his home community so as to 'pull-out/bring into the open' (*ulua*) more goods and money to fuel the joy produced by spirit-play.

The motor driving this ritual economy is the desire for the joy spirit-plays provide. When the techniques associated with a particular spirit-play are performed faultlessly they reliably produce delight and wonder. During the performance, initiates try to build this up to produce euphoric, trance-like states in participants. It is the euphoria or joy (*bisengo*) of these moments that people value so highly and are concerned to freely share, but not the techniques employed to produce them. In effect, each spirit-play is a skill-set that once understood and mastered enables participants to establish a situation in which all experience joy and communion. The spirit-play economy is a unique system for distributing practices and knowledge that ensure particular euphoric states are repeatedly produced and made available to all present.

Each spirit-play creates a different quality of joyful experience. During no-moon *Malobe*, for instance, fires are extinguished and light forbidden, participants huddle together in the middle of camp, legs resting on their neighbours', voices intertwining in complex polyphony until tiny luminous dots float into camp producing a calm, wondrous and expansive joy. In the

pitch black participants melt into one another and the forest. *Ejɛngi* is quite different. *Ejɛngi* produces the 'frisson' of feeling safe in the presence of something beautiful but dangerous, combined with an erotically charged joy generated by sexy symbolism and dancing, seductive playfulness and excessive consumption. Other spirit-plays, such as *Enyomo* or *Monano*, produce a relaxed joy by blending clowning humour with virtuoso singing and dancing. Spirit-plays enchant many senses; using strange sounds, stirring sights, beautiful songs and dance movements, with humour and parody, touch and smell, emotions and desires, their overlapping rhythms entrance and produce joy.

Individually, each spirit-play is a work of art – aesthetically charming the senses and emotions. Mbendjele say that the animals and the forest appreciate this too. Even UNESCO has felt it, and recently inscribed the distinctive polyphonic singing of spirit-play songs on the Representative List of the Intangible Cultural Heritage of Humanity (UNESCO 2003).

The regional economy and contemporary change

It is the high value that BaYaka place on community well-being (Lewis 2002; Oloa-Biloa 2016) as the means to assure abundance that motivates the search for new spirit-plays. Successful spirit-play banishes disharmony and conflict while producing prized social products: music, dance and joy; and desired goods such as drink, food and smoke. Each new spirit-play produces a new variation of joy that contributes to the overall well-being of the community and by extension to the forest keeping the camp 'open' for food to come. The high social value of joy leads to performances that often run right through the night, sometimes lasting for several days. These are people's most cherished moments, sometimes provoking watery eyes when reminiscing about particularly memorable ceremonies. The desire for novelty and variation results in this vigorous search for new spirit-plays and for novel songs and dances of existing ones. Joy is the motor of this ritual economy of remarkable scale by hunter-gatherer standards.

As the search for new techniques for producing joy drives the movement of spirit-plays between groups, so it also moves difficult to obtain, high value items from outside the forest. These items circulate between communities as new spirit guardians are initiated and the goods acquired are shared on demand. Then locally, initiations into new spirit-plays cause things hidden in the community to emerge for all to share. While the right to perform these spirit-plays is traded, the items demanded in the trade are shared on demand once they have been 'pulled out' (*ulua*) by the spirit guardian. While the products of performing spirit-plays are shared on demand, the rights to perform them are not. This combination enables spirit-plays to cause desirable goods to circulate at multiple levels – within local groups, between local groups, and between regional groups internationally.

Many of the desirable products that spirit-plays cause to circulate are not to be found in the forest: money, iron, distilled liquor, tobacco, marijuana and farmed food. These items change over time. In interviews asking spirit guardians what they received or paid, they described past payments as mainly composed of metal goods – notably small iron anvils, metal coils or spear blades, but also wine, salt, cloth, tobacco and money. Today spirit-guardians mostly focus on 'pulling-out money' (*ulua mbongo*).

With the expansion of the logging industry throughout the region since the 1990s, scrap iron is relatively easy to find, and ready-made blades widely available. In tandem, far more money is circulating locally than ever before. An increasing familiarity with money since the 2000s has led Mbendjele to become interested in demanding, obtaining and using money, whereas previously they had preferred exchange or to receive goods in return for their labour or forest produce. Although exchange still occurs, Mbendjele are impressed by the way cash can transform according to need into cloth, machetes, cigarettes or manioc, can be used to pay fines that solve disputes or problems in the community, and can be easily hidden away to avoid being shared. Due to its fungibility and storage potential, money has become the elusive, desirable good from outside the forest for spirit-plays to circulate.

Bringing money and goods out into the open is an explicit objective of spirit-plays and how Mbendjele ensure ritual is an immediately productive activity. Spirit-plays are also used in this way to 'pull-out' goods and money from neighbouring *Bilo* villagers. Due to their indigenous status as 'first people' (*bisi bosso*) BaYaka perform spirit-play rituals at all the *Bilo*'s most important ceremonies. These ceremonies are an important arena for *Bilo*' inter-clan status competitions. It is important for inter- and intra-villager claims to prestige and status that large numbers of Mbendjele perform spirit-plays during their rites, especially during weeklong commemoration ceremonies (*matanga*). BaYaka spirit guardians are expert at playing villager status claims off one another to encourage competitive gifting to the singers.

With the rapid emergence of large logging towns in the forest, Mbendjele are now applying this system for producing money there. When I first arrived in the early 1990s outsiders were only exceptionally initiated into spirit plays. As Mbendjele started to visit

logging towns in the early 2000s they realized that on payday weekends workers had lots of cash and would spend it easily. While the standard fee for an initiation would range between 500 CFA and 2000 CFA, in logging towns it was possible to obtain between 5000 and 20,000 CFA for initiating non-BaYaka. Riotously drunken spirit-plays would proceed for the whole weekend.

A dual economy

In contrast to the daily demand sharing focused on circulating forest produce that most individuals have the skill and knowledge to obtain for themselves, spirit-plays circulate rare and elusive goods produced outside the forest. These goods have changed, but the mechanism for transferring them is structurally similar across a huge area of Central Africa: from the Bagyeli on the Atlantic coast to the east bank of the Ubangi River in DRC and probably further east when research in these regions is undertaken.

BaYaka are sometimes considered small-scale, isolated and mutually independent groups with closer ties to their agricultural neighbours than with each other. However, an understanding of how spirit-play networks irresistibly draw people together in larger groups than for any other event, and connect communities over great distances, shows this to be mistaken. This ritual economy circulates songs and spirits, people and their genes, and valued items unavailable in the forest to all BaYaka no matter how remote. Spirit-plays maintain the BaYaka's shared identity across language boundaries and international frontiers.

The circulation of spirit-plays often follow men doing brideservice – they bring metal to pay for initiations, genes mix, news is shared and populations keep in touch. Participation is not motivated by greed or profit, but by the popular desire to experience the variety of collective joyful states spirit-plays establish. Rather than bringing status or prestige, the circulation of goods spirit-plays provoke is seen as evidence of how powerful the forest spirits are, not the spirit guardian or initiates.

Participating BaYaka now have different languages, subsistence practices and neighbours, and the goods they value from outside have changed, but they continue to share the same dual systems for distributing local produce through demand sharing while obtaining and circulating rare but desirable social and economic products widely throughout the forest through spirit-play. The social products of congregation, companionship, and joy are complemented by the economic achievements of spirit-plays that extract distant or hidden production, distribute actual production and teach skills and knowledge that assure future production. The two systems are highly complementary, and their distribution and adaptability suggests that they are highly resilient and of long duration.

Hunter-gatherers' dual economic systems

The dual nature of immediate-return hunter-gatherer economies has been rather neglected since Woodburn made his initial perceptive insights (1982, 441–4). Following his lead, I will conclude this chapter with some preliminary observations of similarities between what on the surface appear to be very different solutions to ensure non-local products circulate between small, remote and highly dispersed populations without exchange, dependency or indebtedness. I have discussed ritual performances (*massana*) among BaYaka, now I turn to gambling (*lukuchuko*) among Hadza, and gift-giving (*xaro*) among San. Each group uses the same system to distribute local products – demand sharing; whereas each has found a different solution to ensure the sharing of non-local desirable products amongst and between communities.

When food is plentiful Hadza come from far and wide to congregate in large camps around the food source. These are vast bushes of *undushibi or tafabe* berries or when large animals have been killed (Marlowe 2010, 66; Petersen 2013, 130). During such times men spend most of their time gambling personally owned objects such as 'metal-headed hunting arrows, both poisoned and non-poisoned, but … also … knives, axes, beads, smoking pipes, cloth and even occasionally a container of honey which can be used in trade' (Woodburn 1982, 441). Woodburn notes that these objects are made from materials not available in every part of Hadza country – scrap metal was obtained through trade with non-Hadza, arrow poison is from a tree-sap or seeds only available in certain locations and absent from large areas, as is a shrub producing lightweight arrow shafts. The sandstone used to make stone smoking pipes is likewise only available in certain places. The game is played by throwing bark discs against a baobab tree until one player's disc lands in the same position as a larger 'mother disc' (Petersen 2013, 129). Outcomes are based on chance, not skill, and the winner takes all the goods gambled. Participants must gamble another set of goods for the game to continue. '(M)en would follow their lost possessions as they moved from camp to camp seeking to recover them again through *lukuchuko.* As a result, scarce goods circulated and the game was perpetuated.' (ibid). Woodburn further observed that much inter-camp visiting was stimulated by gambling,

whether to keep hold of winnings or to retrieve them from winners, thus ensuring that scarce goods circulated among all Hadza without forms of exchange that would bind people in potentially unequal relations of contract or indebtedness, or of one-way flows of goods that could create dependency.

> 'Individual effort, craft skill and, particularly, the skill of trading with outsiders are quite variable. The attraction of gambling mobilises effort and skill but distributes its proceeds at random in a way which subverts the accumulation of individual wealth by the hard-working or by the skilled. It further subverts any tendency to regional differentiation within Hadza country based on valuable local resources which are in demand in other areas.' (Woodburn 1982, 442).

Whereas Woodburn noted that many men spent more time playing *lukuchuko* than they did hunting or gathering, Marlowe and Petersen both note that *lukuchuko* has now waned in most areas, possibly because of the greater availability of scrap metal, and money from tourism and researchers. Nonetheless, young men in Tli'ika have recently begun to play *dobuko,* a modification of *lukuchuko.* In this game, individuals try to throw coins closest to a hole in the ground (Petersen 2013, 130).

Petersen quotes two Hadza men: '"*That game* lukuchuko *eats poison arrows"* Endeko,' and '"*Men can lose everything they have including harmony with their wife and children."* Elder Kampala.' (2013, 131). These echo many Hadza's views that *lukuchuko* (like other forms of gambling) is highly addictive, and derives from watching some men spend so much time playing that they lose all their personal possessions, have little time left to search for food or care for their children, and in chasing their lost goods to other camps, occasionally even left their wives behind.

In the Hadza case, the motor driving the circulation of rare, skilfully crafted or difficult to obtain goods, and objects from outside Hadza country, is the pleasure derived from gambling. The pleasure of winning beautiful objects – a fine arrow is a beautiful object to a skilled hunter – and of winning back prized possessions that have been lost. This pleasure, which can verge on addiction in some individuals, made the game compulsive, so ensuring that rare non-local goods circulated to every part of Hadza country.

Employing a different strategy, San groups over a vast region of southern Africa participate in long distance gift-giving networks called *xaro*[1] that circulate non-food goods such as beadwork, clothing, hunting and gathering equipment, kitchenware and livestock. The networks distributed these goods remarkably evenly across San groups, despite some camps having easy access to wages and store-purchased goods, and others to none. Polly Weissner reports that 'For the 59 !Kung in the sample, 69% of a person's possessions were obtained through *hxaro*, while the remaining 30% were made or purchased by the owner, but destined for *hxaro* networks' (1982, 70). San choose a widely spatially distributed set of *xaro* partners; about a third are !Kung leading similar lifestyles to their own, another third are those leading very different lifestyles or living in very different environments (e.g. farms or settlements) and another third are made up of adolescents and elderly people. Wiessner's work shows that in 1968–69 and 1974 most extended visits by !Kung to different areas were to give gifts to *xaro* partners.

Wiessner's detailed ethnographic study of *xaro* networks demonstrates how they provide a framework within which San groups 'import and export goods to and from local and world markets' and 'structure ties that allow !Kung to redistribute themselves over traditional and nontraditional resources.' (1986, 121).

> *Hxaro* chains, literally 'paths for things', extend for hundreds of kilometers, sometimes crossing linguistic boundaries, although knowledge of others on a *hxaro* path does not extend beyond a certain segment. Wiessner (1986, 109).

As trade goods pass from one *xaro* partner to another they are often altered to fit the aesthetic expectations and existing repertoire of San material culture, and/or to express San identity. 'The continuity and integrity still found in material culture in remote areas may thus be, in part, attributable to the structure of *hxaro* paths.' (1986, 114).

Reflecting on the long, uneven history of the San's engagement with non-San, beginning 1500 years ago in some areas outside the sandveld, Wiessner remarks:

> although items foreign to San culture constantly move along *hxaro* networks [Wiessner 1981, 1982], at least until the mid-1970s many items of !Kung material culture did not undergo great change … The greatest outside influences were in the adoption of a few items of great utility such as cooking pots, and the substitution of new materials for old ones [i.e. iron for bone and glass

> beads for ostrich egg shell beads]. In addition, a San specific repertory of material culture covers vast areas ... For example, in the early 1970s among hunting and gathering groups, 90 percent of the material culture was shared by the !Kung, G/wi and !Xo [Wiessner 1983]. (Wiessner 1986, 104).

Here, as in the BaYaka and Hadza examples, the underlying system demonstrates great resilience, able to incorporate the introduction of new items, and surviving for long periods of time without losing its underlying efficacy and structure. Since 2000 these groups have experienced an intensified onslaught on their cultural integrity and autonomy as their land is dispossessed, occupied or impoverished by commercial, industrial and conservation activities, and governments oblige them to sedentarize. Their hunting and gathering lifestyle has been effectively forbidden in many countries by government agencies and international conservationists pressuring for control of biodiverse landscapes at the expense of local peoples' rights and livelihoods (Lewis 2016). Despite this recent dramatic downturn in hunter-gatherers' ability to practice their lifestyles, these dual distribution systems have persisted in some form or other – though more successfully among BaYaka than among Hadza or San.

To better understand the source of this resilience a consideration of the quite different organization and motivation of these distribution systems to those current in industrial-capitalist societies is illuminating. While I have outlined the organizational differences of each system, it is at the motivational level that similarities emerge. When reading Wiessner's ethnography describing the atmosphere in which *xaro* goods are prepared for passing on to a *xaro* partner, or received by the partner, the importance of expressing affection and the pleasure this produces, is what people say motivates the transfer of goods.

In contrast to items for trade with outsiders that are made quickly and often alone, items for *xaro* are manufactured over weeks or months in groups sitting together telling stories and laughing. For instance, a store-purchased woolly hat received from one *xaro* partner will be un-stitched and re-woven to change the pattern before being given to another partner.

> '*Hxaro* gifts are surrounded by an air of appreciation and expectation partially because many are either pretty or useful and the !Kung enjoy having new things, and partly because they are the expression of a social relationship … [T]hey grow in social value through conversation after conversation. Others can later recognize their maker and know how much care was put into them. (Wiessner 1982, 71).

Like the Trobriand *kula* gift that contains something of the essence of the giver to make the receiver feel obliged to return the gift (what the Maori call *hau*, Mauss 2000), so *xaro* gifts materially embody the maker's love, care and attention for the person to which they are destined. It is this expression of affection that motivates the entire system to move valued items over hundreds of kilometres and distribute them surprisingly evenly across San groups. 'Most !Kung feel it is not only the responsibility of the receiver to reciprocate, but of the giver to make him want to do so.' (Wiessner 1986, 106).

The cultural importance and pleasure for !Kung people of holding each other in mind even if they cannot be present with them is well illustrated in Wiessner's fascinating comparison of the content of daytime and night-time conversations:

> Night conversations also conveyed the broader structure of *xaro* exchange, particularly remembering distant *xaro* partners. Nine of 122 (7%) day conversations included stories about the exploits of people who were direct or indirect *xaro* partners, compared with 41 of 52 (79%) stories told at night. Night conversations used multimodal communication with gestures, imitation, sound effects, or bursts of song that brought the characters right to the hearth and into the hearts of listeners. People went to sleep with absent kin filling their thoughts; not infrequently they left for visits shortly after. (2014, 4/9).

Conclusion

In contrast to similarities evident in how the demand sharing of local produce is conducted in each society, their systems for circulating non-local products between small, remote and highly dispersed populations are different. Each demonstrates a different economic solution that establishes these societies as existing at both small and large scale, while effectively circulating goods without creating dependencies, indebtedness or political inequalities at either scale. The pleasure derived from holding distant relatives and friends in mind as non-local objects are transformed into San artefacts to demonstrate the maker's affection, and then receiving that affection through the *xaro* object, is what drives the San system for distributing non-lo-

cal goods. The Hadza's, by the pleasure of winning exotic or beautiful objects, and of winning back prized possessions that have been lost. The BaYaka's system is driven by the search for novelty in ritual musics and the social concentration of accompanying performances that reliably produce collective joy and consumables for feasting and indulgence.

Rather than depending on authority or obligation between strangers, their economic systems for distributing their most valued non-food items are motivated by peoples' pleasure-seeking propensities. They are positively reinforced by the delight generated by participation in moments of intense sociality as small groups come together or visit one another – the search for joy among BaYaka, the compulsive pleasure derived from gambling among Hadza, and the opportunity to hold in mind, cherish and demonstrate affection for distant relatives and friends among San. When dwelling in such small-scale societies for most of the year, key moments in which groups come together, whether to dance and sing, eat berries and gamble, or to give or receive lovingly made gifts, are yearned for in a way difficult for many WEIRD (western, educated, industrialized, rich and developed – Heinrich et al. 2010) people to appreciate. It is these moments of large-scale self-awareness, of social concentration and emotional intensity in which prized goods are distributed, that are recounted and discussed as highlights of the recent past, often humorously and vividly brought to life in the intimacy and charm of fire-lit conversations.

In different ways, each system depends on culturally specific pleasure-seeking propensities to circulate outside goods alongside local items, genes, news and stories, broadly across constituent groups. Such dual economic systems are hinted at beyond immediate-return African hunter-gatherers; Tonkinson's (2005) account of how new songs and ancestral rituals emerge and are traded between Aboriginal Australians for important items such as weapons, shows how this circulated these prized items between groups in a large part of Western Australia. Such examples offer ethnographically grounded suggestions to guide investigations of archaeological sites such as Wadi Sura (Honore, this volume) where meeting for ceremony may have supported sharing other items unevenly distributed in the surrounding region.

While being suggestive of much greater variation among such systems in the past, this presentation of three of these dual economic systems for distributing local and non-local products demonstrates that these modern societies of hunter-gatherers and former hunter-gatherers are adapting and fashioning their worlds according to their values and preoccupations in response to the opportunities presented or denied them by the vagaries of history and change. The San incorporated new items of utility or beauty into *xaro*, where possible refashioning them at each stage of their journey along *xaro* paths to become more San in their aesthetics and styling, or how BaYaka adapted to incorporate iron and now money into their spirit-play economy, or, at least some Hadza, gambling for coins rather than arrow heads now that money's fungibility provides access to many of the key goods previously distributed by *lukuchuko*.

The extent and resilience of these distribution systems until very recently, is striking. *Xaro* paths stretched hundreds of miles across the Kalahari well beyond any known individuals; the BaYaka spirit plays of Ejengi, Yelle or Ngoku, are shared by many tens of thousands of people speaking different languages and living in different countries but who self-consciously recognize each other as sharing the same values, political system and origins. Among BaYaka their shared participation in spirit plays establish an awareness of themselves at a civilizational scale, and mark them as distinctive from politically hierarchical, non-sharing non-hunter-gatherers living in the same region.

The common thread in these alternative African economies is that they are dependent or maintained over long periods by culturally mediated pleasure-seeking rather than by exchange, balanced reciprocity, indebtedness, dependency or sanctions. While each form is different, culturally adapted to the environment and social aesthetics of the culture in which it is embedded, each appears to have been highly effective. Without written laws, specialized roles or institutions to arbitrate disputes or enforce social values, they have been able to ensure long-term continuity through institutions that are non-coercive because they are based on cultivating shared pleasures, on celebrating joy, affection and sociability in the process of revealing a large-scale sense of identity and belonging to participants.

Such hunter-gatherer economic systems show that despite non-producers claiming most of their production, producers are not demotivated, but continue to produce. This may seem paradoxical, but the long duration of these hunter-gatherer societies demonstrates that these are successful and resilient economic arrangements for distributing both local and non-local goods across huge areas, and fairly evenly between widely dispersed small-scale communities occupying some of the most challenging environments for modern transportation and distribution networks.

The distributional systems summarized here offer an explicit critique of current economic orthodoxy that

assumes successful production or exchange requires material rewards to function.[2] Reward to motivate production is fundamental to capitalist ideology, but is not universally true. For instance, both historically and today, numerous hobbyists often spend a large proportion of their personal resources and time on pursuing their passion. Such non-materially rewarded activity can often be the main focus of an individuals' life, pleasures and free time, but is rarely their means of earning a living or sustaining themselves and their families. By contrast these hunter-gatherer economies have successfully harnessed this human propensity by directly incorporating pleasure-seeking to motivate their distribution systems for scarce and valuable non-local goods over great distances and across highly dispersed populations. In line with their egalitarian ethos, such systems do not depend on authority figures, enforcement bodies or sanctions.

Bird-David's recent work (2017 and this volume) on the importance of taking into account the small-scale nature of hunter-gatherer communities serves as an important reminder of the need for ethnographers to consider the personal, the intimate, the value people in such communities place on caring for one another, and on positive emotional relationships with those around them. Bird-David's analysis of the Indian Nayaka shows the importance of face-to-face interaction or 'pluripresence' in constituting peoples' sense of themselves as a group extending beyond the self, but in a very localized way (2017). In contrast to this Indian example, the secondary distribution systems for non-local products among the African hunter-gatherers described here make present a virtual social group that extends well beyond those in local camps. This wider community extends the notion of 'who we are' to groups and people so far from the local area that they would be unknowable but for these systems distributing their products regionally. Thus BaYaka are made aware of others like themselves in distant communities through experiencing their musical and ritual creativity as they sing their songs and dance their forest spirits. San make distant relatives and friends daily present through the work that imbues *xaro* goods with the affection of the giver, and wearing or using them each day keeps those distant others in mind. As Hadza track their lost gambled goods, or enjoy those they have won from others, they are reminded of their extended community made present through these objects.

Notes

1 The spelling has changed from *xharo* to *xaro* in more recent publications. I use *xaro* here, unless quoting from an earlier publication.

2 The efficacy of non-coercive distributional systems driven by collective pleasures have only recently been more formally integrated into capitalist systems by the success of content sharing platforms such as YouTube, Facebook, Instagram, Musically, Pinterest, Tiktok, Open Street Map, etc. or in freeware projects such as Open Office, and in certain real-world spaces such as volunteer-run charity activities, hackathons, or similar community projects.

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Chapter 8

The archaeology of sharing immaterial things: social gatherings and the making of collective identities among Eastern Saharan hunter-gatherers

Emmanuelle Honoré

The most challenging practices to detect in the archaeological record are those evidenced by the fewest traces, as they leave a broad area for interpretation. It is not unusual for the physical remains of a unique archaeological site to be read in completely different ways by different researchers, even before starting the reconstruction of ancient peoples' lives (Muzzolini 1986, 35). The sharing of food is a common topic in the anthropological and archaeological literature (Gurven & Jaeggi 2015; Enloe 2003), whilst the sharing of immaterial things remains little investigated, especially in archaeology. The latter concept is fraught with pitfalls, justifying why it is still barely found in archaeology. With insights gained from a case study involving Late Stone Age rock art, this chapter examines how the sharing of immaterial things can be studied in the archaeological record. On the walls of natural shelters nested in the rocky flanks of the Libyan Desert massifs, hunter-gatherer groups represented themselves performing group activities. Images of social gatherings allow one to question the relevance and significance of the concept of sharing – especially applied to immaterial things – both for the hunter-gatherers who painted such scenes and, more generally, in our discipline.

The concept and the practice of sharing in archaeology

The sharing of material things is a practice that has potential material manifestations in the archaeological record. However, sharing leaves only indirect traces or no traces at all when it concerns immaterial things. The concept and practice of sharing has been studied more by anthropologists than by archaeologists so far: most – if not all – theories about sharing amongst hunter-gatherers have been elaborated by anthropologists (amongst others Service 1966; Ingold 1980; Bird-David 1992; Hawkes 1993). One key aspect of several early theories is that the double diet of meat and plants, hunting and gathering, involves a division of tasks and, consequently, the sharing of food. Based on evolutionary theories, researchers have traditionally assumed that the division of tasks was made on a sexual basis: men hunt and women gather (Lee & DeVore 1968, 11). A number of experimental studies has provided evidence for both qualitative and quantitative differences between male and females when performing hunting and/or gathering tasks (Silverman & Eals 1992; Panter-Brick 2002; Pacheco-Cobos et al. 2010). Data for energy expense and types of spatial ability would indicate that women are more efficient in gathering (landmark strategy) and men in hunting (orientation strategy related to mobile preys). After having been viewed initially as the 'natural' explanation of sharing, the division of labour explained by sex differences has then rapidly been considered as the necessary proof of it. Some ethnographic counter-examples – among which the Guayaki men who gather (Clastres 1974, 89–90) and the Ainu or Inuit women who hunt (Testart 1986) – prove that this rather simplistic scheme has perhaps to do more with what Wiktor Stoczkowski (1994) calls 'naïve anthropology' rather than with the scientific justification of the origins of sharing amongst hunter-gatherers, as there is no regularity across different hunter-gatherer societies (Bird-David 1992, 28). Sharing is not always justified by bare necessities. Many different forms of sharing happen, between different agents or groups and for different purposes. Furthermore, what is analysed in the archaeological and anthropological literature as sharing is not always practiced or explicitly assumed as such.

Sharing: an ambivalent concept

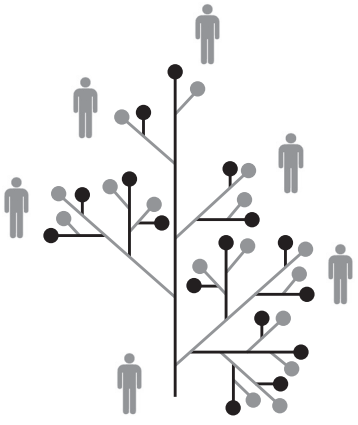
In practice, there is no strict boundary between what is 'exchanging' and what is 'sharing', or between what is 'giving' and what is 'sharing' (Gurven 2004). Research on sharing is imbued by the topic's theo-

retical underpinnings within the nebulous galaxy of concepts that includes distribution, exchange and gift: the obligation of reciprocity invoked by giving and/or sharing (Mauss 2007; Godelier 1996), the theory of generalized exchange or 'social exchange theory' (Ekeh 1974; Sahlins 1972), and the many processes involved in specific forms of sharing like the ceremonial exchange of the *potlatch* (Barnett 1938; Boas 1896), the *kula* or the *gimwali* (Malinowski 1922; Weiner 1988), linking together the obligations of giving, receiving and giving back (Mauss 2007, 247; – see also Widlock, this volume). Except in complex forms of reciprocity (Weiner 1992), sharing material things involves giving – or 'giving up' (Hawkes 1993, 341) – part of them. Nonetheless the term itself is ambiguous. Sharing can refer to division: when people share a portion of food, they divide it into different parts, either equally or unequally – the cake-cutting problem. 'Any system of sharing is arbitrary, thus unfair' (Testart 1985, 163). It can lead to conflict and to disunity, contrary to what is implied by the term sharing when defined as 'put in common', from which the word 'community' derives. In this regard, a distinction can be made between the sharing of material goods, which means in most cases dividing, and the sharing of immaterial things, which means in most cases multiplying (Fig. 8.1). The sharing of immaterial things does not necessarily mean that the group will not face disadvantage. For example, if one group shares strategic information about the location of a source of raw material, this group could face some disadvantage because they no longer have sole access to the source.

The concept of sharing has been the starting point of discordant theories, from collectivism and primitive communism to the origins of capitalism viewed as a system of relations. At one extremity of the spectrum is the theory of the altruistic nature of humans: sharing, more than fighting, was the leading cause of the Plio-Pleistocene hominization; humans are naturally good and caring (Isaac 1978). At the other extreme, neo-Marxist theories state that sharing has engendered a form of domination: 'What is called sharing is not the only distribution, but it also refers to a form of appropriation of the thing and thus, to a relation of production' (Testart 1985, 11). Sharing is studied as one concept in this volume (Lavi & Friesem, introduction) but it is actually many concepts depending on the nature of the thing shared, the motivations of the sharer (egoistic or altruistic; see Vermunt 2014, 61) and the significance of the practice in a given society, which is not always and/or necessarily a 'social whole' (Gellner 2003).

The only point on which anthropologists and archaeologists agree is that sharing is universal or almost universal (Sahlins 1965) and of considerable importance in social mechanisms. '*Sharing* is the central rule of social interaction among hunters and gatherers' (Lee & Daly 1999, 4). In practice, the different forms of sharing (Testart 1985, 64–5) are difficult to distinguish and many anthropological theories remain nearly unverifiable on archaeological sites, since the identification of sharing practices themselves is already a matter of debate. Sharing is a weakly operative concept in the field: the nature of the archaeological record makes it almost undetectable. As noted by James Enloe (2003, 4), 'the difficulty lies first in establishing that food sharing took place, as opposed to the mere assertion that it did'.

Sharing *material* things



Sharing *immaterial* things

Figure 8.1. *A visual representation of the sharing of material things (dividing) and the sharing of immaterial things (multiplying).*

Thus far, sharing has been debated mostly in terms of food sharing. Indeed, in ancient societies, 'the economy is only seen for its visible moments' (Corsin Jimenez & Willerslev 2007, 528). Food sharing has the advantage of being quantifiable (Ingold 1980, 147). But archaeology is a discipline based on material evidence, and practices of sharing involving only immaterial things are much more difficult to detect. They remain unnoticed if no indirect remnant testifies to them, and detection relies mostly on inferences supported by the necessary dialogue of archaeology and anthropology. From a 'palimpsest fieldwork', it is a challenge to trace back the concept and to link material evidence with such evanescent practices.

Approaching the sharing of immaterial things in archaeology

There have been many attempts by archaeologists to study immaterial concepts and practices that leave no direct evidence. What anthropologists call the 'sharing of knowledge' (see Salali et al. 2016 for the concept of 'cumulative culture') can be traced back, for example, in the level of technical skills in stone tool manufacture, testifying to learning steps (Karlin 1991, 139–40). During the past decade, researchers have stepped up efforts to address themes that are not directly accessible from the archaeological record, having developed the archaeology of performance (Inomata & Coben 2006; DeMarrais 2014), the archaeology of feast (Dietler & Hayden 2001; Hayden 2014) and the even more intangible archaeology of emotions and feelings (Harris & Sørensen 2010).

Despite a consistent willingness to approach human behaviour in its entire complexity, there remain obvious limits constituted by the very nature of the archaeological record, which gives access in priority to technical aspects. As early as the 1960s, André Leroi-Gourhan founded the *Ethnologie Préhistorique* (Prehistoric ethnology), with the aim of studying Magdalenian groups at Pincevent as an ethnographer would do. The intention was not only to describe finds as it is done in traditional archaeology, but also to reconstruct the complete life of groups in space and time. The *Ethnologie Préhistorique* was primarily concerned with technical processes (Leroi-Gourhan 1943, 1945, 1964, 1965), especially with the reconstitution of the *chaînes opératoires*. Other attempts have followed the same path: when Michael Schiffer and James M. Skibo founded the laboratory of behavioural archaeology at the University of Arizona, they called it the 'Laboratory for Traditional Technology' (Schiffer 1992; Skibo & Schiffer 2009; Schiffer 2011). Such major historical examples highlight how hardly accessible are, in archaeology, past actions having involved to a least extent the material culture or any technical action – as it is the case for the sharing of immaterial things.

Interaction and the making of social existences by sharing performances

The rock art record of the so-called 'Green Sahara' includes numerous paintings of humans performing various activities, making it key to the investigation of social existences and interactions. In the Gilf el-Kebir, in the Libyan Desert (Egypt), images of collective gatherings provide invaluable insights into what might have been group events and festive meetings during the later prehistory of the region, given that we have found no other archaeological evidence of such things so far. Be they snapshots of concrete events or idealized representations of the group, the images testify to an intricate social life relying on gathering, performing and sharing together.

The rock art site of Wadi Sūra II is located in a remote area of the Libyan Desert in the Eastern Sahara: the Gilf el-Kebir, a massif in southwestern Egypt, not far from the Libyan and Sudanese borders (Fig. 8.2). The site is on the southwestern border of the northwestern Abu Ras plateau, in a region with a very high density of rock art sites, contrasting with the south plateau of the Gilf el-Kebir (the Kemal el-Din plateau) (Honoré, in press). It is a naturally curved rock wall of 20 meters, a typical large rock shelter – despite it has been called the 'Cave of Beasts' (Kuper 2013). According to archaeological evidence, the micro-region was peopled during what are called the Gilf B (6500–4400 BC) and the Gilf C (4400–3500 BC) phases (Gehlen et al. 2002, 104–5). There is only very scarce evidence of a Gilf A occupation phase (starting from 8100 BC) (Riemer & Bartz 2013, 32–7), even though data show that the palaeoenvironmental setting was most probably suitable for sustaining a hunter-gatherer way of life during this early phase (Kröpelin 1987).

Covered with around 8000 paintings and engravings, Wadi Sūra II is one of the most important rock art sites in the world (Fig. 8.3). Discovered in 2002, it has been digitally recorded by a team from the University of Cologne (Kuper 2013). Several layers of paintings are superimposed on the walls (Watrin, Saad & Honoré 2008). Like Wadi Sūra I, Wadi Sūra II does not show figures painted in the typical pastoralist rock art style widely disseminated in the Gilf-'Uweināt area (Zboray 2013). Considering the depiction of hunting activities and the absence of clearly identifiable domesticated animals in the motifs, it is highly probable that the Wadi Sūra II paintings pre-date

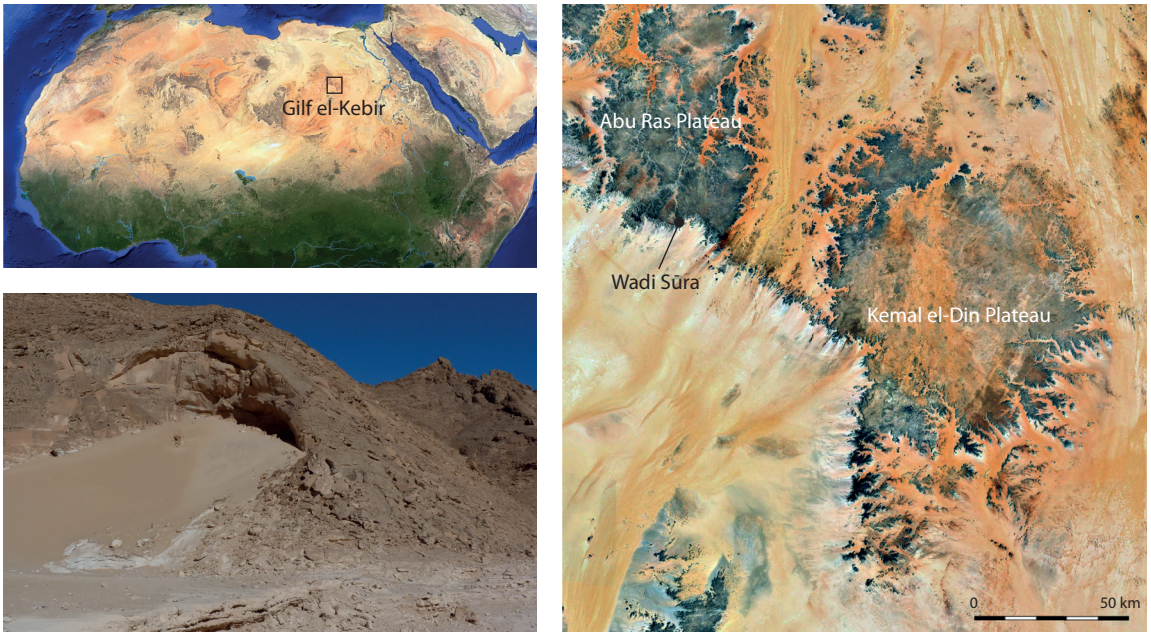


Figure 8.2. *Location map and general view of Wadi Sūra II, Eastern Sahara.*

Figure 8.3. *The central panel of Wadi Sūra II paintings.*

domestication in the region and should therefore be assigned to hunter-gatherer groups. In terms of chronology, no direct dating has been carried out but most authors agree on a dating of the main layers of paintings to between the seventh and the fifth millennium BC (Riemer, Kröpelin & Zboray 2017, fig. 6), varying from between the second half of the seventh millennium BC and the sixth millennium BC, around 6000 BC (Honoré et al. 2016, 246), to between 5500 and 5000 BC (Riemer, Kröpelin & Zboray 2017, 20).

The repertoire at Wadi Sūra, as well as more widely in Saharan rock art, is dominated by the human figure. In depictions of group activities, several scenes involve more than five people mostly undifferentiated in terms of their appearance (same colour, same dress) and in similar positions (Figs. 8.4–8.6). In these scenes, some elements seem to underline the importance of dance and music. Two groups appear in frontal view with legs bent like those of crabs. This posture is never adopted by an individual

Figure 8.4. *A group of human figures depicted with legs bent like those of crabs in the rock art of Wadi Sūra II.*

Figure 8.5. *Human figures in a row at Wadi Sūra II.*

Figure 8.6. *A row of human figures holding what could be musical instruments (drums?) at Wadi Sūra II.*

alone, it is exclusive to groups. The position of the arms varies: most of the time, they are opened like the legs and slightly flexed (Fig. 8.5), but they can also be one down and one up (Fig. 8.4), or together on one side (Fig. 8.6). It is hypothesized that these dynamic postures could represent dancing (Honoré in press, 6). According to Yosef Garfinkel (2003, 18–19), the depiction of movement in a static medium can be achieved by four means; three (excepting figures depicted in a circle) are found in Wadi Sūra II scenes: humans depicted sharing the same direction, the same rhythm and the same body position. All individuals are in row, facing altogether someone or something. Moreover, their specific body position recalls tribal dances and is especially close to the most characteristic steps in African dance (Menardi Noguera, pers. comm.; Asante 1996). In some tribal dances, like the Kapa Haka performed by the Maoris, the primary intention is to intimidate opponents, but the circumstances and aims of group dances are numerous: for celebration, for ritual purposes, for natural and supernatural entities, for competition, for courtship, etc. In any case, performing together is a way of reinforcing group cohesion with the sharing of a more or less codified performance by all members of the group, or by members of a subgroup. Several visual elements emphasize the importance of group membership: there is no difference in status, gender or age expressed, and even no marker of it. Finally, the human figures hold objects in the form of large sticks (Fig. 8.6). Based on their size and shape, they could be portable traditional drums like, for example, the Saharan lithophones identified by Erik Gonthier at the Musée de l'Homme in Paris and most probably spread in different regions of the world during late prehistory (Gonthier 2005; 2006; Caldwell 2013).

Group cohesion and the different forms of sharing

How should we interpret the Wadi Sūra II scenes? While Michael Dietler and Brian Hayden's theory of feast has a special focus on the sharing of food and beverages in collective gatherings, the Wadi Sūra II images invite us to consider the importance of immaterial shares such as moments, actions and performances (and any share that is non-directly useful to subsistence) for enhancing group cohesion. As early as the late nineteenth century, the German sociologist Ferdinand Tönnies (1887/2017) distinguished between 'community' *(Gemeinschaft)* and 'society' *(Gesellschaft)* as two types of human groupings. In his theory, sharing is practiced in both forms of human groupings, but in a 'community' the whole and the unity of the whole (the 'common good' and the 'common will') are paramount, whereas a 'society' is an agglomeration of individuals in which individual will *(Kürwillen)* is a driving force. Depending on the type of activities performed, and despite the fact that they are all cooperative, the painters at Wadi Sūra II have depicted both types of human groupings: the 'society' in hunting scenes with differentiated individuals, and the 'community' in dancing scenes with unity reflected *inter alia* by the physical uniformity of the people involved. The humans depicted on Wadi Sūra II walls perform the same activities, but the way they are depicted shows that they share more than dancing: they share a common identity.

A second level of interpretation is accessible from the same scenes. The act of depicting images of collective gatherings can be viewed as resulting from an intention to share memories of those shared moments. As defined by Andrew Jones, remembrance is 'a bodily encounter between people and things as people don't remember in isolation nor do artefacts' (2007, 26). Images act as the materiality of actions leaving otherwise no material traces. Creating rock art is also a performance in itself; therefore depicting images of past or imagined performances is a double *mise en abyme*. The number of superimpositions of paintings in the same place at the Wadi Sūra II site poses a question of the meaning of this site and of the importance of perpetuating tradition.

Finally, the question of the formation of collective memories needs be raised. The reinforcing of group identity can happen as much in the sharing of an image of the group performing dance as it can in the sharing of the performance of the dance itself. Depicting these actions in a certain way has fixed an image of the group: a shared memory or what we could term with Paul Connerton (1989, 6–40) a 'social memory'. Several researchers have argued that rock art can be studied as places and instruments of memory (Wrigglesworth 2006; Armstrong 2010; Morphy 2012; McNeil 2012). These innovative approaches have to be nuanced with the fact that this memory can be a construction, and is not necessarily a transcription of moments and things that actually happened. As such, it can be a virtual memory constructed to provide historical grounds to a social reality or, at Wadi Sūra II, to inspire the feeling of being part of a long-established community. Dan Sperber, the originator of the theory of the 'epidemiology of representations', explains that a cultural representation 'includes a set of mental and public representations. Each mental version is the product of the interpretation of a public representation, which is itself the expression of a mental representation' (1996, 40). The process of making rock art images (pictorial representations) borrows from mental representations

deriving themselves from commonly shared opinions and memories, and contributes in return – by sharing the images – to the formation of collective representations (of 'cultural representations' in Sperber's terms).

Conclusion

Despite the long-standing dialogue between archaeology and anthropology, the different nature of the material they study makes it difficult for archaeologists to fully benefit from the advances in anthropology on the concept of sharing. The majority of sharing events in the past have no transcription in the archaeological record, and most theories are hardly workable with fragmentary evidence, especially when working on the archaeology of hunter-gatherers. Acting as a transcription of group gatherings, rock art images on the walls of Wadi Sūra II testify to a complex social life. Even though immaterial shares are less visible in archaeology, the case study presented in this chapter seems to show that the sharing of dance performances has been a more cohesive form of sharing than subsistence-related shares amongst the Late Stone Age hunter-gatherer groups in northeastern Africa. The hypothesis developed here is that the depiction of similar people when they perform ritual dances, while they are individualized in other group activities like hunting, may result from the intention to depict the 'community' more than the 'society'. As such, the scope and significance of sharing has been substantially different in these groups depending on the thing shared. Painting such performances contributed to the representation of social identities, the definition of which was different depending on the activity performed. Ultimately, rock art appears as a means of sharing a certain idea of the group within the group and, beyond, with any onlooker.

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Chapter 9

Information sharing in times of scarcity: drought strategies in the Kalahari Desert and the central plains of North America

Alan J. Osborn & Robert K. Hitchcock

Anthropologists and archaeologists interested in hunter-gatherers have given a great deal of attention to technology, subsistence, and social organization but less to information and information sharing (e.g. Binford 2001; Crothers 2004; Damas 1969; Kent 1996; Leacock & Lee 1982; Lee & Daly 1999; Lee & DeVore 1968; Panter-Brick et al. 2001). There are, however, notable exceptions to this generalization (e.g. Barton et al. 1994; Conkey 1978; Moore 1981; Whallon 2006; Whallon et al. 2011; Wobst 1977).

All sentient organisms receive a diverse array of information from their surroundings, and they possess multiple means for conveying information to other individuals. Animals are able to transmit information via calls, displays, and formalized interactions as well as by means of phenotypic features (e.g. horns, antlers, ruffs, colourful plumage, and so forth; see Smith 1977). Among humans, information or knowledge can be transmitted verbally or non-verbally via real time conversations, displays, dance, ritualized behaviour, and body adornment. In addition, information may be exchanged indirectly via petroglyphs, pictographs, message sticks, and portable 'art'. We propose that human communication is information sharing and operates at two levels. First, effective verbal and visual communication requires that both senders and receivers share underlying coded systems and conventions. Second, both direct and indirect human interactions convey shared information that ultimately alters the behaviour of the receiver(s) in the short- and long-term.

Human body modification (e.g. tattooing, scarification, cranial deformation, neck rings, and dental inlays) and body adornment can be viewed as a behavioural means *to physically alter and/or enhance our phenotype* in order to communicate or transmit supplemental information about ones physical and social status. Clothing (including belts, headbands, and accessories), hair styles, jewelry, and body pigments provide additional information in various arenas of social interaction. Human communication involving these various forms of information exchange can only be effective if senders and receivers share underlying coding systems and conventions.

In the fall of 2016, the McDonald Institute for Archaeological Research at Cambridge University held a conference titled *SHARING: The Archaeology and Anthropology of Hunter-Gatherers*. This conference was meant to encourage archaeologists and anthropologists to collaborate in their studies of sharing behaviour among hunter-gatherers. Such collaboration has perhaps occurred more frequently in North America, particularly in the Great Plains, the American Southwest, and the Great Basin where the boundary between past and present indigenous people is less distinct as compared to other regions of the world (e.g. Eggan 1952; Steward 1938; Wedel 1938). For example, Julian Steward conducted extensive ethnographic fieldwork among Paiute and Shoshoni hunter-gatherers in the Basin-Plateau region of North America (1938). His model of hunter-gatherer land use was re-examined by David Hurst Thomas using archaeological survey and excavation data (Thomas 1969, 1971, 1972). More recently, Lewis R. Binford's (2001) extensive research regarding modern hunter-gatherers of the world has resulted in a number of archaeological studies to test his empirically generated expectations (Johnson 2008; Johnson 2013; Johnson & Hard 2008; Johnson et al. 2014).

It should be noted that sharing is done at various levels among hunter-gatherers, pastoralists and farmers. At the camp level, sharing of food, such as the meat of larger animals, is done with relatives and friends who are present. This sharing is often directly and is not necessarily always seen as gift-exchange or requiring of reciprocity. Much of this sharing is done discreetly, not openly. Foraging peoples such as the Ju/'hoansi San gave gifts of food in order to reinforce

friendships and to reduce risk (Marshall 1961, 1976, 295–303; Wiessner 1977). These exchanges occur both at the camp and regional level. A specific example of food sharing at the regional level can be seen in the case of elephants which are sometimes killed by hunters who then request local community members from a number of different places to come to the kill site to help in the processing and to get some of the meat and other products (for a comparable discussion, see Barkai, this volume).

Networks of sharing relationships exist both within and between camps. As Jiro Tanaka points out about sharing among the G/ui and G//ana San of the Central Kalahari, Botswana,

> Food is shared equitably among those who are present [in the camp] and relieves all of them, not just certain members, from hunger. … They share 'as a matter of course' Tanaka 2014, 87).

Meat-sharing is one aspect of sharing that has received significant attention from archaeologists and anthropologists (Barkai, this volume; Marshall 1976, 295–303; Speth 1990; Speth & Spielmann 1983; Wenzel, Hovelsrud-Broda & Kishigami 2000). In camp settings, individuals can see one another and are very likely to know what kind of meat and other goods that are brought into camp. Sometimes, if an individual sees another person with meat, he or she will demand a share (see Peterson 1993; Schnegg 2015; Suzman 2017, 188–90; Widlok 2017, 64–8). If an individual does not share meat when asked, that person is seen as 'hard-hearted' or stingy, and becomes the subject of much criticism by others in the camp (Tanaka 2014, 78) . Meat is often shared in order to avoid evoking jealousy on the part of other people.

It is not just food that is shared at the camp level; it is also information. When a new group came to join another group at its residential location, a variety of information was shared, ranging from the distribution and abundance of resources in other areas to the location and activities of other groups. Information is also exchanged on such topics as the potential availability of an individual for marriage, the health status of people in other camps and their domestic animals, and the actions of government agencies that might affect a group's well-being.

One way to assess food sharing at the camp level is to look at site structure and the distribution of faunal remains (Yellen 1977a; Bartram 1993; Bartram, Kroll, & Bunn 1991; Enloe 2003). Sometimes hearths have scatters of trash including faunal remains near them while there are also cases where there are specialized activity areas such as butchering localities inside or on the edge of camps (Yellen 1977a; Hitchcock 1987). Analyses of the faunal remains can reveal patterns of butchering and meat distribution. The distribution of ostrich eggshell pieces and beads in camps also may reveal sharing patterns. The ostrich eggshells that are found and brought to camp are sometimes shared at the local level, thus enabling individuals, especially women and young girls, to manufacture beads (Hitchcock 2012; Ikeya 2018). Bead-making activities are often carried out under trees in sight of the shelters and hearths in camp. These days, bead-making is done using wooden drills with iron tips. Skins are used for sitting and for holding the ostrich eggshell and the beads that are produced, and sometimes beads, bead blanks, and ostrich eggshell pieces are found in concentrations in places where shade exists in camps.

Ostrich eggshell beads are manufactured at the camp level, but they are also shared at the regional level, linking people from different camps together. As will be shown in this paper, there are connections between the two systems – sharing of food and things and the sharing of information – and these connections are important in understanding of gift-giving and receiving and the roles that gift-giving facilitates the reinforcement of social relationships, maintaining friendly interactions, enhancing information dissemination, and reducing risk.

The present chapter explores information sharing among hunter-gatherers from both archaeological and anthropological perspectives. It focuses upon possible interrelationships between body adornment (i.e. beads) and information sharing among hunter-gatherers, pastoralists and cultivators. More specifically, we make use of the archaeological and ethnographic records of the North American Great Plains and the Kalahari Desert of southern Africa to gain greater insights into the systemic linkages between body adornment, information sharing, and environmental uncertainty. In both cases, particular attention will be given to the appearance, distribution, and context of beads in the archaeological and ethnographic record of these two regions.

Beads, adornment and information

Archaeologists have recently recovered a variety of beads from prehistoric sites in Europe, Asia, the Levant, Africa, and North America (e.g. Bar-Yosef-Mayer et al. 2017; Bednarik 2015; Bouzouggar et al. 2007; d'Errico et al. 2005; Jacobson 1987; Jodry 2010; Kabiru 2016; Kuhn et al. 2001; Kuhn & Stiner 2007; Quinn 2006; Stiner 2014; Vandiver & Gruhl 2011; Wilkins 2010; Wyllie & Hole 2012). Some of the earliest

beads include those recovered in Grotte des Pigeons near Taroralt, Morocco (Bouzouggar et al. 2007); the cave Godi Buticha in Ethiopia (Assefa et al. 2018) and Blombos Cave on the southern Cape of Africa (d'Errico et al. 2005; Vibe 2007) that date to 82,000, 43,000 and 75,000 years ago, respectively.

Archaeologists and palaeoanthropologists have argued that the early appearance(s) of rock art (parietal), portable art, and body ornamentation (e.g. pigments and jewelry) reflect the transition to modern humans marked by significant behavioural and cognitive changes (Kuhn et al. 2001; Kuhn & Stiner 2007; Stiner 2014; Wadley 2015; Wei et al. 2016; Gärdenfors & Lombard 2018). Interestingly, some researchers proposed that such non-utilitarian aspects of early Upper Palaeolithic culture reflect increased reliance upon information and communication technologies (Binford 1983; Conkey 1978; Houston 2004; Kuhn et al. 2001; Kuhn & Stiner 2007; Stiner 2014).

Regarding the elaborate array of body adornments worn by highland New Guinea males, Binford stated:

> …the material items they wear are tokens of social relationships and they circulate exclusively in terms of those negotiated alliances between individuals ….They are not trade-goods, but symbols. *They are not exchanged for their intrinsic value, but are worn because they carry information about the number and variety of alliances an individual has made* (Binford 1983, 147, emphasis added).

Researchers have also begun to view art and body adornment as mechanisms for transmitting information about the human condition. Such information may concern an individual, a group, or a more extensive social network. Barton et al. (1994, 191) point out:

> Conceptualizing art as a monitor of the volume of information flow channeled through regional and sub regional alliance networks allows us to model relationships between paleoenvironment, regional demography and the distribution of art that can be evaluated empirically.

Kuhn & Stiner propose that 'Body ornaments are most important for communicating to people "in the middle distance" socially, individuals who are close enough to the wearer to understand the meaning of the ornaments he or she wears, but who do not know her or him personally' (Kuhn et al. 2007, 47).

Kuhn & Stiner (2007, 51) go on to say that:

> … the appearance of this new medium of ornamentation [beads] implies that social information – and identities- were longer lasting and more structured, such that there was an advantage to expressing them in semi-permanent media. The particular choice of transferable, durable objects may also imply an expanded scale of social interaction, with messages exchanged over larger areas and among a wider variety of people.

At this point, it becomes necessary to think about conditions that require increased body adornment as well as 'expanded scales of social interaction'. We might then anticipate that uncertainties related to climate, plant and animal food resources, potable water, and intrusive human populations would select for increased collection, storage, and sharing of information. Sustained, long-term regional droughts would produce very significant uncertainties for hunter-gatherer, cultivator, and pastoralist populations (e.g. Meltzer 1999; Yellen 1977a, b; Fleuret 1988; Hitchcock 1979; Schnegg & Linke 2015; Schnegg & Bollig 2016). Human groups might respond to local droughts by shifting food getting strategies (e.g. cultivating to foraging). Under such conditions, foragers might also increase the frequencies of residential moves as well as the distances between residential locations. They also employ fall-back strategies, including selling off of assets, dipping into food stores, moving closer to pastoralists and farmers in order to take advantage of employment opportunities and food hand-outs or diversifying their food-getting activities, exploiting more diverse kinds of resources (Scudder 1971; Devitt 1977; Hitchcock 1979). Severe, long-lasting droughts may also be accompanied by dust storms that would adversely impact the viability of plants and animals (both wild and domesticated), availability of water, and human health (e,g., Mormon & Plumlee 2014). These dust storms are sometimes correlated with aridity and with a reduction of food availability, thus increasing risks to the livelihoods of individuals and communities.

Behavioural ecology and signalling theory

Recently, ecologists, anthropologists, and archaeologists have given considerable attention to signaling theory that includes costly, honest, and quality signals (e.g. Bliege Bird & Smith 2005; Bliege Bird et al. 2001; Dawkins & Krebs 1978; Gintis et al. 2001; Hawkes & Bliege Bird 2002; Hebets & Papaj 2005; Scott-Phillips

et al. 2012; Sheehan & Bergman 2016). Behavioural ecologists Sheehan & Bergman (2016) have recently proposed a conceptual framework that describes the interplay between social recognition and quality signalling among 'conspecifics' or individuals within a given population. We suggest that this conceptual framework is particularly applicable to our study of information sharing between and among prehistoric populations of hunter-gatherers, cultivators, and pastoralists in the arid lands of southern Africa and the North American Great Plains.

Sheehan & Bergman (2016, 2) state, 'Information reduces the uncertainty surrounding decisions … and animals can reduce uncertainty inherent in social interactions by acquiring information about the trait values of conspecifics ….' Individuals within a small group would possess information about the status and behaviour of others within the group as a result of social recognition or frequent observations and interactions regarding stable characteristics of group members. Social recognition, then, 'refers to information learned about the quality or characteristics of other individuals or groups of individuals during the course of social interaction or observations' (Sheehan & Berman 2016, 3). Social recognition in small group can provide very reliable information regarding individuals within the group.

As group membership increases, populations may become more dispersed and encounters become less frequent. We would expect to observe greater reliance upon quality signals (e.g. body adornment) that would be used to provide additional information about less familiar individuals. Quality signals among animals include badges of status or ornaments which transmit information about relatively stable aspects of sender quality related to resource holding potential (RHP) (Sheehan & Bergman 2016, 4). Importantly, Sheehan & Bergman (2017, 6) state, 'With quality signaling, information is gathered directly from the phenotype of the sender.' Consequently, information is transmitted during initial interactions so that previous interactions are not required. They (2016, 4) also state, that 'Signaling is relatively more costly for the senders that for receivers.' And, importantly, 'Once the meaning of a signal is learned, however, the information is transferable to all individuals and so does not add significantly to the marginal costs of attending to signals' (Sheehan & Bergman 2016, 4).

This behavioural ecological framework may, then, provide greater insights into the appearance and proliferation of prehistoric beads in the arid lands of southern Africa and the North American Great Plains. Small multi-family groups or bands would be expected to send and receive information through social recognition. These small social groups would have shared access to critical resources and would have consisted of closely related kin. Increased population size, increased residential mobility, and more extensive regional, social networks favoured the appearance and reliance upon quality signals (e.g. beads and pendants) so that more distantly related individuals and groups could enhance information flow (Fig. 9.1).

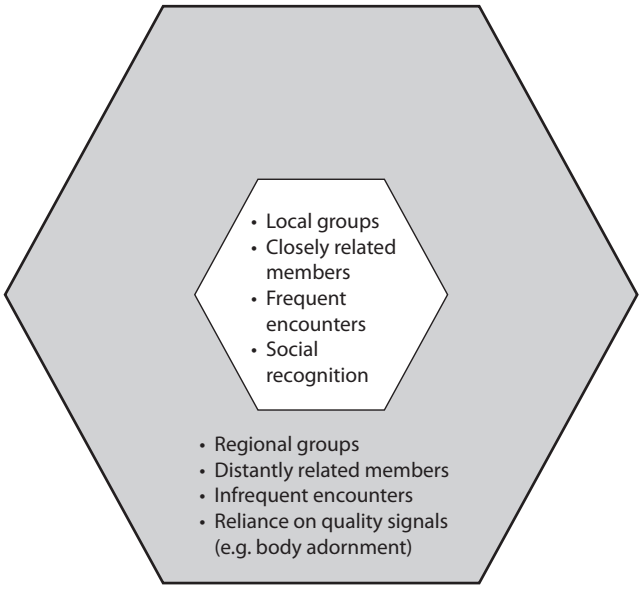

Figure 9.1. *Interpretive framework for understanding the interrelationships between social recognition and quality signals (based upon text by Sheehan & Bergman 2016).*

Beads and ethnology: the Kalahari Desert of Southern Africa

The San and their neighbours inhabit an immense sandfilled basin that covers between 900,000 and 1,100,000 sq. km (Mendelsohn et al. 2009, 48; Thomas & Shaw 2010, 2–9). This basin lies in the interior of southern Africa and stretches from the Congo River in the north to the northern part of South Africa in the south. Portions of Angola, Botswana, the Democratic Republic of Congo, Namibia, South Africa, Zambia, and Zimbabwe contain Kalahari sands.

Mean annual precipitation for the Kalahari Desert equals 250 mm and ranges from 170 to 700 mm (Smithers 1971, 11; Tanaka 1980, 21). Inter-annual variation in rainfall for the Kalahari may fluctuate more than 500 per cent. Droughts are frequent in the Kalahari and occur in two years out of five; severe droughts can be expected in one out of four years and there is a pattern of severe droughts every second decade (Lee

1979, 112; Manthe-Tsuaneng 2014; Tyson & Lindsey 1992; Tyson & Preston-Whyte 2000). Botswana was experiencing a serious drought in 2015-2016 and again in 2017–2018 which saw a wide range of options being employed by the San population in order to adapt to these periods of low rainfall and high stress. These options included migrating to new places in order to access food and employment; increasing their exchange of goods such as ostrich eggshell beads necklaces, headbands, and bracelets; seeking assistance from relatives, and opting to engage in government relief programs such as *Ipeleng* in which people are paid to debush agricultural fields, clear roads, and construct community facilities such as schools. One of the other responses of Ju/'hoansi, much to chagrin of community members, was to reduce the sizes of sharing units, not unlike the behaviour of Mikea in southwestern Madagascar (see Tucker, this volume). According to Wiessner (2014, 14028) 'The average Ju/'hoan in the1970s had 15–16 *hxaro* partners residing between 30 and 200 km away.' The number of *hxaro* partners appears to have declined by 2017–2018, when people Hitchcock interviewed said that they had fewer than 10 *hxaro* partners. It is clear, therefore, that patterns of sharing both at the community level and the regional level have declined, in part, perhaps, because of the shift toward a cash-based economic system.

Megadroughts

Mega-droughts, those lasting ten or more years, also have been known to occur in the Kalahari and adjacent areas (Cohen et al. 2007; Hoell et al. 2015, 2016; Hoell 2017; Woodborne et al. 2015). Tudhope et al. (2005, 1514) mention one drought in 2500 BC that lasted 6 years. Some of the drivers of the climate in southern Africa are postulated to be El Nino-Southern Oscillation (ENSO) events related to the monsoons and currents and other weather factors in the Indian Ocean and South Atlantic. Proxies for ascertaining drought events include the presence of burned daga (wattle and daub) floors in Iron Age sites, hyrax middens, bat guano in caves, pollen, and ostrich eggshell which can be dated (Brooks et al. 1990) as can geomorphological features (e.g. sand dunes, stream-cut areas such as *dombos*, *omaramba* and *mekgacha*), and stalagmites and stalactites in caves (Thomas & Shaw 2010; Thomas Huffman, pers. comm. 2017). Table 9.1 shows Late Stone Age and recent forager sites in the Kalahari that contain evidence of ostrich eggshell beads.

Beads and hxaro *in the ethnographic record*

An important social feature among Ju/'hoansi San in Botswana and Namibia relates to the exchange of non-food items (including ornaments) and gift-giving through a network that ties together people in dif-

Table 9.1. *Late Stone Age and recent forager sites in the Kalahari that have evidence of ostrich eggshell beads.*

Location	District	Features	Location
Cgae Cgae (/Xai/Xai, /Kae/Kae)	North West	The remains of 3 blinds were close to the pan	19° 52′46″ S 21° 04′50″ E
Chapman's Baobab	Central District	1 hunting blind close to the baobab, scatter of lithics and OES beads	20° 29′21″ S 25° 15′01″ E
ǂGi Pan	North West	14 blinds are in or close to ǂGi Pan; beads in the site	19° 37′ S 21° 01′ E
Gutsa Pan and Green's Tree	Central District	4 hunting blinds in the pan and one next to a tree; scatters of OES beads	20° 25′29″ S 25° 13′53″ E
Gwanasi, Tsodilo Hills	North West	Salt licks at pans south of the hills where there were lithics and OES beads and pieces of ostrich egg	18°45′ 40″ S 21°44′45″ E
Kaucaca Pan	Central District	Tshwa informants noted the use of blinds there and manufacture of OES beads	19° 52′45″S 25° 49′ 25′E
Kubu Island (Lekhubu)	Central District	Tshwa informants said blinds were used there and OES beads produced	20°53′23″ S 25°49′41″ E
Kudiakam Pan	Central District	5 hunting blinds in lowest part of pan, all with OES beads	20°7′58.08″ S 24°46″3.72″E
Ngxaishini Pan	Central District	Acheulean, MSA, LSA site with recent hunting blinds, OES beads in LSA portion	20°05′05.52″S 25°22′21.07″E
Nxai Pans	North West	Blinds located next to the pans at Baines' Baobabs, OES beads and blanks scattered in area	19° 50′45″ S 25° 25′53″ E
Toromoja	Central District	Lithic scatter with OES beads and blanks	21°04′ S 24° 35′ E

Note: Data obtained from fieldwork; see also Helgren & Brooks 1983; Hitchcock 1982, 52–3, Table 1; Thomas & Shaw 2010, 196, Table 8.1; Yellen 1977a, b; Yellen & Brooks 1988.

Figure 9.2. *Distribution of San language groups in southern Africa.*

ferent areas (Fig. 9.2). This system, which is known as *hxaro* (*xaro*) has been described in detail by Polly Wiessner (1977, 1982, 1986, 2002, 2014). The exchange system links people together in complex systems of reciprocity. It serves to reinforce social alliances and facilitates mobility of people who are connected through *hxaro* ties. Gift-giving includes ostrich eggshell bead necklaces and bracelets, decorated skin bags, and other items. The social ties created by the gift-giving provides people access to other places during times of resource scarcity, especially during droughts, floods, and times when wild foods are unavailable.

As Wiessner (2002, 421) notes, *hxaro* relations serve as a proxy for long-term mutual support among Ju/'hoansi. *Hxaro* is a system aimed at reducing risk and reproducing social values that are crucial in an egalitarian society, one where people depend on each other in order to survive. Sharing, giving, and talking are all important features of the Ju/'hoansi (Marshall 1976; Lee 1979; Wiessner 2014). The creation of social bonds is crucial in order to be able to rely on other people's help in times of need. These social ties constitute the basis for intra-group and inter-group alliances, provide critical information regarding resource availability, and facilitate access to more distant areas where one has exchange partners.

Demi, a !Kung man explained how exchange is often a social, rather than a purely economic transaction in non-monetary societies:

> If people do not like each other but one gives a gift and the other must accept, this brings a peace between them. We give to one another always. We give what we have. This is the way we live together. (Marshall 1976, 311).

As the Ju/'hoansi describe it, *hxaro* interactions involve a balanced, but non-equivalent delayed exchange of gifts. Many of the *hxaro* exchanges are with kin. By the time of marriage, the average Ju/'hoan will have between ten and sixteen *hxaro* partners; these include ones drawn from their immediate families, members of their own band or members from other more distant bands (Wiessner 1982, 72–4). The exchange serves to maintain networks of mutual aid, and, according to the Ju/'hoansi, is essential for group survival.

Silberbauer (1981) discusses the strategies of G/ui San in the Central Kalahari which involved calling on

alliances in times of stress. In some cases, these alliances were symbolized by exchange relations (see also Tanaka 1980, 2014). Stories and story-telling reinforced actual sharing practices for the exchange of information as well as food and desirable objects. Exchange across language boundaries has been documented (Barnard 1992, 141; Widlok 2017) as has long-distance trade involving a wide range of ethnic groups in southern Africa. Mobility among Kalahari hunter-gatherers relates both to the spatial structure of resources and the distribution of other groups (Harpending & Davis 1972; Lee 1979).

The Naro San of Botswana have a system of formalized exchange, *//aĩ*, identical to the Ju/'hoan idea of *hxaro* (Barnard 1992, 141). This gift giving system is also found among Nama. A less formalized but significant system of gift-giving and loans is seen among non-San groups (Barnard 1992, 55). According to Schapera (1930, 321) *sorigus*, or *magus* ('giving to each other') is a ceremonial form of gift-giving that underscores a 'mutual form of obligation and assistance in all aspects of life'. Each person may demand or take from his *sori* partner whatever he wants, thus making it a more powerful relationship than the exchange system among hunter-gatherers (Schapera 1930, 321). There were exchange relationships between Tswana and non-Tswana, some of which are advantageous or disadvantageous, depending on the power relationships of the groups involved (Hitchcock 1990, 230; Schapera 1938, 214–23; Wilmsen 1989, 99, 133, 138).

As Wiessner (2009, 134) puts it, '*Hxaro* had two components: one was a delayed exchange of gifts that transmitted information that the relationship was alive and well; the other was an underlying mutual obligation to give access to resources and alternative residents in time of need.' She goes on to say that sharing and *hxaro* are the dominant economic institutions governing the distribution of resources among the Ju/'hoansi (Wiessner 2009, 134). The advantage of such a system was that it allowed for people to create social ties with other people whose services or resources could then be called upon in times of stress. The exchange relationships functioned in such a way as to allow extended visits to the *hxaro* partners' *n!oresi* (territories) (Wiessner 1982, 74–7). What these exchange relationships served to do, therefore, was to allow the Ju/'hoansi to pool their risk and to allow for goods transfers across space and ultimately to allow mobility of people during times of stress.

This complex exchange custom ensured (a) good relations between different bands with members in each connected by the exchange system, (b) regular inter-band visiting and (c) most importantly, co-operation during times of stress, particularly during droughts. If a person has an unproductive period of foraging or is in a community facing drought and hunger, he or she knows that they can rely on their *hxaro* partners for help. If there is a general shortage of food, the band members will turn to their *hxaro* partners in other bands. If a drought problem is widespread Ju/'hoansi will move to the lands of their most distant *hxaro* partners and stay there until the crisis has passed. In the period between 1968 and 1974, for example, Ju/'hoansi in western Ngamiland experienced some severe resource shortages, and people spent an average of 3.3 months visiting *hxaro* partners in other places (Wiessner 1986, 2014, 14027). The length of time people spent visiting *hxaro* partners was considerably less in 2017-2018, presumably in part because people had alternative sources of food from government drought relief programs.

Extensive ethnographic studies of the San contain a great deal of information regarding the role of beads within these hunter-gatherer societies in southern Africa. Beads, including ones made of ostrich eggshell (*Struthio camelus*), are used extensively by the San and other populations in the Kalahari Desert region of Botswana and have been for thousands of years (Collins & Steele 2017; Dayet et al. 2017; De Voogt & Ng 2017; Hitchcock 2012; Marshall 1976, 304–6; Mitchell 2013, 48–481; Robbins et al. 2000, 2009; Tapela 2001; Vibe 2008; Wilmsen 2015; Wingfield 2003). Silberbauer (1981, 227) points out that the G/ui in the Central Kalahari put beads on harnesses that are used for young children that have yet to learn to walk. An apron measuring 22 by 28 cm and containing 4000 beads represented nearly 200 hours of work, while a harness for a child required 60 hours of work (Silberbauer 1981, 227). Beadwork, for which the G/ui use the term !*xamdzi*, is considered to be very important socially and economically. As a result, skilled bead-makers are regarded highly (Fig. 9.3).

Ostrich eggshell beads were observed on both adults and children by Siegfried Passarge in the Kalahari during his explorations in the region in 1896-97 (Passarge 1997 [1907], 150–2). Emil Holub, who traveled in the Kalahari in 1872–79, noted that the 'Bushmen' in the Makgadikgadi region of north eastern Botswana, decorated themselves with beads (Holub 1881, 82). Beads of various types were exchanged with travelers for pots and other items by San in the Kalahari, especially after the increase in the numbers of European and other travelers after 1849. The majority of the ostrich eggshell beads analysed by Wilmsen (2015, 99) were from the 19th and early 20th century, and he makes the important point that the exchange of these beads was done prior to the expansion of bead production as part of the tourist trade.

Figure 9.3. *Ju/'hoan beadmaker at Nyae Nyae (//Xao//oba) (taken by Hitchcock 2016).*

Iron Age sites in southern Africa contain beads made from a range of materials including ostrich eggshell, marine shell, glass trade beads from India, copper, and gold (DuBroc 2010; Huffman 2009; Klehm 2013; Wood et al. 2009). Tapela (2001) has proposed that both Later Iron Age foragers and Iron Age agro-pastoralists made and exchanged ostrich eggshell beads. In some cases, it is assumed that ostrich eggshell beads are exchanged over long distances, while in others bead production is done locally, while still communicating social information.

Deacon & Deacon (1999, 138) see *hxaro*-like exchange as a likely explanation behind the appearance of seashells in Later Stone Age sites far inland from the coast, as does Mitchell (1996). As they note, more than merely 'trade items', the beads may be a material expression of relationships that a variety of groups maintained with one another across the southern African subcontinent. Information regarding Iron Age sites as well as forager sites in Botswana that contain ostrich eggshell beads is provided in Table 9.2. Judging from the numbers and diversity of beads in the dated layers of these sites, it is evident that there were larger numbers and more diverse kinds of beads found at times that appear to correspond to megadroughts.

The Iron Age in southern Africa is generally broken down into three periods: the Early Iron Age (AD 200–900), the Middle Iron Age (AD 900–1300), and the Late Iron Age (AD 1300–1840) (Huffman 2007, 331–461). Food-producing populations expanded into southern Africa from areas further north around the time of Christ, bringing with them iron implements, ceramics, domestic livestock, and a variety of crops. Houses were built of daga, a mixture of termite earth, dung, wooden poles, and thatch, with smooth floors of dung and time earth. Archaeologists often recognize these house features when they are burned (Huffman 2007, 4–6). This is also true for granaries, storage features made up of wattle-and-daub, with daga floors that are raised up on poles, and are usually round or rectangular (Huffman 2007, 8). A third type of feature on Iron Age sites is a kraal (corral) in which domestic animals were kept. These are recognizable archaeologically because they are areas some 10–20 meters across that are bounded by stone or pole fences and contain deposits of vitrified dung which is sometimes burned intentionally for both hygienic and ritual

Table 9.2. *Iron Age sites in the Kalahari Desert region of Botswana with ostrich eggshell beads.*

Site Name	District	Features	Location
Bosutswe	Central District (east-central Kalahari near Mashoro)	Iron Age Site (AD 700–1700) OES beads and pieces	21°57′09″ S 26°36′39″ E
Mmadipudi	Central District (east-central Kalahari, 3 km from Bosutswe)	Iron Age (AD 550–1200) burned daga, OES beads (354 whole, broken, and in preparation)	21°57′09″ S 26°36′39″ E
Kaitshàa (Tsaitshe)	Central District (southern Sua Pan)	Iron Age Site on the southern margins of Sua Pan (AD 700–1000) OES beads and pieces	2126 A1 140555 GPS reading
Divuyu, Tsodilo Hills	North West District (Tsodilo Hills)	Iron Age Site (AD 540–1000), OES beads	18°45′ 40″ S 21°44′45″ E
Nqoma, Tsodilo Hills	North West District (Tsodilo Hills)	Iron Age Site (AD 650–1280), OES beads	18°45′ 40″ S 21°44′45″ E
Xaro	North West District (Okavango Delta)	Iron Age Site (AD 1270–1420) OES beads, ceramics, domestic animal remains	18°29′ 14″ S 21°55′11″ E

Note: Data drawn from Denbow 2011; Denbow et al. 2008; DuBroc 2010; Klehm 2013; Klehm & Ernenwein 2016; Wilmsen 2011; Mike Main, pers. comm. 2016.

Table 9.3. *Evidence for severe droughts on the plateau of southern Africa during the Iron Age.*

Time period	Stratified rainmaking hill	Sites with high O values	Sites with burnt daga
Group XIII AD 1650	Modipe Hill		Modipe
Group XII AD 1530	Matokwa	Faure	Faure
Group XI AD 1440–1450			
Group X AD 1350–1400		Icon	Icon
Group IX AD 1300 (±15)	Kirstenbos	Bosutswe	Bosutswe
Group VIII AD 1200–1250	GZ PIII	Pont Drift I; Mapungubwe Hill	Pont Drift I; Mapungubwe Hill
Group VII AD 1020–1070	GZ PIII	Mapungubwe ST; Schroda B	Mapungubwe ST; Schroda B; LKMK D2
Group VI AD 900–1000 (two episodes)		Point Drift IV; Schroda E	Point Drift IV; Schroda E;
Group V AD 750–800	GZ PIb		LKMK D2
Group III AD 650 (±15)			Lydenburg
Group II AD 550–570			Broederstroom B2
Group I AD 400–450	GZ PIa		Buhwa

Note: GZ: Great Zimbabwe; LKMK: Leopard's Kopje Main Kraal (after Huffman 2010, 466, Table 1).

reasons (Huffman 2007, 8, 17, 2013, 3553). Iron Age settlement in the Limpopo Region and in the Kalahari fluctuated in size and location, depending upon climatic conditions. Some Iron Age communities were located on hills in order to avoid tsetse fly (*Glossina morsitans*); the location also reduced the chances of large bush fires from decimating the homes, granaries, and livestock corrals.

Burning cycles were related in part to El Nino events. There were times when Iron Age villages were burned by wildfires and sometimes suffered destruction at the hands of competitors. In dry periods, Iron Age populations moved into more marginal areas, in part to take advantage of hunting and gathering and mineral exploitation opportunities. Drought periods saw rising social tensions in the region, with an expansion, in some cases, of conflict. Climatic data from Iron Age sites include information drawn from tree rings, oxygen isotypes, pollen, and speliotherms in stalactites in caves. The climate conditions fluctuated between wet and dry and warm and cold periods (Huffman 2007, 99; Tyson & Lindsey 1992). Burnt daga was a product of fires that were due to several factors, including lightning strikes, intentional burning by people, and possibly a result of internal combustion in piles of dung. The frequency of fires varied in part with temperature, wind, rainfall, and fuel loads. It is interesting to note that rainmaking rituals tended to increase in hot dry periods (Huffman 2007, 71–73; Schapera 1971). Table 9.3 provides data on severe droughts that occurred on the plateau of southern Africa during the Iron Age (for a discussion of the droughts and their relations with high Oxygen values and the presence of burned daga structures, see Huffman (2009, 2010; Huffman & Woodborne 2016). It is possible that rainmaking hills and caves were utilized more frequently during periods when there were droughts. One of the constraints that exists in the archaeological interpretation of rainmaking sites and residential sites is that they both may contain pole-and-daga structures, grinding stones, faunal remains, and broken ceramic vessels (Huffman 2007, 73). One item that is not uncommon in rainmaking sites is broken beer pots (Isaac Schapera, pers. comm. 1980).

During droughts, foragers appear to have moved closer to Iron Age agro-pastoral sites in order to get access to food, water, employment opportunities, and domestic labour. Agro-pastoralists, for their part, also employed fallback strategies, expanding the amount of foraging they did or reducing the size of sharing networks. Agro-pastoralists also engaged in exchanges of goods such as livestock, pots, and iron weapons with foragers as a means of gaining resources that they could use for subsistence purposes. Agro-pastoralists became foragers at various points in time, and foragers transformed themselves into agro-pastoralists, acquiring livestock, agricultural implements, and grain grinding facilities (see Crowther et al. 2017).

For both agro-pastoralists and foragers, engagement in rituals was a key way to cope with environmental and social stress (Lee 1979; Marshall 1976; Schapera 1971). In many cases, when rituals were performed, people wore beads and other items such as leg rattles made of cocoons (Megan Biesele, Tsamkxao ≠Oma, George Silberbauer, pers. comms. 2011). A way that Tswana and their ancestors dealt with drought was to 'bring in a San' who were known for

their rain-making abilities. There were San healers and rainmakers who went from place to place during drought periods offering to assist local communities in coping with the weather (Mathias Guenther, personal communication, 2018). Rainmaking and rituals to promote better environmental conditions were practiced extensively across the Kalahari and eastern Botswana and South Africa in the 19th, 20th, and 21st centuries (Landau 1993; Marshall 1976, 61–3, 179; Schapera 1971). Contemporary informants point out that rain-related rituals were practiced widely in southern Africa during the severe regional drought in 2015-2016 (Hitchcock, field data, 2016). Some of these rituals involved engaging in trance and other kinds of dances in which participants were wearing ostrich eggshell bead items and were carrying canes, some of them decorated with ostrich egg beads.

Beads and archaeology in the North American Great Plains

The North American Great Plains encompass more than 2.6 million sq. km (1 million sq. miles) of the continent's interior. Significantly, this vast interior steppe or semiarid continental grassland is sharply demarcated along its western boundary by the Rocky Mountains. The land surface gradually slopes downward from an altitude of 1520 m near the mountain front to 760 m along its eastern edge. This region is referred to as the turbulent heartland of North America where intrusive air masses from the Pacific, the Arctic and the Gulf of Mexico clash. Winters are cold, windy and dry and summers are warm to hot. Near the front range of the Rocky Mountains, evaporation usually exceeds precipitation creating an arid steppe. Precipitation decreases from north-to-south and from east-to-west. Winter snows along the Rocky Mountains are often melted by chinooks or adiabatically warmed winds that descend the eastern Front Range.

Beads

Bone, shell, and seed beads have been recovered from a number of residential and mortuary sites throughout the Great Plains- particularly the Central Plains subarea including the states of Nebraska, Kansas and eastern Colorado. A number of sites contain beads fashioned from marine shells from the Gulf of Mexico and the Pacific Ocean. The present study focuses primarily upon tubular bone beads made from the long bones of birds (including turkey), rodents, rabbits, and, in some cases, domesticated dogs. These beads were then made from readily available raw materials and did not have to be acquired via travel, exchange, or trade. As we have seen in the ethnographic accounts of the San in the Kalahari Desert, we can expect that beads were used in a number of ways including necklaces, headbands, armband, bracelets, anklets, as well as decorations on clothing, bags, pouches, and satchels (Silberbauer 1981, 227).

In 2003, bone beads were recovered during the excavation of two small houses at the Felis Concolor Site (25SM20) in central Nebraska (Fig. 9.4). A total of 21 complete tubular bone beads and 7 fragments were found. Beads represented the third largest component of the artefacts assemblage other than potsherds and lithic debitage. Field observations at 25SM20 suggested that the occupants of these two houses were undergoing a range of stresses. For example, one house was a small earthlodge and support posts exhibited small diameters perhaps reflecting greater wood scarcity and minimized labour investment. Faunal remains were scant and high muscle mass portions of larger mammals (e.g. bison and deer) were not represented. Macrobotanical remains included a small quantity of corn (*Zea mays*). Both arrow points

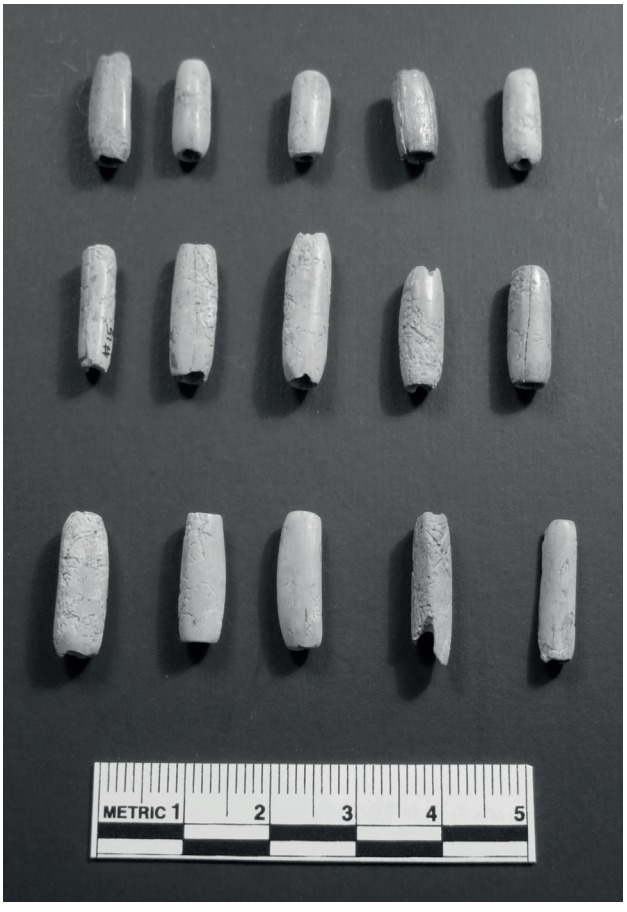

Figure 9.4. *Tubular bone beads from the Felis Concolor Site (25SM20) in central Nebraska.*

and hide scrapers had been resharpened repeatedly and depleted. Sub-floor food storage pits contained very little debris and sheet middens appeared to be absent. Two radiometric dates from the central hearth feature in this small earthlodge are Cal AD 1280 (Cal BP 670) and Cal AD 1300 (Cal BP 650); they happen to fall within a 38 year-long drought (Cal AD 1276-1313) documented in dendrochronologies of western Nebraska (Wedel 1986, 45, Table 3.2). At this point, the question arose 'Was body adornment during this time relied upon to enhance more extensive, far-reaching social interactions that may have been a response to extensive drought(s) in this region?'

Spatial and temporal distribution of beads

A preliminary survey of the published literature has identified 79 prehistoric residential and mortuary sites that contained a minimum of 4419 complete and 109 fragmentary bone beads (Fig. 9.5). Bone and shell beads were most numerous in mortuary sites with totals reaching up to 670 bone beads and 600 shell disk beads in single sites. Tubular beads have been found in various stages of production based upon the 'groove-and snap' technique. The ends of the tubular bead were frequently smoothed and polished. Bone beads, in some cases, were decorated with parallel, shallow grooves encircling the tubular bone beads. Based upon this sample, tubular bone beads ranged in length from 2–58 mm (mean equals 20 mm) and bead diameters range from with diameters ranging from 5–8 mm (mean 6.48 mm).

Twenty six sites have radiometric dates; 22 of these sites fall within the Medieval Climatic Anomaly (MCA; AD 900–1400; Fig. 9.6). This time span includes the latter part of the Plains Woodland Tradition and the entirety of the Central Plains Traditions (Hoard & Banks 2006; Wood 1998). Single houses (rectangular earthlodges) and small settlements were located along streams and tributaries where variable quantities of corn, beans, and squash were grown and a range of ungulates were hunted including antelope, deer, and bison. Roper (2007, 55) suggested that Central Plains

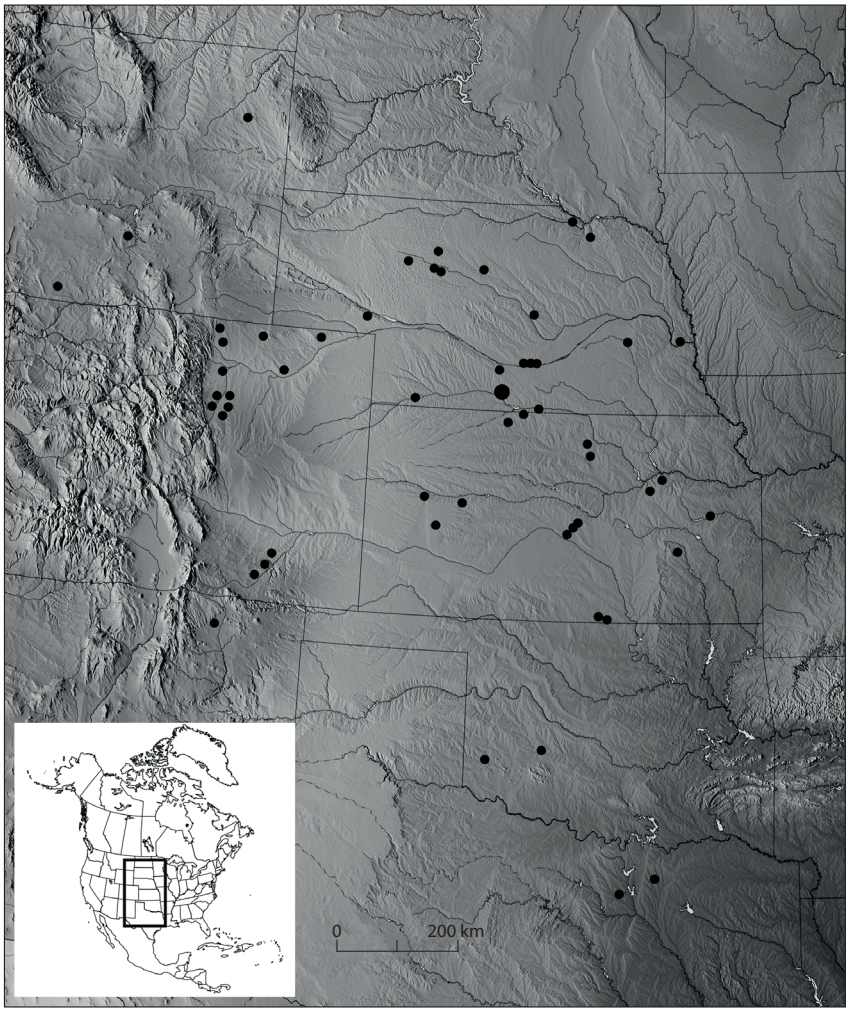

Figure 9.5. *Spatial distribution of sites with tubular bone beads in the Central Plains of North America.*

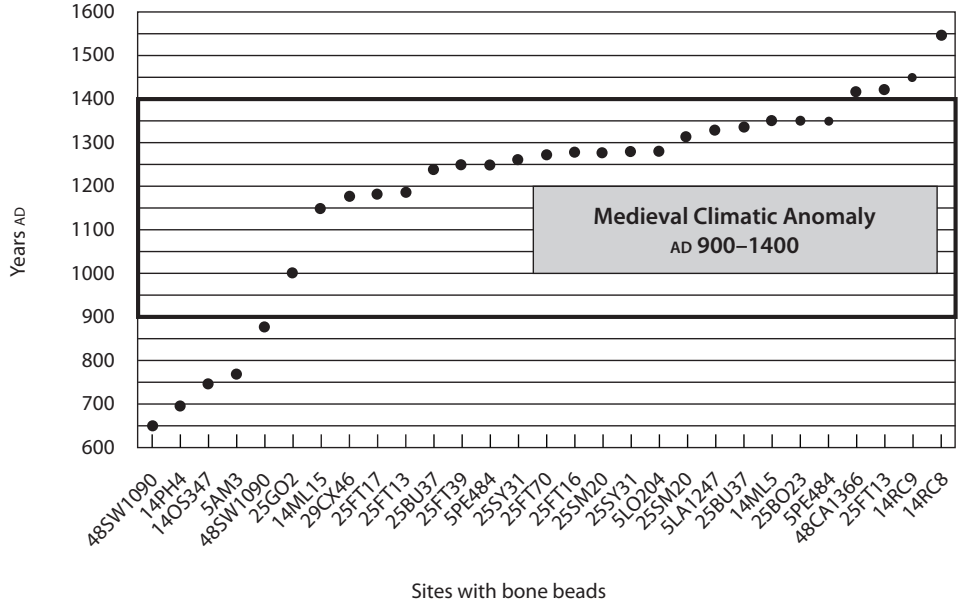

Figure 9.6. *Temporal distribution of sites with tubular bone beads in the Central Plains of North America.*

Tradition groups relied upon a 'low level food production' system (e.g. 30–50 per cent of food energy derived from domesticated plants).

Droughts and megadroughts

These prehistoric groups in the Central Plains would have been significantly impacted by droughts and particularly megadroughts that occurred throughout the Central Plains of North America during the MCA (AD 900–1400) (Hoard & Banks 2006; Wood 1998; Woodhouse & Overpeck 1998). Megadroughts in the Great Plains persist for more than one decade and have been linked to sea surface temperatures (SSTs) associated with La Niña events in the tropical Pacific Ocean (Cook et al. 2007; Cook et al. 2016; Graham et al. 2007; Halfen et al. 2012; Pu et al. 2016). Five of the most severe megadroughts occurred in succession during the MCA (Coats et al. 2016). Several droughts that occurred during the MCA in the Central Plains persisted for 40–50 years, as noted by Layzell (2012). Layzell (2012) utilized Palmer Drought Severity Indices (PDSI) based upon 835 tree-ring chronologies to study drought and climatic variability in Kansas between AD 900–2000. He identified four to nine megadroughts across Kansas between AD 850–1500 (Medieval Climatic Anomaly, AD 900–1400).

Two megadroughts occurred between AD 862–1074 and AD 1122–1299 (Cook et al. 2016). The second megadrought covered much of the Central Plains. These megadroughts are reflected in dendrochrological records as well as by episodes of dune activation and aeolian deposition (Cook et al. 2013; Cook et al. 2016; Forman et al. 2001; Halfen et al. 2012; Hanson et al. 2010; Schmeisser McKean et al. 2015). Recent studies indicate that major episodes of dust (loess) deposition during the latter portion of the MCA (AD 1100–1400) amplified megadroughts initiated by shifts in SSTs (Cook et al. 2013, 4420). The primary variables involved in amplifying megadroughts in the Central Plains during the MCA include stronger winds, aeolian erosion and dust aerosol (Cook et al. 2013, 4425–6).

Responses to megadroughts

Cultivators relied upon domesticates that were more drought-sensitive and consequently would have been forced to become more dependent upon foraging or find more mesic 'refugia' better suited for cultivation. Benedict (1999, 10) proposed that hunter-gatherers made greater use of the short grass plains and the foothills regions along the eastern edge of the Rocky Mountains between AD 990 and 1230 during the MCA. These shifts in population may reflect forager responses to megadroughts on the Great Plains during the Medieval Climatic Anomaly. One can expect that prehistoric foragers and cultivators in the Central Plains as well as the Great Plains in general, would have had to expand their social networks. Consequently, such groups would be expected to shift from local, kin-based societies that relied upon social recognition for sharing information to regionally extensive populations that made use of quality

signals to enhance social interaction. Kelly, Pelton and Robinson (this volume) suggest that a marked shift in obsidian sources circa 650 years ago in the Carson Desert of Nevada might reflect such an expansion of regional networks among hunter-gatherers coupled with resource sharing. The geographic distribution of tubular bone beads within the Central Plains coincides with portions of Kansas, Oklahoma, Colorado, and Nebraska that experienced a series of consecutive megadroughts during the MCA (Cook et al. 2016; Layzell 2012). In addition, there are a number of sites along the boundary between the short grass plains and the foot hills along the eastern margins of the Rocky Mountains (Fig. 9.3).

Discussion and conclusions

Archaeologists have during the past two decades devoted considerable attention to the discoveries of early beads in Africa and Europe. Sites such as Grotte des Pigeons in Morocco, Godi Buticha in Ethiopia, and Blombos Cave in Africa's Southern Cape have been viewed as providing evidence for quantum leaps in the cognitive development (e.g. symboling, identity, and aesthetic expression) of humans. In addition, some investigators have proposed that pigments, beads, and parietal art were components of information sharing and communication strategies (e.g. Barton et al. 1994; Binford 1983; Kuhn & Stiner 2007; Stiner 2014; Whallon 2006; Kelly 2015, 49–50).

Preceding these developments in anthropology and archaeology, ecologists and animal ethologists carried out extensive studies of animal communication based upon signalling that involves both phenotypic and behavioural expressions. Sheehan & Bergman (2016) have proposed a behavioural ecological model for a shift in animal communication strategies from small local group interaction based upon social recognition to larger, more extensive populations that make use of quality signals. Animals exhibit phenotypic variation that serves as quality signals that enhance information flow and communication. This model may also enable us to gain greater insights into human communication including the use of quality signals such as body adornment (e.g. beads).

The San in the Kalahari Desert devote a great deal of time and energy in maintaining social ties with more distant groups by traveling and visiting. These face-to-face interactions would certainly favour continued reliance on social recognition. Whallon (2006) would characterize San traveling and visiting as 'non-utilitarian mobility'. Silberbauer (1981) describes visits between various G/ui bands in the Central Kalahari. Some of these visits lasted eight weeks and may have been in response to an abundance of tsama melons in one place or to a local drought in another. Whallon (2006) emphasizes that hunter-gatherers require the 'establishment and maintenance of regional and longer social ties' in order to adapt to uncertain environments. In this context, he discusses 'non-utilitarian' mobility that involves wide-ranging social and ceremonial ties. Interestingly, Whallon (2006, 261) states, 'The establishment and reaffirmation of social ties in the context of these movements often involve actions and elements that symbolize the ties, frequently through gift giving or exchange, and sometimes with ceremony and ritual.' Whallon (2006, 263) proposes that social gatherings and ceremonial events encourage long distance travel, aggregation, visiting, and ceremonial observances.

One might ask at this point what are the archaeological correlates of social interaction and extensive networks that may have been responses to increased environmental uncertainty. Excavations at the Felis Concolor Site (25SM20) in central Nebraska revealed two small lodge floors that were constructed *c*. AD 1300. Archaeological evidence (e.g. small lodges, exhausted stone tools, low ranked prey, and very sparse midden deposits) suggests that the inhabitants of this site were stressed. Interestingly, tubular bone beads were among the most numerous artefacts recovered from the excavations. Radiomertic dates from a central hearth feature indicate that this site was occupied during a megadrought in the Central Plains. A preliminary inventory of Central Plains archaeology revealed 79 prehistoric sites that contained more than 4500 tubular bone beads. Most of these bone beads were found at residential and mortuary sites within the Central Plains (Kansas, Nebraska, southeastern Wyoming, and eastern Colorado; see Wedel 1961). Perhaps body adornment during periods of severe, protracted drought would have served as quality signals to facilitate social interaction across this vast region.

We would expect to observe regional level social networks develop in response to megadroughts in both the Kalahari Desert in Botswana and the North American Great Plains. Such extensive social networks may be reflected by the spatiotemporal distribution of quality signals (beads and other forms of body adornment). It is interesting to point out that the megadroughts in the Kalahari Desert are causally linked to intensive El Niño-Southern Oscillation (ENSO) events that originate between the Indian and Pacific Oceans (Huffman 2010). On the other hand, megadroughts in the North American Great Plains are related to La Niña events that are initiated within the same region. In both cases, hunter-gatherers, cultivators, and pasto-

ralists would have all faced the challenges presented by megadroughts. Sharing networks expanded and contracted over time, in part as a response to social and environmental conditions. It appears that the gift-giving and information sharing were especially important during periods when there were megadroughts, and that social and material exchanges and signaling represented essential means of coping with uncertainty.

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Chapter 10

Studying sharing from the archaeological record: problems and potential of scale

Robert L. Kelly, Spencer R. Pelton & Erick Robinson

The subject of this monograph – sharing of food, information, tools, land and knowledge – is an important topic to anthropology because routine sharing is unique to the hominin lineage. Accordingly, it has produced such a voluminous literature that Kelly devoted virtually an entire chapter (6) to it in *The Lifeways of Hunter-Gatherers* (Kelly 2013b). The lion's share of that literature, however, comes from ethnographic observations and data; far fewer studies come from archaeological sources. This does not mean archaeologists are less interested in the subject; in fact, tracing the origins of sharing is of keen interest (Stiner et al. 2009), but the subject is more difficult to study in an archaeological context. While ethnographers can witness food or information transfers in real time, archaeologists must reconstruct sharing based on objects, such as animal bones, stone tools, or pottery, and we do so long after the fact and from a record whose temporal resolution would dismay ethnographers, who must sometimes wonder: Can archaeologists contribute anything to the study of sharing among hunter-gatherers (or anything at all to anthropology beyond a voyeuristic antiquarianism)?

We begin with what some may find a contentious claim: cultural (or social) anthropologists and archaeologists think differently (Kelly 2017). Briefly, cultural anthropologists often take seemingly 'small' behaviours and correctly show them to be a portal into a very complex world. This is what Mauss (1966) had in mind when he described 'total social facts'. Archaeologists, on the other hand, take disparate data (ceramics, faunal remains, settlement patterns, etc.) drawn from chronological sequences covering often vast stretches of time and seek the primary factors lying behind trends in the data. Cultural anthropologists seek complexity; archaeologists seek simplicity. This is why comparative ethnographic studies (e.g. Ember & Ember 1992) often draw archaeologists' approval and cultural anthropologists' ire: because comparative studies ignore detail in favour of broad patterns. Archaeologists and cultural anthropologists often talk past one another, or, like members of two different cultures, misunderstand one another. This volume contains, and should contain, both sides of that conversation (compare, for example, this chapter with Bird-David, this volume).

The cultural difference between the fields is partly a product of a difference in scale. Ethnographers observe behaviour moment-by-moment in personal interviews and observations of daily life, and a long-term study might go on for 50 years. Archaeologists record behaviour from material objects in large, compressed and coarse chunks of time – decades if we are lucky, but sometimes centuries, millennia, or for Palaeolithic archaeologists, even longer. This ability to see long-term history is, in fact, the strength of archaeology.

Both approaches are valid paths of anthropological inquiry, and, in fact, need one another. We achieve a more complete understanding of complex human behaviours, such as sharing, when we analyse them at different scales, both spatial and temporal. Human behaviour transpires moment-by-moment *and* across millennia. The two scales are linked: century or millennial patterns that archaeological data are best at revealing are the cumulative result of many individuals' quotidian actions (actions that archaeology usually cannot see). Archaeologists need to understand the everyday aspect of human behaviour (with all its potential for individual agency) to make sense of the patterns they reveal. Cultural anthropologists, on the other hand, must understand that coarse-grained archaeological patterns are not simply 'poor' data but reveal the effects of factors at play (e.g. climate change, population density) that are not easily visible at the day-to-day scale, where many factors conspire to confound the easy interpretation of individual behaviour. Both fields yield different but complementary

knowledge on the various conditions and contexts of culture; neither field corners the market on understanding human behaviour.

Archaeological studies of sharing

Despite the archaeological record's limitations, some archaeologists have tried to replicate the ethnographer's scale in the study of sharing at archaeological sites. Waguespack (2002) refit caribou and Dall sheep remains between two Nunamiut houses at the Palangana site, occupied in the 1880s, in Alaska's Brooks Range to look for evidence of food sharing. Based on bone refits, Waguespack argued that the distribution of caribou bones reflected a form of sharing known as tolerated theft (now often called 'tolerate scrounging') where low utility remains are shared with neighbours not so much to ensure reciprocity in the future but to alleviate the instantaneous potential for conflict that could erupt between the haves and the have-nots.

Waguespack's analysis was possible because when Lewis Binford excavated the site in the early 1970s he also collected oral accounts about its use from informants. Therefore, Waguespack knew that only four families occupied the site for a short period, that one of the two excavated houses was occupied by a man, Palangana, and his family and the other by another man, Kapkana, and his family. She also knew that the two men were friends and that Palangana was an excellent hunter while Kapkana was an excellent toolmaker. In other words, her work proceeded with far more ethnographic-scale data than most archaeologists have.

Enloe (2003, 2004) also used refitting to show sharing of reindeer among households at the Upper Palaeolithic site of Pincevent, along the Seine in central France. Pincevent is a remarkable site because it has been so extensively and carefully excavated, contains numerous, clearly distinguishable, short-term households of nomadic hunters, and because it lies in a geomorphic context that resulted in gentle burial of those houses – with their associated hearths, lithic and faunal scatters – beneath floodplain silts. Because of these conditions, Enloe was able to track the movement of pieces of the same animal between houses, and thus document the sharing of game at this site.

Finally, O'Brien (2013a, 2013b) similarly showed the sharing of antelope at the protohistoric Shoshonean Eden-Farson site in western Wyoming. The antelope assemblage at this site appears to result largely from a communal kill. Unlike Enloe, he could not refit broken bones or find members of bilateral pairs (e.g. femurs whose size and condition suggest they came from the same animal) between houses. Instead, O'Brien focused on the spatial distribution of antelope elements between the households. He found no differences among the households in terms of elements or animal size; although families shared single animals between houses, there appears to have been no bias in the cuts of meat consumed at or moved between houses.

Besides these three, there are really no studies of individual- or family-level sharing based on archaeological data. Why? Archaeologists try to emulate what ethnographers do when they study sharing, and that means, to the extent possible, they look for and tabulate individual instances of food sharing between households. The problem is that such studies require the extensive excavation of sites that are 'fine-grained' assemblages, those where multiple occupations and/or natural processes have not distorted the link between behaviour and material remains. This kind of site is rare; most archaeological sites contain multiple, mixed occupations, are disturbed to one extent or another by post-depositional processes (e.g. rodents, rivers), have poor bone preservation, or are deeply buried and thus not amenable to extensive horizontal excavation. Pincevent, Palangana, Eden-Farson: these are exceptions rather than the rule in archaeology. While we applaud the work at them, they provide so few data points that they are of little use analytically. If we had, say, 30 Eden-Farson sites spread across Wyoming's prehistory we might be able to use a tight analysis of each site to look at relationships between measures of sharing and other variables, say, climate or population density. But we don't have 30 Eden-Farsons and we probably never will.

If archaeologists cannot witness instances of food sharing across a dimension that helps anthropology understand sharing-like behaviours, what can they contribute? To answer this question we must return to archaeology's strength: broad patterns in material culture across space and/or time. To employ this strength we must translate the understanding of sharing that we receive from ethnographic accounts into data that archaeologists can witness. This is not easy, perhaps especially for the archaeology of nomadic hunter-gatherers. What archaeologists see are distributions of things across time and space, and for nomadic hunter-gatherers there is always the question as to whether those things moved through exchange, which is a form of permission-granting behaviour (e.g. the sharing of use rights), or through direct acquisition during a move. Fortunately, we can often sort these out. In the US Great Basin, for example, obsidian projectile points in the Carson Desert of western Nevada must have been imported since there are no geologic sources of obsidian in the region. Obsidian appears in

lithic assemblages primarily as projectile points, and the waste flakes show that these artefacts entered as complete tools, and not as raw nodules of material or even partially worked cores (Kelly 2011). The obsidian artefacts must indicate trade of some kind because: (a) the geologic sources lie far outside any reasonable annual territory that would have included the Carson Desert, and (b) if the points were fashioned from sources encountered during long-distance moves then foragers would most likely have discarded them before reaching the Carson Desert because obsidian points generally break on their first use (Cheshier & Kelly 2006).

The obsidian points perhaps indicate 'sharing', and provide evidence of a social link between the participants of those relationships. By sourcing points of known ages, we observed a shift, one that occurred about 650 years ago, from a predominant use of southern to a predominant use of northern sources. This may mark a shift in who the foragers of the Carson Desert were sharing with, that is, to whom they were giving permission to use the resources of 'their' land (and presumably vice versa; Kelly 2011). Why this shift occurred is unknown.

Working in the Late Woodland and Mississippian archaeology of the Ohio River Valley of the central US, Nolan & Cook (2010) tried to link sharing to external variables. To do so, they had to scale up from ethnographic observations of individuals to groups. Although they were working with the archaeology of maize agriculturalists, their approach is useful to the study of prehistoric hunter-gatherers, and, in fact, employs a model drawn from hunter-gatherers, one they labelled the Winterhalder-Kelly model.

The Winterhalder-Kelly model

We know from copious ethnographic data that hunter-gatherers commonly share meat from large game but not plant food (in fact, this is one of the few universals one can derive from hunter-gatherer ethnology). Winterhalder (1986) constructed a model to account for this difference based on variance in returns from large-game hunting versus gathering, and the degree of correlation in foragers' returns. Large game hunting is usually risky in the sense that there is a chance, often high, that the hunter will come home empty-handed. Contrast this with plant gathering: the forager generally knows beforehand how much he or she will gather. In addition, if three men go hunting individually, there is a high chance that only one of them will be successful; if three women go tuber-gathering, they will each return with about the same. Thus, and in more general terms, hunters of large game have high variance in their day-to-day returns, and low correlation with other hunters in those returns. Plant collectors have low variance in their day-to-day returns, and high correlation with other collectors.

Winterhalder used these basic facts of large-game hunting and plant gathering to model sharing behaviour of meat versus plants. Winterhalder is not an archaeologist, but he does think like one: he looks for the general pattern rather than the many factors that complicate the ethnographer's world. Using the framework of human behavioural ecology, which privileges the returns from foraging as a measure of success, he argued that if foragers aim to maximize their daily return rates and to minimize their risk of a serious shortfall, then they should share foods with high variance in returns and a low degree of correlation among foragers' efforts; but they should not share foods with low variance in their returns and high correlation among foragers' efforts. As it happens, the former generally describes large-game hunting and the latter describes gathering. To keep one's daily average intake of meat as high and as even as possible, foragers should share meat; but they should not share plant foods since variance in returns is most likely a result simply of variance in a forager's effort (leaving aside forager illness or child-care needs – complicating factors the results of which would be dealt with through sharing).

Winterhalder was operating with the idea that sharing builds up debts: I share with you today when you are in need with the expectation that you will share with me tomorrow when I am in need. It turns out that sharing is more complex than that (see Tucker, this volume), but debt-building is certainly part of what sharing is about. Large game hunting is highly variable, but when it's successful it results in a surfeit of food. Plant gathering is not highly variable; poor returns result from laziness (and there's no profit in sharing with a lazy person since there's a low expectation of return at a later date).

Winterhalder's model used variance over time in forager's returns and the degree of correlation in their returns as a way to model expectations of *individual* food sharing. However, we can think of his variables as variance in resource availability over time and correlation between any social entities in the overall returns from food-getting. Doing so, Kelly (1995; 2013b) scaled Winterhalder's model up from individuals to *groups* to describe sharing-like behaviours of land and other resources between social entities (be they foraging bands, agricultural villages, or clusters of settlements). In this case, Kelly scaled up the predicted behaviours from individual to group-level actions, and included social-boundary defence,

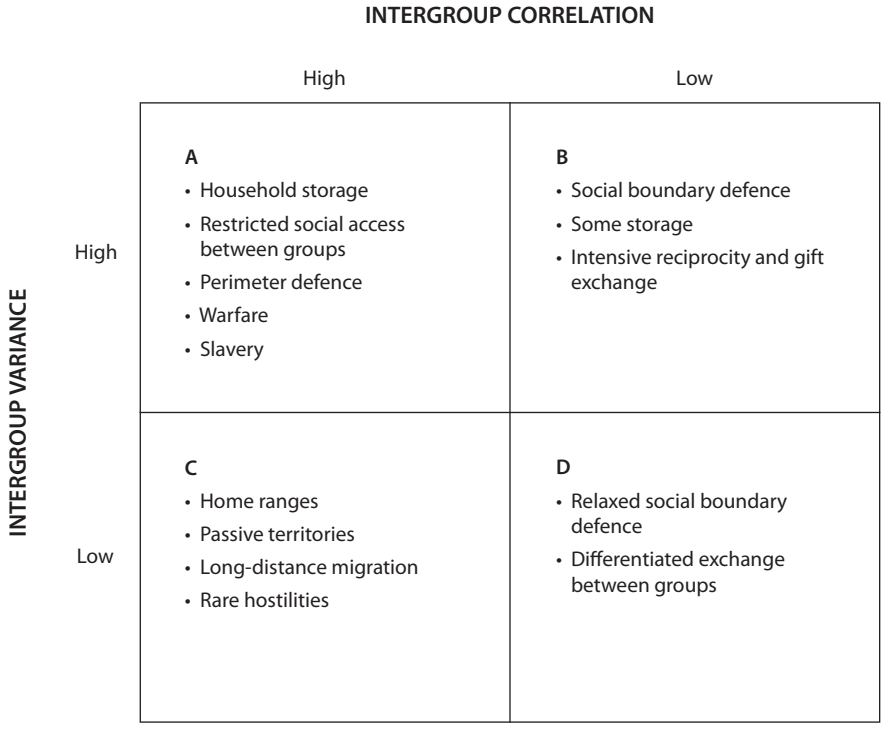

Figure 10.1. *The Winterhalder-Kelly model of sharing relations between groups of foragers (Kelly 2013b, fig.6-8).*

territoriality, warfare, exchange, and storage (Fig. 10.1). It is perhaps best to look at sharing (admittedly the preferable option!) as one of a range of behaviours whereby individuals acquire resources (e.g. where one party won't share, aggression is a possible outcome).

The crucial variables in the Winterhalder-Kelly model are the amount of variance between villages or regions in the returns to food getting and the degree of correlation between villages' or regions' return rates. In box A of Figure 10.1, the amount of variance for villages is high – the good years are very good, and the bad years are very bad. However, the correlation among villages is also high – when one village is doing poorly, so are the others; and in years when one village is doing well, all do well. This means there isn't much potential for sharing: when your village needs the resources of another, that village can't afford to share what they have. This is when more aggressive solutions arise: warfare or slavery (you control a slave's production and consumption), strict territoriality (perimeter defence), and household or perhaps village level storage of food from year to year.

In box B, villages still suffer high year-to-year variation in resources, but those villages are not in sync; when one does poorly, another might have a good year. Under these conditions, villages have the potential to share with one another, for one has resources when another does not. This leads to social boundary defence, some negotiation of who can share with who, a way of admitting people into one's social network (and thus putting off the threat of violence) but at the same time keeping them at arm's length, so to speak. This situation should result in reciprocity and exchange of gifts, trade goods whose purpose is not directly economic but which serve as a reminder of a social connection (see Osborn & Hitchcock, this volume).

Where variance in a group's returns is low, as in boxes C and D, we expect little need for sharing (similar to plant gathering). In box C, village returns are correlated, as in box A, but the low variance tells us that hostilities should be rare. When bad times occur, long-distance migration might be the most viable option; territories will exist, but they will be passive and not as contested as in box A, since the need to raid one's neighbours will not be as high. Box D describes an Eden-like situation that, understandably, is rare: there is little need to share due to the low variance, but low correlation means that the occasional shortfall can be met by neighbours – and the social reinforcement of such might be signalled by relaxed social boundary defence and exchange of a village's particular goods (a certain kind of pottery, perhaps, for another village's particularly good chert) for economic rather than social purposes.

Nolan & Cook (2010) used the Winterhalder-Kelly model to explore how human behaviour might have changed as a function of changes in the temporal variance and spatial correlation in precipitation (measured by the Palmer Drought Index), a crucial variable for maize horticulturalists. They found that the model predicted social behaviours, including warfare, the extent of regional ceramic styles (as a measure of who was socially linked with who), and village size.

Sharing in the prehistory of Wyoming, USA

We also take a broad-brush approach in looking at Wyoming's prehistory, all 13,000 years of it, in terms of sharing. Note that the indigenous people of Wyoming were all foragers; there was no agriculture until Europeans arrived in the later nineteenth century. Figure 10.2 compiles several data sets whose analysis is currently on-going: (a) a summed probability distribution of ~5000 radiocarbon dates from the state, calibrated and taphonomically corrected (See Kelly et al. 2013; Zahid et al. 2016), alongside a measure of the frequency of groundstone artefacts in dated contexts (data on 80 metates compiled by Pelton from Wyoming state site records), (b) a nearest neighbour analysis of site distances (Robinson et al. 2018), and (c) a measure of the distances that obsidian artefacts move from their geologic sources by time period (from Wunderlich 2014; n = 568).

Elsewhere we have argued that a human population appears in Wyoming about 13,000 years ago and grows at a rate of about 0.04 per cent, reaching carrying capacity about 6000 years ago (Zahid et al. 2016; Fig. 10.2). Nearest neighbour analysis (Clark & Evans 1954) provides a simple first-order measure (r) enabling us to understand whether this population growth occurred within the context of dispersed or clustered social groups (Robinson et al. 2018; Fig. 10.2b). There is noise in the dataset for sites more than 9000 years old due to small sample size. Nonetheless, the general trend suggests increasingly clustered groups from 11,000–9000 years ago ($r = 1.2$ to $r = 0.4$), more randomly distributed groups from 9000–7500 years ago, then a period with clustered spatial organization from 7000–4500 years ago. As population declines from 4500–2000 years ago, settlements become more randomly distributed, suggesting that people were inhabiting a wider variety of landscapes again.

The period of 7000–4500 years ago marks the first fluorescence of pithouses in the archaeological record of this region (Smith 2003). Pithouses provide evidence for increasing investment in specific places and reduced mobility, if only on a temporary and seasonal basis. As in the children's game of musical chairs, pithouses suggest hunter-gatherers grabbed the landscape's best places and perhaps exerted some control over them. The increase in pithouses is accompanied by an increase in groundstone artefacts (Fig. 10.2a). These artefacts point to an increase in the use of tubers and/or seeds, marking an expansion of the diet breadth. Optimal foraging models suggest this trend is expectable: as population density increases, we expect foragers to encounter high-ranked resources less frequently and consequently, for diet to expand and include lower-ranked foods such as tubers and especially seeds (Kelly 2013b). Groundstone helps make those resources more edible (e.g. by removing seed coats that make seeds difficult for humans to digest).

Population begins a slow decline after about 4500 years ago, reaching a nadir about 2000 years ago. Elsewhere, we have shown that the growth and decline of human population in Wyoming is tightly linked to available moisture (Kelly et al. 2013) and we expect such environmental changes are at play throughout the state. As population declines, foragers abandon the mobility strategy that entailed pithouses and groundstone tools, and sites are less clustered. After 2000 years ago, population again grows, reaching a zenith about 1200 years ago. As that population grows, groundstone again increases in frequency, and pithouses, too, make a short-lived return about 1200 years ago, when population reaches perhaps its highest point in Wyoming's prehistory. Population then declines sharply toward the present beginning around 1200 years ago, most likely in response to the aridity of the Medieval Climate Warming. (Although some of the decline may be due to the edge-effect of summed probability distributions, European-introduced disease, and a reduction in the use of radiocarbon dates in favour of European trade goods to date protohistoric sites, the data probably still point to significant population decline after 1200 years ago.) Groundstone and pithouses both decline in frequency as population declines after 1200 years ago.

The 13,000-year long story here is, at one level, a simple one in which hunter-gatherers used a combination of mobility and technology to cope with changes in the availability of foods, changes that were jointly linked to both climate and human population density (which, as we showed previously, are linked themselves; see Kelly et al. 2013). Foragers maintained a nomadic lifeway with widely spaced settlement, relying heavily on high-ranked game during the initial period of population growth, 13,000 to 7000 years ago. We imagine that as local population pressure increased, some families moved to unoccupied land. But as population grew, it eventually reached the

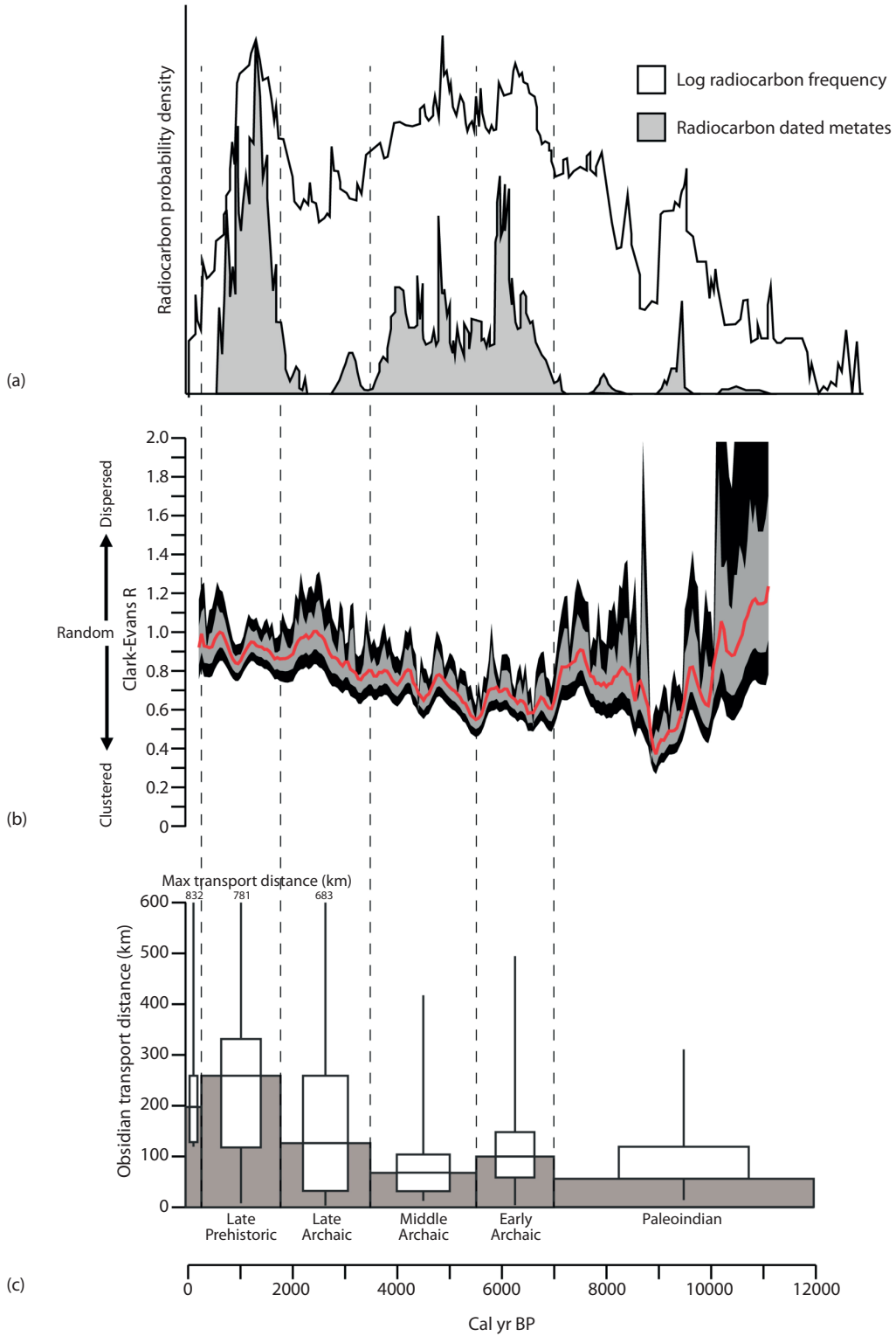

Figure 10.2. *(a) Summed probability distribution of ~5000 radiocarbon dates from the state, calibrated and taphonomically corrected (see Kelly et al. 2013; Zahid et al. 2016 for methods), and the frequency of groundstone in dated contexts, (b) a nearest-neighbour analysis of the distance between radiocarbon-dated sites, with mean, 68, and 95% confidence intervals, and (c) box plots of the average distance that obsidian artefacts move from their geologic sources by time period (data from Wunderlich 2014).*

Table 10.1. *Obsidian Frequencies by Wyoming County and Time Period.*

County	Protohistoric	Late Prehistoric	Late Archaic	Middle Archaic	Early Archaic	Early and Late Palaeo	Total	%
Bighorn	17	67	27	1	0	1	113	19.9
Crook	0	4	5	0	1	0	10	17.6
Fremont	0	1	4	0	0	1	6	10.5
Hot Spring	0	7	0	1	1	0	9	15.8
Lincoln	5	15	28	4	18	0	70	12.3
Natrona	2	3	0	0	0	0	5	0.9
Park	34	25	29	25	3	0	116	20.4
Sublette	0	13	3	4	22	0	42	7.4
Sweetwater	5	19	1	5	0	1	31	5.5
Teton	0	27	41	45	21	31	166	29.2
Total	63	181	138	85	66	35	568	100
Median distance moved (km)	197	259	126	68	99	55		

current foraging strategy's carrying capacity during the late Early Archaic and Middle Archaic periods (about 7000 to 3500 years ago). Foragers then shifted their strategy, relying less on mobility (as evidenced by pithouses) and more on technology (as evidenced by groundstone) to continue to live as foragers in the Wyoming landscape. Certain regions, notably southwest Wyoming, appear to have been more amenable to this strategy than others (Smith 2003).

Sharing at some level played a role in this adaptive scheme, and the Winterhalder-Kelly model anticipates the trend: as subsistence moved toward a heavy reliance on seeds and tubers, foragers relied more on intensification of their resource gathering efforts, and less on outside contacts and support. Evidence for this comes from the distribution of obsidian artefacts.

Since we can trace them to their geologic sources, obsidian artefacts tell us something about social connections across a landscape. Geological sources of obsidian are rare in Wyoming; in fact, the only sources lie in far northwestern Wyoming (Obsidian Cliff, Cougar Creek, Park Point, Grassy Lake and Jackson Hole); other obsidian artefacts come from sources in Idaho (Bear Gulch, Big Southern Butte, Malad, Brown's Bench and Timber Butte), and one source in Utah (Wild Horse Canyon). Our database consists of 568 pieces of obsidian (Table 10.1), slightly more than half (54 per cent) of which are formal tools (see also Smith 1999), mostly bifaces and projectile points, with the other half split between waste flakes (23 per cent) and unknown (24 per cent). All but 15 pieces (from Natrona and Crook counties) are from western Wyoming, which is expected given the lack of geologic sources outside the state's northwestern corner; this also explains the abundance of obsidian in Park and Teton counties, which lie in the state's northwest. In addition, there are only two obsidian artefacts from an Early Palaeoindian context, and 33 from Late Palaeoindian contexts (combined for analysis here).

Obsidian artefacts moved the shortest median distance during the Middle Archaic period (68 km), from about 5500 to 3500 years ago, and the greatest median distance in the Late Prehistoric period (259 km), about 1800 to 300 years ago (Fig. 10.2c). Obsidian also moved long distances during the protohistoric period (median = 197 km) but this may be due to the greater mobility that horses allowed. An earlier study of obsidian use in Wyoming, Montana, and Idaho found that the diversity of sources used is very high during the Late Prehistoric period, and declined sharply during the protohistoric and historic periods (Scheiber & Finley 2011).

Southwest Wyoming is particularly interesting because it is where Middle Archaic pithouses – the evidence of reduced residential mobility – are most common (Smith 2003). Note there are few obsidian artefacts in Middle Archaic contexts in the four southwest Wyoming counties (Fremont, Lincoln, Sublette and Sweetwater; there is no obsidian recorded for Uinta county sites in the database); most (82 per cent) Middle Archaic obsidian comes from sites in Park and Teton counties, where geologic sources are located. Obsidian did not move very far during the Middle Archaic. Scheiber & Finley (2011) also found low counts of obsidian in Middle Archaic contexts for southwest Montana and Idaho as well, and they found a decline in the diversity of sources represented in southwest Wyoming Middle Archaic sites.

Reducing residential mobility in the Middle Archaic of southwest Wyoming would have reduced

the likelihood of encountering and trading with people from northwest Wyoming, people who would have had greater direct access to obsidian sources. But that very fact also points to a contraction of social relations, and a reduction in the broader arena of sharing behaviour, for example using the territory that 'belonged' to others (i.e. those who saw themselves as holding the privilege to grant the right to use a given tract of land). As we noted above, the Winterhalder-Kelly model anticipates this.

The distance obsidian moved during the Late Prehistoric period increased, as did the diversity of sources represented (Scheiber & Finley 2011). This is intriguing because the Late Prehistoric witnessed an increasing population, and then a sudden loss of carrying capacity (and people) during the Medieval Warming (*c*. 1150–600 cal. BP), which presumably reduced foraging returns across the region and, through severe drought, made some areas unliveable at times (see Mann et al. 2009).

The Middle Archaic was also a time of drought and population decline, and the adaptive response to it was to grab a good spot on the landscape and reduce social ties, or sharing. Although pithouses make a brief appearance at the beginning of the Late Prehistoric period, they soon disappear, and evidence suggests foragers used high elevations (> 3000 m) more intensively (e.g. Morgan et al. 2012), and eventually participated in warfare. In fact, the Late Prehistoric presents us with the strongest evidence of warfare throughout the region's entire chronology (Kelly 2013a). Thus, the Late Prehistoric shows a different adaptive response to competition for lifespace and food than that of the Middle Archaic: foragers at once rapidly increased their populations and expanded their shared access to obsidian. Why was the response to competition in the two periods so different?

One possibility is that the larger Late Prehistoric world of North America was different from that of the Middle Archaic. North America in the Late Prehistoric contained several large, socially complex entities, notably in the Midwest (e.g. Cahokia and other Mississippian communities) and the southwest (e.g. Chaco Canyon and its descendants). These could have spurred trading networks across the country (obsidian from Wyoming's Obsidian Cliff appears in Hopewell contexts as far east as Ohio so such trading networks already existed before Mississippian communities did). Those trading networks may have provided support by far distant social groupings, perhaps an expected outcome of the vast geographic scope of some effects of the Medieval Warming. Additionally, competition in the Middle Archaic may not have been as strong as in the Late Prehistoric due to lower overall numbers of people, who resolved competitive pressures by reducing their residential mobility and localized their sharing (which in southwest Wyoming did not entail obsidian since there are no local geologic sources). In the Late Prehistoric, population density may have been simply too high relative to the effects of the Medieval Warming, and resulted in more frequent violent encounters with close neighbours (box A, in Fig. 10.1) and the need for support from more far-flung groups. What we do not yet know is the precise timing of these changes, such as the use of high elevations, the onset of warfare, and the shift in obsidian use, relative to the onset of the Medieval Warming. The Late Prehistoric was also a time of great social movements, with new ethnic entities (e.g. Avonlea, and possibly ancestors of the Shoshone) moving into the high plains and Rocky Mountains (Kornfeld et al. 2010), new groups who could have increased tension by introducing different customs and languages to the region. Such population shifts point to a response predicted by box C (long-distance migration), perhaps produced by low, but less variable returns, but widespread correlation in how poorly all foraging groups were doing during the Medieval Warming. How these social movements, environmental changes, and related shifts in the broader area of sharing are interrelated is a direction for future research.

Conclusions

Archaeology and (social/cultural) anthropology contribute different pieces to the anthropological puzzle. There is no point in asking that each do the same, and, in fact, doing so would lessen the capacity of each to contribute its strength to the field. Ethnographic observation leads us to understand the factors that condition quotidian patterns of sharing while archaeological study shows how those patterns play out over long spans of time and space, and how they link to environmental or social variables.

We know from ethnographic data that the degree of variance and correlation in foraging returns affects sharing behaviours among individuals, and we can hypothesize that the same models account for long-term patterns of sharing of food, land, and information between villages and regions. There is a cost and benefit to every act of sharing, and foragers – anyone in fact – considers them in deciding whether to be generous or stingy. Our goal as anthropologists and archaeologists is to figure out how and why people make the decisions that they do, and to understand the consequences of those decisions. In this regard, we need both the long-term and short-term scales of archaeology and anthropology.

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Chapter 11

An elephant to share: rethinking the origins of meat and fat sharing in Palaeolithic societies

Ran Barkai

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 on 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; Guil-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 Iinuu, '*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, sinews, 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; Zivaljevic 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 Palaeolithc 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; Domínguez-Rodrigo & Pickering 2017; Zink & Lieberman 2016), and the intriguing production of handaxes made from elephant bones (see Zutuvski & 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/mammoth 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

Figure 11.2. *An experiment in using flint handaxes in butchering operations. Courtesy of Ruth Blasco and Jordi Rosell.*

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

Figure 11.3. *A biface made on an elephant bone from the site of Fontana Ranuccio. Courtesy of Margherita Mussi.*

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 Iinuu: '*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 (*sensolato*) 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 Iinuu; 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 vegetal 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 characteristics 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 probiscidean 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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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

> Earlier this morning, I was on a trail returning from collecting *ndosi* caterpillers with a group of teens and young adults. We met a group of Ngandu sisters who [I know] from the village and whom I've always found particularly ornery and mean... Much to character, the oldest…grabbed the bucket of *ndosi* carried by Gono and started pouring them into her own, angrily berating Bolomu for not paying his debt. Gono resisted a little, so the young woman grabbed the bucket, put it on the ground in front of Bolomu and told him to fill his order or she'd hit him hard ('*Mbi pika mo shoni*'). He put some in her bucket and the parties parted. The Aka laughed about the incident afterward, continuing to collect *en route* [back to camp].
>
> Boyette's field notes,
> 19 August 2010, 9:22 a.m.

As the other papers in these proceedings attest, resource sharing is without question a key value among hunter-gatherers, or foragers, and sharing norms and institutions structure a great deal of daily social life (Lee & Daly 1999; Wiessner 1982, 2005). Norms such as demand sharing (Peterson 1993) also impact larger scale movements of people over time, as individuals or families leave if they are not satisfied with the generosity of other members of their community (Woodburn 1982) or they wish a share of resources elsewhere – a pattern which may be key to the resilience of mobile foragers (H.M. Lewis et al. 2014). However, foragers are not the only peoples who 'share'; anthropology has a long history of studying acts of giving across cultures, the associated social norms and their instantiations (e.g. Malinowski 1922; Mauss 1954). Yet, few studies have explored how neighbouring foragers and farmers living in the same environment differently conceive of, and socialize for, sharing. It is our contention that, in order to understand the norms that guide resource sharing amongst foragers, or any other peoples, we must consider the articulation of sharing with other core values. As others have before us (e.g. Bird-David 1990; B.S. Hewlett 1991), we utilize the striking contrast in such values apparent between foragers and their agrarian neighbours, in this case, Aka foragers and Ngandu farmers from the Congo Basin, to identify the underlying cultural models which motivate sharing in their respective cultural contexts. More specifically, we explore how autonomy among the Aka, and communalism and hierarchy among the Ngandu, shape the beliefs and practices surrounding sharing.

Our approach to understanding sharing in this chapter is drawn from cognitive anthropology (Holland & Quinn 1987; D'Andrade & Strauss 1992; Strauss & Quinn 1997). As such, we are interested in finding evidence for how cultural models – cognitive structures that organize and motivate thought and feeling – guide individual decision making among a group of people who share a culture (Shore 1996; Descola 2013). Cultural models are often implicit but are instantiated in social norms and practices, such as reciprocal exchange or demand sharing, that govern resource sharing. Importantly, the cognitive anthropology approach does not assume that everyone in a culture acquires exactly the same cultural model. For example, children's everyday experiences of observing sharing and receiving feedback for their own sharing behaviour (Boyette & Hewlett 2017) help forge their understanding of cultural models of sharing, but these experiences vary depending on individual differences, availability of kin, resources, and social structure (Boyette 2019; Crittenden 2016). Thus, an important aspect of the cognitive perspective is that individual experiences differ to varying degrees and thus cultural models are shared to the extent that

experiences are shared (Shore 1996), especially in childhood (see Gardner and also Tostevin this volume on expectations of variation in cognition). In other words, the cognitive approach permits us to consider intra-cultural variation as well as differences between cultures. Additionally, a cognitive approach takes cultural models to be hierarchically nested such that higher order models orient and motivate behaviour in context-specific ways. We refer to higher order cognitive structures which organize many cultural models as 'foundational cultural schemas' (D'Andrade 1992; Shore 1996), which are similar in concept to Descola's 'integrated schemas' (2013, 104, 415, note 29). Foundational cultural schemas are early developing and influence thought and feeling across multiple domains of life among a group sharing a culture.

We find the theoretical framework of cognitive anthropology useful because it allows us to test specific hypotheses about how people from two cultures with contrasting cultural models – manifest in contrasting norms – make decisions. In this case, we are especially curious about when one should share and how one should deal with others who do not share, in relation to contrasting Aka and Ngandu foundational cultural schemas. Here, our hypotheses are derived from cultural and evolutionary anthropological insights into sharing among foragers and farmers.[1]

Sharing in forager and farmer thought

In most cases, forager groups have long-standing ritual and economic relationships with nearby agrarian peoples, as is the case among the Aka and Ngandu. Yet, thinking about sharing is observably different between the two societies. Bird-David (1990) contends that for foragers, 'sharing' consists of an obligation to give and an open invitation for others to demand that things are shared (also Peterson 1993). This perspective on sharing is, in Bird-David's view, observable in how foragers speak of themselves in relation to their environment. Their environment gives to them what they need as would a caring parent, and they in turn give to their family, conceived of as all of those who identify as members of the wider forager community. In contrast, farmer exchange relationships are based on reciprocity; whatever is given is a contract which requires repayment. Their relation with the environment shows evidence of this view as well, as farmers must struggle against the environment to reap their subsistence, and view the environment as a vengeful ancestor that gives only when they behave according to cultural norms. In other words, farmers must give in their behaviour towards others, whom they view in terms of different kinship relations, for the environment to reciprocate.

Elsewhere, we have described sharing as one of three foundational cultural schemas among Congo Basin foragers, including the Aka, and proposed they are held by other mobile foragers as well (B. S. Hewlett et al. 2011; Boyette & Hewlett 2017a, 2017b; Lew-Levy et al. 2017, 2018). As a foundational schema, sharing among foragers permeates not just the domain of resource sharing but how people conceive of labour (Bliege Bird 1999), space (Hewlett, this volume), joy (J. Lewis 2016), childcare (B.S. Hewlett 1989) and more. The other forager foundational schemas are respect for autonomy and egalitarianism. Respect for autonomy means that people are free to do what they want, and no one can coerce others (Gardner 1991). Egalitarianism means that all people are given equal respect, and that, in principle, no individual has more power than another. This combination of schemas is unique among the world's peoples in that – beyond being the most egalitarian of all known societies – only among foragers is there the unique articulation of respect for individual autonomy and a strong expectation of constant, widespread sharing. The Endicotts have referred to this behavioural complex as 'cooperative autonomy' (K.M. Endicott 2011; K.L. Endicott & Endicott 2014), and have noted the conflicts that can emerge when individual interests do not clearly articulate with obligations to others. Ameliorating such conflicts is part of the social education of young foragers (Turnbull 1978; Briggs 1998; Boyette 2019).

Less work has dealt explicitly with foundational schemas among small-scale subsistence farmers (e.g. LeVine et al. 1994). However, our characterization based on work with the Ngandu and from other ethnographic descriptions of (at least other Bantu) farmers suggests at least three schemas govern thought and emotion among these peoples: communalism, hierarchy, and a material basis to social relations (B.S. Hewlett et al. 2011). Communalism refers to the ethos of putting the needs of the family (often the patrilineal household and clan) above the needs of the individual. Hierarchy refers to a strict order to social relations based on gender, age, and status (typically wealth or prestige). A material basis to social relations implies that the strength of social bonds is tied less to emotional attachments but to a history of material gifts. For example, in remembering lost family members, Ngandu adolescents spoke of the gifts their loved ones gave them more than the loss of their presence (B.L. Hewlett 2005). Each of these schemas hypothetically impact thought regarding sharing. For example, Bird-David's (1990) characterization of farmer sharing as reciprocity among kin evokes the measured giving that is couched within a hierarchical social system and the importance of exchange of goods to the strength

of these relationships. Communalism defines the aim of much resource exchange – to advance or maintain the status of the family in relation to the community.

Sharing and early life experiences

Early life experiences are key in imparting the foundational schema of sharing, which persists throughout childhood and into adulthood (Lew-Levy et al. 2018; Boyette in press). Among foragers, various authors have noted that the socialization for sharing occurs as early as infancy (B.S. Hewlett et al. 2000). For example, among the Nayaka, the feeding of infants is framed as sharing (Bird-David 2008). Furthermore, though positive feedback is a rare form of teaching among foragers (B.S. Hewlett & Roulette 2016; Boyette & Hewlett 2017a), Bakeman et al. (1990) found that San parents encourage and celebrate San infants when they offer objects to others. Also among the San, infants as early as six weeks are socialized into a sharing institution, *hxaro*, in which children are encouraged to invest in relationships by distributing wealth. Once forager children are able to walk, they are encouraged to participate in sharing through everyday life experiences, such as by distributing plates of food between households in the evening (Bird-David 2008; K.L. Endicott & Endicott 2014; Crittenden 2016; Boyette & Hewlett 2017b). By middle childhood, as children spend more time in playgroups where they not only imitate adult sharing but also return from foraging trips with food to share, the sharing practices so central to the foraging ethos have been formalized (Crittenden 2016; Crittenden & Zes 2015).

Among the Aka specifically, children report that they know how to share correctly by 10 years old (B.S. Hewlett & Cavalli-Sforza 1986). Boyette (2019) shows that, when asked, Aka children as young as four are explicit that when they acquire a resource, it is to be shared. They report being taught to share by a number of individuals, especially their mothers. Consistent with sharing being a foundational cultural schema that is learned early in life, children largely say they share because it is simply something one does, and because others will think they are selfish or will speak poorly of them if they do not. Additionally, children also enforce sharing norms among others. Before middle childhood, norm enforcement is more direct; some children say they would announce to the group if someone has hidden food or they would reprimand them for not sharing. However, after middle childhood, norm enforcement becomes less direct; children say they will do nothing, or most commonly, they say they will not share with that person in the future. Boyette (2019) argues that this developmental change in norm enforcement is a result of the cognitive changes that occur during the transition to middle childhood, when children develop a robust theory of other people's minds, allowing them to recognize that, if they are to maintain their autonomy, they must respect others' as well – including their choice not to share. Thus, children's testimony illustrates the early developing value for resource sharing as well as the sequential cognitive integration of the foundational cultural schemas of sharing and respect for autonomy during development.

Less is written about Ngandu or other farmer sharing practices. However, there is equally active socialization of sharing, and the foundational schemas are clearly implicated in the pattern observed among adults and children (Boyette 2013). For example, meals are shared in a hierarchical fashion, with men served first, usually receiving the best portions. Among children, older children are typically made responsible for younger siblings and share with those under their care. Material exchange as a basis for social relationships can be seen in how age-peers share with one another. For instance, there is an institutionalized sharing relationship between maternal cousins in which, Boyette was told, a *koya* (the kin term for this relationship) must be given anything they ask of their cousin. Such relationships create alliances outside of the patrilineal family, but more research needs to be done on their function. In childhood, boys share food and material items with their friends, sometimes to the exclusion of other boys nearby. Fouts & Lamb (2009) have shown evidence of the early socialization of this behaviour pattern. Among the Bofi farmers, living in the savannah region just west of the Ngandu in the Central African Republic, conflicts between toddlers were commonly over possession of material items. In contrast, Bofi forager toddlers' conflicts were typically over proximity to favoured social partners. While we have seen Aka, Mbendjele and Hadza forager children fight over material possessions, a hierarchical pattern to sharing and its role in relationship maintenance is distinct to farming groups like the Bofi and Ngandu.

Evolutionary approaches to resource sharing

While the cognitive approach helps us to understand the origins of cultural meaning behind such things as resource sharing, evolutionary theory reminds us that what people say and think are not always the same as what people do. Evolutionary researchers are interested in the ultimate inclusive fitness benefits of giving away resources, especially food (Gurven 2004), so the focus is on observable behaviour trends over time. In evolutionary studies, degree of related-

ness and reciprocity are the most reliable predictors of forager food sharing (Gurven et al. 2002; Gurven 2004; Allen-Arave et al. 2008; Schnegg 2015), and these seem to hold even among settled groups, although the scope of sharing decreases (Allen-Arave, Gurven & Hill 2008; Gurven, Hill & Kaplan 2002). Theoretically, kin-selection and reciprocity are stable organizing principles of sharing because they avoid the free-rider problem. In other words, people are more motivated to give, and not just take, if they get something in return. Future returns may be immediate, such as material goods, or delayed, such as evolutionary fitness through the survival and reproduction of those with whom they share genes.

In terms of individual decision making in the contexts of sharing, then, evolutionary theory predicts that people consider the likelihood that others will reciprocate if they are shared with, making reputations for cooperating (i.e. sharing) key to maintaining cooperative exchanges (Macfarlan, Quinlan & Remiker 2013). Additionally, punishing those who do not cooperate, theoretically, stabilizes cooperation in human groups, as people are less likely to free-ride if they know there are sanctions (Roberts 2008; Henrich et al. 2006). Thus, evolutionary theory suggests that, in general, giving to kin, reciprocal exchange, attention to reputations, and punishment of those who do not reciprocate should be universally valued.

Evolutionary theory is not as clear about what we should expect regarding children's sharing and how children learn to share (Gurven 2004; Crittenden et al. 2013). Life history theory suggests that, during our long evolutionary history of living as foragers, learning to extract difficult to access resources (e.g. game meat, honey, roots and tubers) took so long to master that childhood lengthened to provide for time to learn. Consequently, human children are not net producers of food until adolescence and early adulthood (Kaplan et al. 2000; Crittenden et al. 2013). Thus, sharing should occur from older to younger generations, as children are not net producers of calories, and thus need provisioning throughout the learning years. While this theory focuses on learning skills, humans must learn much more (Boyd, Richerson & Henrich 2011), including how to share, and cultural transmission theory suggests that humans acquire ideas, beliefs, norms and practices through multiple modes (e.g. parents vs. peers vs. institutions) and processes (e.g. observation, teaching) (Cavalli-Sforza & Feldman 1981; Boyd & Richerson 1985). Parents are expected to be important transmitters because of their proximity and genetic interest in their children's success. Empirical studies tend to find evidence that parents are the main transmitters of cultural knowledge, and that other people become more important later in life (B.S. Hewlett et al. 2011; Kline, Boyd & Henrich 2013).

In what follows we attempt to integrate the cognitive perspective – which emphasizes individual experiences in a culture as shaping motivations – with evolutionary expectations – which emphasize universal motivations to cooperate or punish – through an analysis of Aka and Ngandu decision making around sharing situations as presented in a formal survey. We propose a set of hypotheses and use methods from cognitive anthropology and psychology to test whether Aka and Ngandu respondents systematically make judgements about similar sharing situations that are consistent with their foundational cultural schemas and the expectations of evolutionary theories of cooperation. Additionally, we explore people's perceptions about the socialization of sharing in order to investigate cultural models and evolutionary predictions of how children share and sharing is learned.

Ethnographic setting

Data for this study were collected between July and September of 2010. The Aka and the Ngandu[2] who participated in this study lived in and on the periphery of the northwestern part of the Congo Basin tropical forest in the southwestern Lobayé Province of the Central African Republic (CAR). The two groups have historical trade and fictive kinship relationships going back at least a few hundred if not a few thousand years (Vansina 1990). The Aka long ago borrowed the language of the Ngandu, after which the two languages diverged while remaining mutually intelligible (Bahuchet 1993). The recent generation of Ngandu understand DiNgandu, the traditional language, but speak Songo, the trade language of CAR, in the village where this research was conducted. Many Aka men and some women can also speak Songo. This linguistic environment is one illustration of the nature of the inter-ethnic relationship in this ethnographic setting: frequent and flexible (largely economic and ritual/ethno-medical) inter-ethnic exchange, but relatively stable and conservative social segregation.

While some Aka aspire to live among the Ngandu for the material resources and education (i.e. literacy) village life provides, they strongly identify as BaYaka: people of the forest (J. Lewis 2002). By some measures, half of the calories the Aka consumed come from agricultural foods (B.S. Hewlett 1991). However, the Aka still went into the forest daily to collect a variety of seasonal resources (nuts, mushrooms, honey, caterpillars, wild game) and *koko* leaves (*Gnetum* spps.) all year round. The interview data for the study was collected among Aka living in forest camps 2-4 hours walk

from the Ngandu village and with individuals living in camps established at that time on the periphery of the village, in traditional Aka spaces in-between cacao plantations and the Ngandu manioc (cassava) gardens. 'Forest camps' typically consist of around five to seven nuclear families related through kinship, who each live in a *mongolo* – the traditional one-room dome house constructed by women. In the 'village camps', there might be more families living at the same site, and some men have built larger mud-brick houses in the Ngandu style, as these can be reoccupied after time in the forest. In both settings, the houses are typically centripetally organized and close in distance, reflecting a cultural model of shared space (Hewlett et al., this volume).

The Ngandu who were interviewed all lived within the central three neighbourhoods of the village, each of which had a population of roughly 100 people. The Ngandu are swidden horticulturalists (farmers for simplicity) who cultivate manioc, corn, peanuts, plantains, and several minor crops. Most families also engage in small-scale commerce, selling market goods or extra produce from their home. Ngandu live in patrilineal, extended family compounds, consisting of one or more larger houses and a kitchen, oriented to create more privacy for the family than is ever possible among the Aka.

Hypotheses and qualitative predictions

We conduct statistical tests of the following hypotheses:

1. The Aka and Ngandu will both demonstrate consensus in their responses to our formal survey as analysed using cultural consensus modelling (Romney, Weller & Batchelder 1986; Romney, Batchelder & Weller 1987), indicating a coherent cultural model of sharing in each group.
2. The Ngandu will have higher consensus than the Aka, as foragers' foundational schema of respecting autonomy permits more individual variation in sharing behaviour (see Gardner, this volume), whereas the schemas of hierarchy and communalism place individual autonomy below maintaining the social order.
3. Aka responses to the survey questions will indicate an overall tendency towards unconditional sharing and conditional punishment of selfishness (i.e. more likely to respect another's autonomy not to share). In contrast, we expect the opposite among the Ngandu.

As our survey tool included qualitative as well as quantitative data, we also investigate the following qualitative predictions:

1. Aka justifications for their responses to the hypothetical sharing situations will more often reflect a cultural model of unconditional sharing as compared with the Ngandu, while Ngandu responses will more often reflect sharing for reasons of reciprocity, enforcing norms of sharing, or reputational gain.
2. Respondents should indicate a perception that children learn to share from parents, and that sharing of food and non-food items should be directed from older to younger individuals, as predicted by evolutionary models of resource sharing.
3. Sharing will be ranked highly in terms of what people think are the most important things children should learn, as it is expected that it must be actively socialized (Boyette 2019; Boyette & Hewlett 2017b).

Methods

Sample

A sample of Aka and Ngandu informants were interviewed by the first author and a trained Ngandu field assistant, or by the field assistant alone. A small sample of Aka children (younger than approximately 18 years old, n=10) were interviewed but were omitted from the current analysis. The final sample consisted of 53 Aka (57 per cent female; mean age=32.4 years, SD=8.9 years) and 46 Ngandu (46 per cent female; mean age = 31.5 years, SD=9.4 years).

Survey design

The structured interview design was constructed to gather data on decision making in situations concerning resource sharing norms in general and among children specifically. The survey included two types of questions: forced choice responses and free-lists. The cultural domain of conditional resource sharing was probed with 22 forced-choice questions where respondent was asked how sharing should occur between individuals within the community (e.g. would you share with someone who is selfish?). The status and reputation of the giver and receiver (i.e. was the giver or receiver generous/selfish/stranger/family), and the role of the respondent in the situation (e.g. giver/third-party observer) varied across questions (Table 12.1). This design permits analyses of the degree to which reputation is a condition for judgements about sharing, and accounts for differences in how an individual would choose to share versus how they think others should share. Informants were asked to respond whether they thought the hypothetical situation would happen 'Always', 'Sometimes', or 'Never'. Informants

were asked to choose between 3 options instead of a Likert-scale standard of 5 options to decrease informant and field assistant fatigue. Based on pilot work with a 5-point scale, a 3-choice method improved our sample size and the accuracy of informant responses, but still allowed for a test of the tendency for informants to choose a conditional ('Sometimes') versus a non-conditional response ('Always' or 'Never'). They were then asked to describe why they gave the response they did, providing insights into their decision making. These two sets of data, forced-choice and justifications, were analysed separately.

Four free-list questions (Table 12.1) concerned children's sharing. They were chosen to understand adult views of how children learn to share, who they share with, and where sharing practices and norms fall within adult priorities in the socialization of children. For each question, informants were asked to list as many items as they could think of. If they stopped, they were asked once more if that was all. The interviewer (AHB or a field assistant) aimed for at least 5 responses per informant.

Analysis

Informal cultural consensus modelling was used to test the hypotheses that the pattern of informant responses to these forced-choice questions were evidence of a cohesive cultural model in each group (Weller 2007). For this analysis, categorical responses were coded as ordinal (1, 2 or 3) and the matrix of informant responses (observations/rows) to each question (variables/columns) was transposed so that the rows were questions and columns were informants. Missing values were filled randomly with either a 1, 2, or 3 as the analytic procedure does not permit missing values (only 7 missing values were present in the dataset). A factor analysis was then performed on the data using the principal-factor method, which computes factor loadings using the squared multiple correlations as estimates of communality. Factor analysis was done using Stata IC statistical software. Aka and Ngandu informant responses were analysed separately under the assumption that each maintained independent cultural models concerning the analytical domain of interest (Romney, Weller & Batchelder 1986). The factor loadings from the first factor were treated as the competence scores and were extracted for analysis (Weller 2007).

In order to test the hypothesis that the Aka responses were consistent with a cultural model reflecting more unconditional sharing and more conditional punishment (respecting autonomy versus enforcing social norms), we treated the questions and the categorical responses as a psychometric scale with two subscales, 'Sharing' and 'Autonomy'. For this analysis, we

Table 12.1. *Interview questions and associated hypothetical domain.*

Forced-choice response questions	
Would you share with someone who refused to share with you before? ***	Sharing
If a child is selfish, is it necessary that someone punishes them? ***	Autonomy
Do you share with others who do not share? **	Sharing
Do generous people share with other generous people? *	Sharing
Do children punish other children if they see them not sharing? *	Autonomy
Do you share with strangers? **	Sharing
Is it good if a child is selfish in front of a stranger? *	Autonomy
Is it good to share with someone who is generous? *	Sharing
Is it good to share with someone selfish? ^	Sharing
Do children share correctly without being taught? ^	Sharing
Do generous people share with selfish people? ^	Autonomy
Do children punish adults who they see not sharing with others? ^	Sharing
Do children share with other children who do not share?	Sharing
If someone is selfish, must someone else punish them?	Autonomy
Do selfish people share with selfish people?	Sharing
Do you punish someone who you see not sharing with another?	Autonomy
Is it good if children/your children are selfish? (Reverse)	Sharing
Do your children share correctly without instructions?	Autonomy
Is it good if an adult in your family is selfish in front of a stranger?	Sharing
Is food more important to share than other things?	Sharing
Do selfish people share with generous people?	Sharing
If someone shared with you before, do you share with that person?	Sharing
Free list questions	
Who teaches children to share?	Socialization
Who do children share food with?	Socialization
Who do children share non-food items with?	Socialization
What are the most important things to teach children?	Socialization

Bold font indicates a Chi-square test result for a significant association between ethnicity and response choice at the p≤0.05. These were chosen for qualitative analysis.

^p≤0.10, *p≤0.05, **p≤0.01, ***p≤0.001

reverse coded the responses to 7 questions such that for all questions, a response of '1' is consistent with a cultural model of unconditional sharing and conditional punishment, and a response of '3' is consistent with conditional sharing and unconditional punishment. We examined the reliability of the scale and its sub-domains using Cronbach's alpha statistic. Finally, we generated aggregate response scores for each informant for the whole scale and for the Sharing and Autonomy subscales by summing their responses across the questions and dividing by the total number of responses.

Our qualitative predictions regarding intercultural variation in responses to individual questions were evaluated using the untransposed dataset and including the justifications for each response. All forced-choice responses were subject to Chi-squared tests of association. For those questions which had responses with Chi-square results at $p \leq 0.05$, we performed a content analysis of the response justifications to identify major themes to provide qualitative insights into what was driving the variation in forced-choice responses.

A salience analysis was conducted on the free-list responses. The free-list salience index was calculated following Smith (1993) using Microsoft Excel Version 14. The calculations included the frequency at which items were mentioned across lists, and the order of mention in the list. To account for the order of mention, the percentile rank was calculated in the following manner: the sequence at which an item was mentioned ('beginning at zero, so that for any item in any list, the sequence numbers state how many items were mentioned before that item in that list', Smith 1993, 2) was subtracted from the total count of items mentioned. This number was divided by the total count of items mentioned, and multiplied by 100. The item's salience index was calculated by finding the gross mean percentile rank for all respondents. The frequency at which each item was mentioned was also calculated. Finally, the net rank at which an item was mentioned across respondents was calculated as well. For the question, '*What are the most important things to teach children?*', Mann Whitney U tests were conducted on the percentile rankings for teaching sharing, using ethnicity as a predictor variable.

Results

The results of the factor analysis supported the assumption that the questions tapped into a cohesive cultural domain, in support of Hypothesis 1. For the Aka, the first factor accounted for 45 of the variance in the data. For the Ngandu, the first factor accounted for 53 of the variance. The average level of agreement, or cultural 'competence' in the domain of interest, is 0.67 (SD=0.10) among the Aka and 0.72 (SD=0.11) among the Ngandu (1.0 would indicate 'perfect knowledge' of the domain). The difference in mean competence is statistically significant ($t=-2.51$, $p<0.01$, one-way t-test) indicating a higher average level of consensus among the Ngandu, in support of Hypothesis 2 (Fig. 12.1).

Evaluation of the 22 questions as a psychometric scale (with 7 questions reverse coded), indicates reasonable reliability (Cronbach's alpha=0.65). Analysis of the aggregate scores indicates a significantly greater mean score for the Ngandu ($t=-2.92$, $p=0.002$), consistent with Hypothesis 3, that the Aka would respond according to a cultural model emphasizing

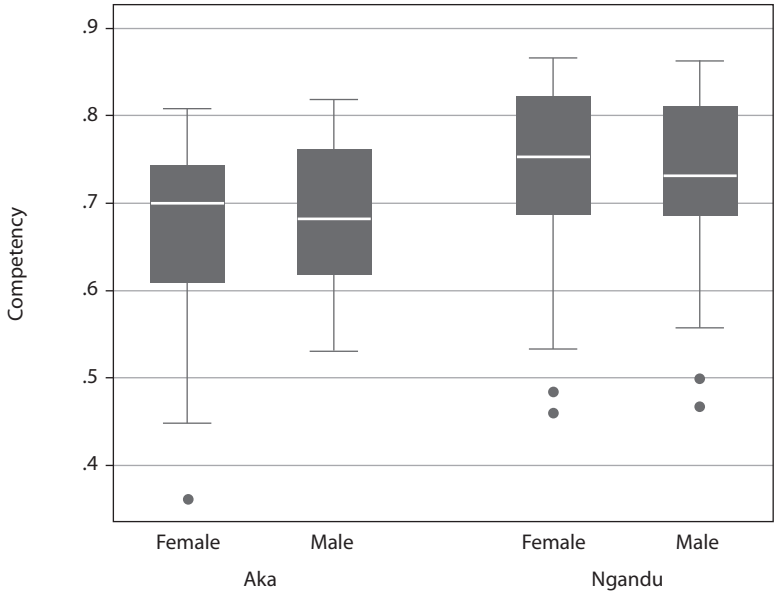

Figure 12.1. *Box plot of cultural competency scores for Aka and Ngandu men and women.*

Table 12.2 *Per cent of forced-choice responses by ethnicity and domain.*

		Always	Sometimes	Never
Sharing	Aka	38	46	16
	Ngandu	29	54	17
Autonomy	Aka	39	42	18
	Ngandu	34	43	23

unconditional sharing and conditional punishment (Table 12.2). The subscales are slightly less reliable (Sharing: alpha=0.53, 14 items; Autonomy: alpha=0.63, 8 items) but consistent with the overall scale, indicated more responses among the Aka that are supportive of unconditional sharing (t=-2.82, p=0.003) and respectful of individual autonomy not to share (t=-1.77, p=0.04).

In examining the variation in responses to individual questions at the ethnic group level, Chi-square tests of association demonstrate that responses to 8 questions were significantly different between the two groups at the p≤0.05 level (Table 12.1). A closer look at the justification for informants' responses to these questions reveals thinking consistent with our predictions: When Aka informants said they would always share, justifications often referred to 'kindness', or a general norm that one shares because it is good to share. In contrast, while some Ngandu also justified their responses with reference to 'kindness', fewer said 'Always'. Those who did choose 'Always' justified their response at least as frequently by saying they would share because the other person might reciprocate, or, in the case of sharing with someone selfish, to teach them to share. As one Ngandu man put it, '*To serve them a lesson on selfishness*.' That is, to demonstrate the social norm.

For example, in response to the question, 'Would you share with someone who is generous?', 53 per cent of the Aka responded 'Always' and 44 per cent of these informants said they would out of 'kindness'. In contrast, 30 per cent of the Ngandu answered 'Always', and 21 per cent justified their response with reference to 'kindness' while just as many referenced reciprocity. Similarly, in response to the question, 'Do you share with others who do not share?', 23 per cent of the Aka said they always would, and of those all but one said they would out of 'kindness'. Only a single Ngandu said they would always share with others who do not share, and they too would do so out of kindness, '*For him my good heart*.' There was less variation in justifications for responses of 'Always' to the question, 'Do you share with strangers?' Most Aka and Ngandu who gave this unconditional response said they would share out of kindness or for the potential of future reciprocity. However, again, twice as many Aka said 'Always'.

There was less variation in justifications to the questions regarding socialization of sharing and punishment for not sharing – our domain of 'Autonomy'. However, some responses were consistent with our predictions. For example, in response the question, 'If a child is selfish, is it necessary that someone punish them?', 57 per cent of Ngandu respondents said 'Always' and 4 per cent said 'Never'. In contrast, the same number of Aka, about one-quarter, responded 'Always' as did 'Never', indicating greater respect for children's autonomy. Moreover, 77 per cent of the Aka

Table 12.3. *Rankings of Aka and Ngandu responses to the question: who teaches children to share?*

	Aka				Ngandu			
	Rank	Gross mean	Freq.	Net mean	Rank	Gross mean	Freq.	Net mean
Mother	1	79.5	43	1.6	1	82.5	46	1.8
Father	2	69.6	41	1.7	2	79.7	45	1.8
Grandmother	3	36.5	28	1.9	3	30.9	29	2.1
Aunt	4	21.2	26	2.0	7	13.3	16	1.4
Big sister	5	18.8	19	1.3	10	2.3	3	0.3
Grandfather	6	16.5	17	1.3	5	20.7	20	1.5
Cousin	7	5.9	5	0.5	6	18.5	17	1.3
Big brother	8	5.2	6	0.4	9	4.5	4	0.3
Little bro. of father	9	0.6	1	0.1	8	5.9	8	0.7
Juniors	10	0.6	0	0.1	0	0.0	0	0.0
Sister	11	0.4	0	0.1	11	1.3	1	0.1
Family	12	0.4	1	0.1	0	0.0	0	0.0
Friends	13	0.4	0	0.1	0	0.0	0	0.0
Brother	0	0.0	0	0.0	4	22.1	25	2.2

Table 12.4. *Rankings of Aka and Ngandu respondents to the question: Who do children share food with?*

	Aka				Ngandu			
	Rank	**Gross mean**	**Freq.**	**Net mean**	**Rank**	**Gross mean**	**Freq.**	**Net mean**
Father	1	64.3	46	1.9	1	66.8	40	1.9
Mother	2	63.1	47	2.1	2	65.4	42	2.3
Grandmother	3	30.4	30	1.9	5	36.3	27	1.7
Brother	4	29.7	25	1.2	3	38.2	26	1.5
Sister	5	22.6	21	1.2	4	37.8	27	1.7
Aunt	6	17.5	22	1.6	7	14.2	16	1.4
Big brother	7	16.5	12	0.5	10	9.6	7	0.5
Friend	8	13.5	16	1.2	9	12.1	17	1.6
Big sister	9	12.8	13	0.8	8	12.2	9	0.6
Grandfather	10	12.8	14	0.9	6	14.9	16	1.4
Cousin	11	5.0	8	0.7	12	5.0	8	0.8
Family	12	3.7	5	0.4	0	0	0	0
Juniors	13	3.6	3	0.2	0	0	0	0
Little sister	14	1.4	1	0.0	11	5.1	4	0.3
Little brother	15	1.1	1	0.1	14	2.8	2	0.2
People	16	0.5	1	0.1	16	0.4	1	0.1
Strangers	0	0	0	0	13	4.7	7	0.8
Neighbours	0	0	0	0	15	0.4	1	0.1

respondents who said children should never be punished for not sharing said there was nothing to punish – reflecting their respect for autonomy. However, among both groups, the majority of those who said children should always be punished for not sharing said so to teach them to share. In other words, there is agreement that punishment is to curb selfishness and is part of the socialization of sharing.

Finally, the four free-list questions produced an array of responses. For the question, 'Who teaches children to share?', in total, Ngandu respondents named 11 categories of individuals who teach sharing. Each Ngandu respondent provided an average of 4.6 responses, ranging between 2 and 6 responses. In total Aka respondents name 13 individuals who teach sharing. Each Aka respondent provided an average of 4.06 responses, ranging between 2 and 5 responses. The results indicate that, for both the Aka and Ngandu, mothers were ranked first, followed by fathers and grandmothers. For the Aka, aunt and big sister were ranked 4th and 5th, while brother and grandfather were ranked 4th and 5th among the Ngandu (Table 12.3).

For the question, 'Who do children share food with?', both the Aka and Ngandu named a total of 16 categories of people with whom children should share food. Each Ngandu respondent provided an average of 5.09 responses, ranging between 4 and 7 responses. Aka respondents provided an average of 4.7 responses, ranging between 3 and 7 responses. For both the Aka and Ngandu, fathers and mothers were ranked first and second, respectively. Also, for both the Aka and Ngandu, grandmothers, brothers, and sisters were ranked among the top 3rd through 5th individuals (Table 12.4).

In response to the question, 'Who do children share non-food items with?', in total, Aka respondents named 19 categories of individuals with whom children should share non-food items, while Ngandu respondents named 15 categories of individuals with whom to share non-food items. Each Aka respondent provided between 3 and 7 responses, averaging 4.8 responses. Each Ngandu respondent provided between 3 and 6 responses, averaging 5 responses. Both the Aka and Ngandu named fathers first. Both Aka and Ngandu follow with cousins, aunt, grandmother and mother in varying order (Table 12.5).

Finally, for the question, '*What are the most important things to teach children?*', for the Ngandu, out of 50 items mentioned, sharing was the 5th most important item to teach children (percentile rank=20.43). For the Aka, sharing was the 7th most important item to teach children (percentile rank=12.30). There was no significant difference between Aka and Ngandu respondents percentile ranking of the importance of teaching sharing ($U=1230$, $Z=-1.82$, $R^2=0.17$, $p=0.07$).

Table 12.5. *Ranking of Aka and Ngandu respondents to the question: Who do children share non-food items with?*

	Aka				Ngandu			
	Rank	**Gross mean**	**Freq.**	**Net mean**	**Rank**	**Gross mean**	**Freq.**	**Net Mean**
Father	1	39.9	35	1.9	1	41.4	34	2.4
Grandmother	2	36.2	31	1.7	4	32.3	19	0.8
Aunt	3	34.2	30	1.7	3	35.4	26	1.6
Mother	4	33.4	31	1.8	5	31.1	31	2.6
Cousin	5	25.7	23	1.3	2	35.7	26	1.7
Grandfather	6	23.5	18	0.8	8	20.5	18	1.3
Brother	7	19.3	17	1.0	11	14.4	13	0.9
Friend	8	18.6	15	0.7	6	30.8	23	1.5
Big sister	9	18.2	15	0.8	7	24.6	16	0.9
Sister	10	14.5	14	0.9	10	16.4	14	1.0
Big brother	11	9.9	10	0.7	9	17.1	13	0.9
Mother's fam.	12	3.8	2	0	0	0	0	0
Sister-in-law	13	2.4	2	0.1	0	0	0	0
Little bro. of fa.	14	1.9	1	0	15	1.3	1	0.1
Little sister	15	1.8	3	0.2	12	3.9	3	0.2
Family	16	1.5	2	0.2	0	0	0	0
Juniors	17	1.1	1	0.1	13	2.2	1	0.0
Little brother	18	0.9	1	0.1	14	1.4	1	0.1
Brother-in-law	19	0.8	1	0.1	0	0	0	0

Discussion

Few prior studies have systematically investigated sharing as a cultural domain among foragers from a cognitive perspective (B.S. Hewlett et al. 2000; Boyette 2019). In this chapter, we have demonstrated that Aka and Ngandu responses to a series of questions about hypothetical sharing situations evidence cultural consensus, as we hypothesized. This is not surprising, as resource sharing norms are highly conserved as they serve as the link between resources and social relationships in a culture. However, our analysis of the competency scores demonstrates a significant difference between Aka and Ngandu sharing practices that can best be explained with reference to other core cultural values. Specifically, based on our results, sharing norms are more highly conserved among the Ngandu, for whom social relationships are more strictly governed by foundational schemas of hierarchy, communalism, and a material basis to social relationships. Conversely, the Aka foundational schema of respect for autonomy suggests more acceptance of variability in sharing patterns. Several other of our results confirm the consistent interaction of sharing with other higher order cultural models.

For example, when the questions are treated as a psychometric scale, the consensus in each group can be seen to be differently patterned in line with our hypotheses. Based on evolutionary theory, stable sharing norms are made possible by punishment of those who do not cooperate (Panchanathan & Boyd 2004; Henrich et al. 2006). Our scale measured both the tendency to adhere to a cultural model of unconditional versus conditional sharing, but also unconditional versus conditional punishment of sharing norm violations. Results confirm that the Aka responses were more consistent with having cultural models that motivate unconditional sharing but acceptance of individual autonomy when it comes to not sharing. Those who do not share are free-riders, in an evolutionary sense. Recent theoretical modelling has shown that mobility and demand sharing among foragers can support a high level of free-riders because if the demands outpace the productivity of those who share, they are free to move to a more equitable situation (H.M. Lewis et al. 2014). Thus, in theory and in practice, the threat of fission, instead of punishment, encourages cooperative behaviours – in this case, sharing.

In contrast, the cultural models guiding Ngandu farmer thought motivate more conditional sharing and unconditional punishment. Among subsistence farmers, following and upholding social norms is central to maintenance of familial status and the

social hierarchy. The foundational schema of communalism pits families against each other in competition for status and resources. The justifications Ngandu respondents gave to the forced choice questions are consistent with less tolerance for variation and a motivation to enforce norms by teaching others or demonstrating their own generosity. While the individual justifications for responses were not consistently revealing of variation in the underlying cultural models between the Aka and the Ngandu (e.g. reciprocity and reputation were mentioned by both), the overall scale scores are consistent with our hypotheses and suggest decision making is motivated by different ideas of when one should share, and how sharing should be enforced.

The results regarding the socialization of sharing revealed patterns both consistent and inconsistent with other research. For example, mothers, fathers and grandmothers were the most frequently mentioned and highest ranked individuals nominated as teachers of sharing. This is consistent with other work suggesting parents have the greatest role in the socialization of children (B.S. Hewlett & Cavalli-Sforza 1986; Boyette & Hewlett 2017a; Crittenden 2016), and with evolutionary research suggesting grandmothers may have a unique role in the development of their grandchildren (Hawkes et al. 1998; Hrdy 1999). At the same time, many other individuals were nominated by our informants, indicating that the socialization of sharing is a community responsibility (Boyette 2019).

Interestingly, these same individuals were also commonly mentioned and highly ranked as those with whom children share food and non-food items, with parents again being consistently ranked at the top – and father before mother. These results are inconsistent with the embodied capital hypothesis, a branch of life history theory, which suggests that resources should flow downward to support children's growth and learning (Kaplan et al. 2000). We are not the only researchers to observe the upward flow of resources; among the Hadza, Crittenden et al. (2013) also noted that certain children produced a surplus of fruit, which was then shared with their parents. However, people's responses do demonstrate kin selection in that the top five individuals were close kin, which is consistent with evolutionary predictions. Furthermore, it is possible that people's responses reflect socialization practices. As we have seen, parents are central to the formation of sharing routines among children, and responses may reflect the pathways by which parents motivate giving (e.g. 'Give this to your mother. Give this to your grandmother.'). While this is somewhat speculative, Boyette has seen an Aka mother dip her infant's hand in a pot of honey only then to bring the infants' fingers into her own mouth. This sort of behaviour is reminiscent of Wiessner's (1982) observation of a grandmother placing beads in the hands of a newly walking child, and directing her to take them to someone in order to teach her *hxaro* gift exchange.

That fathers were the top ranked individual whom children share food and non-food resources with, whereas mothers were ranked second and fourth, respectively, is interesting. In both cultures, fathers are seen as providers and perhaps these results hint at a cultural model of reciprocity at work. Certainly, the role of the father in the care of children in early childhood is demonstrably different between the two groups, with Aka fathers being in many ways interchangeable with mothers and Ngandu fathers taking no direct role at all in the lives of their young children other than disciplinarian (B.S. Hewlett 1991). Thus, while we have no evidence in the data presented here, we may see a similar result stemming from contrasting cultural values and norms: Among the Aka fathers are important caregivers and providers of resources, who have strong emotional bonds with their children (B.S. Hewlett 1991). In contrast, among the Ngandu, fathers come first in the hierarchy as the male head of the household who is, in principle, the controller of household resources and whose generosity must be earned through obedience to the social norms, as captured in Bird-David's (1990) account of reciprocity.

Finally, both Aka and Ngandu respondents ranked sharing relatively highly among those things that are most important for a child to learn. This is not surprising and is consistent with our prediction that sharing would be considered something important to actively socialize. As opposed to common labour tasks, sharing norms are not always clearly observable, yet breaking them has important implications for social relationships and the willingness of others to share (i.e. reciprocity). Even among the Aka whom we have shown are motivated by a cultural model of unconditional sharing admit as young as middle childhood that they would not share with someone who did not share a resource (Boyette 2019). Furthermore, sharing norms lend themselves to fewer innovative behaviours than subsistence practices, as sharing relies on a consensus among individuals (as we have shown) and thus children must learn the consensus norms and practices. On the other hand, subsistence practices can more easily be improved based on feedback from the environment, and then adopted by the community at large without such active socialization (B.L. Hewlett 2013).

Conclusion

The widespread sharing of food and non-food items is a uniquely human trait, and, accordingly, has received attention from researchers from a broad variety of fields. However, few researchers have considered how core cultural values and socialization practices lead to the development of cultural models specific to sharing, nor how these cultural models can contribute to our understanding of evolutionary trends. Thus, this paper has made important contributions to the anthropology of sharing among foragers and other small-scale societies by showing that, though both the Aka and Ngandu share, sharing practices are tempered by other core cultural values; for the Aka, by autonomy, and for the Ngandu, communalism and hierarchy. We call for both evolutionary and cognitive anthropologists to consider how diverse methodologies can be used to elucidate the commonalities and diversity of resource sharing among small-scale societies and beyond.

Notes

1 As we emphasize more below, the dichotomy between 'foragers' and 'farmers' that we use here, while in reference to subsistence strategy, is based more upon core values and identity than actual subsistence behaviour. We do not suggest the Aka do not farm, nor that the Ngandu do not also hunt and gather at times.

2 While the majority of informants were ethnically Ngandu, five individuals identified with other ethnic groups but had married into the village or independently established themselves and integrated into the Ngandu community. For simplicity's sake, we will refer to all farmers as Ngandu.

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Chapter 13

Foragers with limited shared knowledge

Peter M. Gardner

Last year marked the centennial of Malinowski's keen observation that [on tiny Kiriwina Island] '…no "natives" (in the plural) have ever any belief or any idea; each one has his own ideas and his own beliefs' (1916, 420). Actual field research and theorizing about diversity of beliefs and concepts within groups eventually followed (e.g. Gardner 1966, 1976; Sankoff 1971; Sanjek 1972; Barth 1987; Kelly 1995, 59; etc.),[1] Kelly and I participating in this with foragers in mind.

There is a cluster of foraging cultures in South India and a second one in the American Subarctic in which people speak sparingly and there is clearly highly limited sharing of knowledge. The mere existence of these cultures invites questions (a) about how learning takes place, (b) about how they handle cognitive diversity, and (c) about how claims to knowledge are established. Do we overestimate the amount of knowledge to be acquired and transmitted for a culture to function effectively? Is the oral tradition less essential for foragers than many claim (e.g. Winterhalder 1981, 17; Biesele 1986, 17; Fowler & Turner 1999, 424; etc.)?

Having done almost a year-and-a-half of fieldwork among Paḷiyar, South Indian foragers, then a similar length of time (jointly with anthropological linguist Jane Christian) among Dehcho Dene foragers in Northern Canada, I can applaud Malinowski's stance. Today I will review what we are finding about a person's apparent limited exposure to the knowledge of his or her fellows among such taciturn foragers.

Anthropologists have traditionally thought of foragers' culture as consisting of substantial bodies of well-cultivated knowledge on behaviour of game and predators, seasonal traits of useful and dangerous plants, emergency water sources, medicines, materials for tool making, etc. Knowledge, to be collective, requires communication. Possibly we find it natural to regard elders as repositories of environmental knowledge, who can teach youths orally what they need to know. While it was easy to assume that, it does not in fact account for the full range of our data on knowledge and learning. After all, according to Smith (1981, 44), we have a paucity of accounts of foragers actually engaged in sharing and teaching descriptive knowledge.

What we are now finding is that many foraging peoples use little formal verbal instruction; a few among them view that kind of instruction negatively. Some of them exhibit substantial interpersonal variation of environmental knowledge and understandings within their communities. And some of them weigh knowledge in terms of whether it has been established personally by direct perception, not whether an elder merely claims it to be valid. As those treated in this paper have all been professionally studied, because they hail from different continents and at latitudes ranging from 8°N to the Arctic Circle, and because their reliance on gathering, hunting, or fishing varies greatly (Murdock 1967), it would be a mistake to write them off cavalierly as being a certain kind of anomalous case that we can afford to disregard.

Data to be examined are from seven cultures – in two clusters. From South India there are Paḷiyar[2] (Gardner 1966, 1972, 2000a, 2000b), Malaipaṇḍāram (Morris 1982, 2014), and Nāyaka (Naveh 2007, 2014). From North America, there are Dehcho Dene[3] along the west side of Canada's Northwest Territories (Christian 1977a, 1977b, 1977c, 1977d; Gardner 1976, 1977a, 1977b, 1977c; Gardner & Christian 1977), Tlicho Dene to the east in the Northwest Territories (Walsh 2017a, 2017b), Dene Tha in Northern Alberta (Goulet 1998, 2000), and Gwich'in[2] in northeastern Alaska (Nelson 1973).

How might we understand the ways of life of these particular foraging peoples? How do communication and learning take place among them? Lee Thayer, a specialist in the subject, has defined communication as 'the operation of converting raw

sensory data into *information*' (italics in the original) (1967, 71). Thus, the deriving of information from experience would be an individual, private, and potentially idiosyncratic process, liberating us from the conceptual constraints inherent in so-called 'replication of uniformity' models and from the equally problematic stance that teaching is a mere transfer of knowledge. Thayer's definition, echoed in Goodenough (1971, 19–20, 1981, 51–4), invites us to ask important questions such as how, why, in what domains, and to what extent individuals can achieve operational understandings of one another. This could be a helpful way of proceeding for anyone wishing to examine knowledge in its social and situational contexts. If we begin with the idea that each individual has a distinctive history, knowledge then becomes a phenomenon that we cannot write off as simply the superorganic property of a group; we are obliged instead to consider it as something that can vary in diverse ways across the community and through the stages of any given person's life.

I will take up three broad topics: learning processes, interpersonal cognitive diversity, and peoples' evidentiary criteria for knowledge claims. These will be dealt with one at a time in a review of the data that utilizes fairly extensive quotations. One will see that there are significant similarities between the cultures in our sample. The materials ought to be enough to provoke new questions about our subject.

Actual learning processes

Teaching, especially of subsistence knowledge, is a quiet business in the foraging societies I wish to treat. In some instances, it is possible to document the peoples' own explicit statements as to why they exercise such verbal restraint.

Paḷiyar:[4] These are a starkly taciturn people – tied with the Dehcho Dene as being the quietest I have encountered anywhere. In keeping with this, verbal instruction is minimal, especially after early childhood. For much of each day during the first two years, a child is carried on its mother's left hip, spelled only by brief periods of similar attention from a grandmother, father, or older sibling (and, during short periods of strenuous work, the mother may suspend her sleeping baby nearby in a sling). By the time a child is one, some mothers make a regular practice of lingering a minute or two in front of objects, drawing them to the child's attention. This happens within Paḷiyan settlements and while going to and from work along forest trails. Such mothers point to both familiar objects and alien ones and murmur a few words so softly that they are virtually inaudible. These initial lessons taper off quickly after age two, but they probably provide the child with both stimulation and extremely elementary labelling lessons.

After age four, social learning – by observing others – is more prominent than verbal learning. Four year olds tend to play somewhat separately but within a meter or two of each other, in small, loose, heterogeneous groups. They glance about frequently and often repeat an approximation of social and technical actions they see around them. By five or six, they engage in more integrated play in slightly larger, more mobile groups and their opportunities for social learning begin to widen. Even so, parents remain fairly central to them in early morning and after the big evening meal, when most children under six either keep to nuclear family clusters, or accompany their parents as they visit others. Fathers commonly carry their toddlers on these evening visits, exposing them to the community's muted conversational peak of the day.

In groups of two or three, 10 to 12 year olds accompany adult foraging parties with increasing frequency,[5] but they tend to keep to an age-specific subgroup, alternating all day between ever varying play[6] and subsistence tasks in the proximity of adults. By 13 or 14 they become full participants in adult work groups. While youths themselves talk, the level of conversation within the adult work parties and between adults and youths is low. No one has the authority to direct the activities of youths or request work of them. Explicit verbal lessons are distinctly absent.

Two principles constrain instruction. (1) Apparently, telling even one's own child, what to do is unacceptable. Perhaps it violates the right of the child to make autonomous decisions. Such instruction *should* be ignored. A child of six or seven, for example, will not be stopped by its parent from using a cooking fire, moving to an aunt's house, or seeking a part-time job in a plantation. Even four year olds are allowed to play with fires, climb high in trees, or run about holding a sharp, machete-like *arivāḷ* without so much as a word of caution. (2) Any show of expertise stands to offend all who witness it. To have experts is to create the possibility of dependence. Paḷiyar maintain that all reliance of one person on another is improper – exceptions being possible only for the very young, those seriously ill or disabled with age, and between the somewhat cooperative husband and wife (Gardner 2000a, 101); I have seen but one lone malingerer (Gardner 2000b, 220). Everyone firmly and uniformly denies the existence of experts (other than those who use wit or diplomacy to conciliate) (Gardner 2000a, 89–93). These two principles do much to dampen explicit teaching. When eliciting basic plant, animal, and col-

our terms (Gardner 1992) from a diverse sample of Paḷiyar, I ascertained that rudimentary competence in subsistence terminology is seldom witnessed before age 14. Such competence is only acquired slowly and its timing suggests that it is an eventual result of full participation in adult activities.

Their much-enjoyed accounts of hunts could amount to a form of teaching. Yet only certain hunting experiences get this treatment. People tend to keep their individual or family hunts of small game and root collecting private. Although it was difficult to ascertain by surveys that personal hunts had so much as taken place, I eventually learned through participation that they were much more common than group hunts. What is more, others never mentioned incidental, private, but often well-observed capture of a small animal, such as a tiny chevrotain or mouse deer (*Tragulus meminna*) by a participant in a group hunt (Gardner 2000a, 43). The private catch is not mentioned in summary accounts of the hunt. Yet hunters enjoy reciting in detail the sequence of what they have done collectively. Hunters freely name those involved and may tease the fellow who made the first blow – as when they told how, when a dying but still feisty boar was surrounded, Cadayan, who had struck it first, had to scramble into a tree to avoid its tusks.

Nāyaka: Naveh did much of his Nāyaka fieldwork with children of nine to 12. He described in detail how and why they refrain from asking questions and take responsibility for teaching themselves mainly by experimentation. By using trial and error, rather than by relying on what someone else has to say, they develop deep personal understanding, their term for which best translates as 'wise' (2007, 86–97, 2014, 346–52).

Initially, inexperienced boys do not do this wholly alone. One evening 'Rajan', age ten, went out with his father to set four traps.

> 'Neither of them exchanged a single word throughout the time they were placing the traps. Rajan was highly alert while observing his father placing the first two traps. When they placed the third trap Rajan took the initiative and started to assemble the trap, tying the looped string to the [bent] twig by himself. Sundaren observed his son patiently and allowed him to finish what he had started. Then with a soft smile and without a word, he dismantled what had to be re-done and reassembled it so that the trap would work properly' (Naveh 2014, 348–9).

Naveh's tightly focused research is unique and powerful. He makes clear that, far from leaving youths without help (as teachers from the outside world might claim), the child rearing system has set them on a path toward achieving understanding on their own.

Malaipaṇḍāram: Morris' general ethnography sketches succinctly a broad picture of social learning. Malaipaṇḍāram, as Paḷiyar, are comfortable with four to six year olds finding their own way across swarms of soldier ants, making cooking fires, and using sharp *arivāḷs*. Indeed, six year olds may collect and cook their own roots, fruit, small mammals, and fish. They are granted independence, but are still expected, like Paḷiyan children, to respect others and refrain from violence (1982, 146–9). They soon spend hours cutting steps in trees, fastening bamboo to trees, or blowing smoke into crevices in the wood – as in honey collecting. Then, play turning into 'realistic pursuits', they move on quickly to actual collecting (1982, 149). One difference from Paḷiyar is that they do not avoid cooperation (1982, 150). Moreover, in all-male forest camps, younger members 'fetch and carry water, prepare root vegetables and wash dishes' (1982, 151).

Dehcho Dene:[7] The linguistic anthropologist, Jane Christian, and I documented one-on-one teaching of indispensable skills for hunting, trapping, fishing, preserving fish, tanning moose hides, etc., including first lessons. Female and male approaches were similar, although the former did entail a bit more talking.

In tanning, the teacher tended to be the girl's mother (Christian 1977c, 293). The 'older woman would demonstrate, perhaps elucidate a fine point, then hand over the tool and step back. She would observe the girl's work closely and offer advice and corrections' (Christian 1977c, 292). Training began at about nine or 10, as girls watched and asked to participate. They tried each of the tanning processes, using moose bone and stone scrapers. 'By about fourteen, girls take over tanning for longer stretches, with greater autonomy and responsibility for the results' (Christian 1977c, 291).

In trapping

> 'much of the teaching consists of visual demonstrations (framed only very informally as such, but often of slightly idealized form). . . . the learner watches as good sites for traps and snares are selected [and] as trap sets are built . . .. Eventually, the suggestion is made to the learner, 'now you do it.' Little correction is offered even if minor mistakes appear to be obvious. What correction there is may be nonverbal – the

> teacher trimming up the product of the task or redoing parts of the procedure' (Gardner 1976, 463).

Boys begin trapline lessons between seven and 11 (Gardner and Christian 1977, 397). Most teachers are parents or older brothers, but some are uncles or grandfathers (Gardner 1976, 463). 'There may be a several-year-long association of teacher and learner, a winter spent together on the trapline, or just sporadic trapping and hunting trips' (Gardner 1976, 463).

For both sexes, teacher and student

> 'must actively and consistently . . . continue in [the relationship] for appreciable or successful learning to take place. This means a minimum of a season for techniques like tanning, fish processing, trap setting, etc. For proficiency, exposure over several seasons is required, not all of it with the same intensity of teacher-learner relationship, and not all necessarily with the same teacher' (Christian 1977b, 119).

As with Paḷiyar and Malaipaṇḍāram, 'even one's children . . . are allowed, to a great extent to govern their own lives . . . even though they may be endangering themselves or destroying property.' For both young and old, each is his 'own boss' (Helm 1961, 87).

Indeed, Christian even found no explicit teaching of language *per se* (1977b, 121). But Dehcho Dene certainly had speech-related ideas about learning. Essential to learning is a certain responsive posture: Those who seek knowledge need 'to listen (*etitθi*)', as they put it (1977b, 118). This refers to an attentive frame of mind, not auditory perception, and it should be in evidence by about age seven (1977b, 118).

In keeping with their customary taciturnity, Dehcho Dene believe one should not interrupt someone dealing with a task or, even a person who is lost in thought or deliberately silent (Christian 1977a, 25).

Despite their customary taciturnity, and although technical teaching is usually accomplished with few words, Dehcho Dene have a rich story-telling tradition. They are interested in stories about unusual events in the bush and funny, exciting, or tragic happenings of other sorts (Christian 1977a, 82, 88). Descriptions of 'one's own experiences, true stories about known persons, histories, hero tales, legends and myths are recounted dramatically with great flair.' They believe, though, that telling stories before age 30 can lead to forgetfulness; waiting and maturing allows one to understand and remember (Christian 1977a, 97–8).

Good storytellers are respected and appreciated. 'Mainly older women and some men tend to be excellent raconteurs' (Christian 1977a, 98). But people accord even a modest narrator their rapt attention: one man with little gift for words kept three fellow cabin builders and me enthralled with the first story below. In the course of 16 months, I was present for the telling of many such stories; three of them concerned:

- Finding evidence that a wolf chewed off its own paw in order to escape a steel trap.
- An otherwise shy American coot waddling right up to Old C'olo[2] in his bush camp – a meeting he interprets to be a sign of spiritual protection.
- A perennial young troublemaker leaping his way across over what may have been two or three hundred meters of huge tossing and tumbling blocks of ice during the climactic hours of spring break up of a river, in order to deliver a bottle of medicine to a critically ill child [I witnessed this and later heard it described].

Many elders 'work, if not in solitude, at least in relative verbal isolation' (Christian 1977a, 99) and hold that excessive talk, especially by youths, is not only undesirable, it 'can lead to forgetfulness' (Gardner 1976, 464). Christian concluded that

> '. . . one should listen to tales as a young person but must not recount them until real maturity. Especially if a person under about thirty tells stories he will forget his knowledge. If he prudently waits and considers his knowledge only in a sort of internal dialog, then everything will be remembered, understood, and can be told in full maturity' (Christian 1977a, 98).

Notwithstanding the storytelling tradition then, 'Speaking should be the result of successful listening. One who bandies words about lightly in serious situations, or who lies, will fail in the bush' (Christian 1977a, 99).

Taken together, Dehcho Dene beliefs and practices regarding speaking, keeping silent, and listening do much to shape the overall system. Ironically, the general taciturnity of the aged means that much of their mature knowledge might never get shared with others when, at last, they are old enough that it would be thought suitable for them to pass on what they know.

Dene Tha: They are similar in that they

> 'expect learning to occur through observation rather than instruction, an expectation consistent with their view that true knowl-

> edge is personal knowledge. The Dene [Tha] prefer this kind of knowledge since it is the form that has the most secure claim to being accepted as true and valid' (Goulet 1998, 27).
>
> 'Because [they] consider true knowledge to be personal, firsthand knowledge, they learn in a manner that emphasizes the non-verbal over the verbal, the experiential over the exposition of principles. In this way they foster one another's ability to learn and live competently. They promote the sense of one's autonomy and competence over the sense of one's dependence and incompetence.' The 'ability to learn through observation and imitation and the power to accomplish one's own choices by oneself are nurtured and respected throughout one's entire life. We have seen Dene [Tha] interact with their children, elderly individuals, and non-Dene in this fashion' (Goulet 1998, 58) and 'respect as far as possible each other's autonomy' (Goulet 2000, 72).

On principle, and on the same bases as Paḷiyar or Malaipaṇḍāram, they do not stop a child from approaching a dangerous broken window pane or chainsaw (2000, 60).

Gwich'in: The distant Gwich'in have broad cultural similarities. They

> …take an extremely individualistic approach to the realm of knowledge and belief . . . and there is also a broad realm of idiosyncratic knowledge that is not universally known or accepted (Nelson 1973, 304).

As for being taught on the trapline,

> Young men are not given verbal instruction; they watch, try for themselves, then are corrected for their mistakes. . . . [Nelson, himself,] was almost never given explicit instruction beyond being told how to carry out a specific operation: 'Stand here and watch for moose to come out'. . .. Procedures were never outlined before they were undertaken (1973, 9).
>
> One never realizes how little he knows until someone says 'Now you try it' (1973, 10).

Nelson's summary thoughts on learning amongst Gwich'in are that 'A partial understanding comes through verbal accounts, a fuller understanding comes through observation, and the most "complete" understanding comes through participation' (1973, 10). Like Dehcho Dene, they exhibit 'a broad realm of idiosyncratic knowledge that is not universally known or accepted' (Nelson 1973, 304).

Tlicho Dene: David Walsh, a specialist on indigenous religion, is engaged at present in ethnographic study of a fourth Dene culture, Tlicho Dene (Dogrib Dene), northeast of Dehcho Dene. He has told me that he often hears it said that to learn 'one must watch and then do, and the doing teaches' (Walsh 2017a). But, these 'are not direct quotes' of his consultants, because 'they would not talk quite so bluntly.' Rather, this is his summation of what consultants tell him and his own observation 'of how youth are engaged and expected to work themselves.' He has found that this is a subtle matter, for he has been told that 'being too attentive when watching was considered disrespectful.' Because outright staring is offensive one 'should watch but not over-see' (Walsh 2017b).

The challenge of cognitive diversity

Given the very similar teaching methods that we have found in these seven cultures, entailing nothing explicit being said, it is easy to appreciate the likelihood that there will be considerable interpersonal variation in how people frame and express what they know. This deserves a close look.

Paḷiyar: Their taciturnity and informality foster individuality and they tend to manage problems in a personal and ad hoc manner, rather than conventionally. Although I did no systematic, person-by-person study of cognition among, it was research with Paḷiyar that alerted me to the possibility of there being interpersonal cognitive diversity amongst them. When a healthy jasmine bush providing one of the five main Paḷiyan digging stick woods was given three different names by a mature husband and wife, and an adult cousin of one of them, with whom I was sitting at the time, they seemed undisturbed and one laughed and said 'well, we all know how to use it!' (Gardner 1966, 397). In retrospect, I concluded that, some of their knowledge, in having been derived from personal experience, was comparable to what Scandinavian folklorists have long called 'memorates' in narratives (von Sydow 1934, 1937; Honko 1965).

Dehcho Dene: Honigmann (1946, 40) and Helm (1961, 55–66) had both reported interpersonal variation in limited sets of terms among their main Dehcho Dene consultants, but we sought to examine such variation more systematically. My elicitation of terms for parts of a moose skeleton, bird species, and trap parts from large stratified samples, and Christian's

elicitation of terms for aspects of moose hide processing and fishing technology yielded significant findings (Gardner 1976, 1977b, 203–61, 262–84, 1977c; Christian 1977c, 286–307, 1977d, 308–85).

In preparation for studying moose anatomy with 32 adults, I did a pilot run with six mature adults from one close-knit extended family. They told me that were amused to discover, from comparing notes with each other *after* my interviews, that three of them viewed the meat-rich hind leg as having two well-defined, named segments and showed me the boundary, and three of them viewed it as having three such segments. They had been unaware of their differences. In their view, neither of these could be deemed 'correct', they simply differed (Gardner 2006, 147). Moose being one of the main sources of meat, it was far from trivial in the full study that there were four modal ways, plus others, of labelling the moose spine and its parts, varied length of each named part of the spine, and greatly varied ways of handling the lumbar section that 'connects' fore and hind parts of the moose (Gardner 1977c, 270–84). Curiously, only one person out of 32 gave me a set consisting of what turned out statistically to be the most common term for each part of the spine (Gardner 1977c, 280).

I have comparable data on trap part names (Gardner 1977b). The Dehcho Dene we studied have had steel traps since the early nineteenth century, when the fur trade first reached them, and even seven or eight year olds could set a so-called 'number 1' trap competently. Terminology is just as varied for parts of a trap as it is for parts of a moose. Some labelled trap parts using the terms for spine, pelvis, and femur; others employed the terms for neck, jawbone, and tongue. Let it be said though that, whether or not they knew any English, they used only Dene terms. Variation was even greater in procedures than it was in terminology, individuals differing strikingly as to how they thought the trap should face an approaching animal (Gardner 1977a, 147).

They paid much attention to birds. Even though few birds were of practical utility, people tended to notice and watch them and it may be significant that birds were commonly spirit helpers (Gardner 2006, 140). I found that terms for bird species were highly varied (Gardner 1976).

Christian and I ascertained that, amongst other variables, age might underlie some interpersonal differences, as people not only tended to mature in silence, but they

> 'frequently spent their later years under circumstances in which feedback was diminished and in which the impress of continuing personal experience provided a basis for slight divergence' in the dimensions and phrasing of knowledge (Gardner 1976, 464).

Given such interpersonal differences, especially in terms for critical subsistence items, it is important to establish how people comprehend one another's speech. We found institutionalization of two practices: checking on labels used by others and periphrasis. Checking labels with others is a regular practice between trapping partners and newly-weds. The common form was by asking 'What do you call this?' In trapping partnerships it might continue from months to more than a year. Marriage partners in virtually every family studied did it regularly (Gardner 1976, 463–4). We ascertained that they sought to understand one another, not to converge in their terminology.

> 'Speakers are responsive and appear to assess the effects of what they are saying. One frequently notices speakers rephrasing thoughts in descriptive language or employing other kinds of periphrasis. In one of many observed cases, in a conversation . . . about a trap line incident, one man referred to a trap part by [what I already knew to be] a relatively unusual term. A listener appeared to frown and, without pausing or faltering, the speaker used a stick in his hand to illustrate which piece with a drawing in the dust, as he kept on with his verbal account' (Gardner and Christian 1977, 399).

Tlicho Dene: As for variable procedures, Walsh reports that, among Tlicho Dene, 'different ways of doing something are not wrong.' They are the result of people learning other methods (Walsh 2017a).

No comparable data appear to be available on the Dene Tha or Gwich'in.

Evidentiary criteria for knowledge claims

Paḷiyar: I found adults openly weighing everyone's hunches about some matter, particularly on hunts and in crises. If individuals theorized about what was happening, then they and others in the group might seek and systematically examine facts bearing on each theory that had been put forward. On a boar hunt, people occasionally theorized about what the pig was doing. We changed course *only* if facts justified it.

> 'In keeping with this . . . , realizing there was a puddle of blood each time the pig crossed

> a low obstacle, I mentioned the possibility that it was dragging one leg. Two or three people asked me about the evidence for this. They heard me out, but admitted to skepticism' (2000a, 41–3).

After the chase ended, all wounds were examined and discussed. My theory would not have altered the path of our hunt, but, when my fellows noted the mauled, dangling hind leg, several did flash me smiles (2000a, 43).

Dehcho Dene Christian observed that people cannot judge the emotional state of another person; it is simply 'not known' (1977a, 72) and they talk similarly about other peoples' motives and future actions (1977a, 82, 96). They make a clear distinction between what can and cannot be known. When I tried to elicit a rough equivalent of family-level taxa for birds – such as owls, hawks and eagles, or geese and ducks, some of my subjects baulked and fell silent, but two told me that general terms were only used in cases of ignorance, or what we might call 'empirical' uncertainty (Gardner 1976, 463). An example: 'If from far you see him you can't tell, so you call him… [by using a general term]' (Gardner 1976, 449).

Closing thoughts

There was a point, of course, to my concentrating in this paper mainly on cultures having highly limited sharing of general and specific terms, even those terms central to subsistence. This promised to provide a long overdue challenge to the common assumption that shared terminology is normal and perhaps even necessary. I hope to have made it clear that there actually can be successfully functioning of a system in which there are (a) an explicit aversion to direct instruction, (b) limited oral transmission of information, (c) denial that experts exist, and (d) high levels of resulting cognitive diversity. Although Christian's and my research focused on establishing the degree to which Dehcho Dene had only limited shared knowledge and terminology, we made a point of looking at this in its behavioural context. There was plentiful sharing in other aspects of their culture. Individuals were certainly not disaffected from one other and did not resemble the Ik, as once characterized by Turnbull (1972).

Much could be said, for instance, about shared and coordinated activities of Paḷiyar and Dehcho Dene in their work, social interaction, ritual, and play. Both peoples appeared comfortable when interacting with other peoples who shared a language or dialect and manner of living with them. It was not just that individuals 'made do,' there was evidence of social warmth. What is more, life in such individualized systems was anything but chaotic. Despite the idiosyncratic manner in which people learned and spoke, their venues for joint activity at work and recreation were many. Sharing could be significant. By participating in all male and mixed-sex Paḷiyan work parties and in male Dehcho Dene work parties, I found them quiet yet cheerful, cooperative, and spiced now and then by wordplay by even the most taciturn individuals. I saw this too in women's work parties. If there was light jesting, it seemed never to be taken the wrong way. Even I had to learn to take light, inclusive Paḷiyan teasing. In a Paḷiyan group hunt, spirits were high, most were active in tracking, all happily cooperated in butchering or portioning out the meat, and each hunter cheerfully took home a share precisely identical with the others in size and composition.[8] Since the 1896 Yukon gold rush, Dehcho Dene co-workers have put interpersonal problems to rest by drinking home brew heavily together, thrashing out what was on their minds, then claiming afterwards, 'I don't remember.' Trapping partners did it prophylactically when they returned home in case some problem needed airing; trappers who allowed me to accompany them sought to draw me, too, into this licensed venting afterwards; and I faked memory loss once when drinking with a man who was upset by how we sampled our research subjects. A smile resulted. I even watched a courting couple do it (Gardner 2007, 22–5). As for recreation, on full moon evenings many Paḷiyar (some couples wearing each other's garb) danced joyfully in a circle to song and a beating drum. This drew the rapt attention of smiling onlookers as well (Gardner 2006, 53–4). On grassy riverbanks on long summer evenings, mature Dehcho Dene men and women, with locked arms and calmly focused faces, danced in synchrony to a drumbeat, as they followed a circling singer who had a dream song to share with them, about the trail we must follow after death (Gardner 2007, 30). In both cultures faces spoke loudly; fleeting though they were, such moments of coordinated action appeared to give unity to more than just participating dancers. Both peoples, too, enjoyed moments of improvised play by someone skilful with words or rhyming couplets (Gardner 2000, 184–5, 2006, 150).

While Paḷiyar and Dehcho Dene had limited access to the thoughts of those around them, they valued the resulting privacy, and they acted as though they had little interest in what was on others' minds. Familiarity with each other's usual routines gave social life as much predictability as they seemed to need. Except in Dehcho Dene marriages, contracts were unnecessary and, even between spouses, there was no

evidence of people chafing over what someone else had failed to do. Relaxed interpersonal relations and ready smiles tended to be what one usually saw. The primary shared value of the Paḷiyar and Dehcho Dene, as well as Malaipaṇḍāram and Dene Tha, seemed to be that one must respect others – meaning *all* others, children included (Gardner 2004, 55–6; 2006, 120; Morris 2014, 310; Goulet 2000, 72). Honouring this expectation was normal. In the Paḷiyan case, permissive South Indian weather being no impediment, even light disrespect (such as bluntly telling one's spouse what to do) could lead to the offended spouse promptly moving out (Gardner 2004, 62–5). This was surely an incentive to act with restraint, give others the space they needed, and, in so doing, tie people together in peaceful communities (Gardner 2000b, 218–21).

A predictable consequence of pure egalitarianism and absence of formal authorities is that people are obliged to resolve interpersonal difficulties on their own. During my time in the field, I heard claims that three Paḷiyar resorted to using sorcery in response to provocations (2000, 156–7). This being done in secrecy, of course, was beyond further inquiry. During our work with Dehcho Dene, two families rather openly took turns ritually attacking one another in anger, following a seemingly accidental injury.[9] It was hard to miss six young men suffering broken legs, back and forth between family A and family B, especially when the first victim's mother cried out 'My son will not be the only one to break his leg!' (Gardner 2007, 31–2). Even so, these ritual attacks took place without unduly disrupting otherwise relatively peaceful communities – presumably because respect for all others was a central and very explicit ideal.

Paḷiyar seldom met other hunter-gatherers, but they drew no firm line between themselves and others when they did meet them, even if there were minor dialect differences. I have also seen unproblematic intermarriage of Paḷiyar with plains people. How one acted was a personal matter and there was no prejudice against children of mixed birth. What really counted was respectful behaviour. Once more, such openness was seen when Dehcho Dene encountered Dene from adjacent regions. There appeared to be friendly, open boundaries. In Canada, speech differences within their own communities may have prepared them to be tolerant of linguistically similar, kindred peoples, for in gatherings I have seen (e.g. at a region-wide pipeline hearing) openness and trust of distant peoples were apparent. I also learned that I, an outsider, could approach a log cabin owned by people with whom I had never before exchanged a word, scrape off my boots on the door step, open the door, enter, sit down with my back against the wall, and wait five minutes before saying why I had dropped by. Their response: relaxed smiles and interest in what I had to say.

Returning now to the rationale for our research, for Dehcho Dene to hold that one truly knows only what one has personally witnessed undoubtedly contributes to their interpersonally diverse (or diversely phrased) knowledge, yet that appears not to be automatically problematic. Indeed, in the other individualized foraging cultures I have treated here, field data of professionals make it clear that visually derived information alone can play a significant role in adaptations and in perpetuating ways of life, even under the harshest conditions. The notion that perpetuation of culture 'depends' mainly on speech is flatly incorrect. We chatty outside observers have to face the fact that it is ethnocentric of us to suppose that *our* manner of perpetuating culture is *the* manner of doing so. Foragers such as those described here have provided us with diverse and humbling lessons.

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Notes

1. As Fredrik Barth puts it 'all views are singular and positioned' and 'differences between persons in knowledge, values, concepts, and perspectives animate a great deal of the action and interaction that takes place' (1994, 357). In addition, Robert Kelly not only acknowledges interpersonal differences in knowledge among foragers, he recognizes too the importance of variation in information in the course of transmission (1995, 59–64).
2. In accord with Dravidian languages, 'Paḷiyan' is used as a singular noun or an adjective and 'Paḷiyar' as a plural noun. A subscript dot beneath a Paḷiyan consonant indicates retroflexion, the tongue being curled back, and an apostrophe indicates that the preceeding Dehcho Dene consonant is tense and plosive.
3. I urge avoiding use of the deliberately pejorative exonym, 'Slavey', imposed on Dehcho Dene by insensitive outsiders (Asch 1981, 348). Scholars were slow picking

up on this (e.g. Asch 1981, Helm 1981, *passim*, 2000, 7), but, by 1974, people along the Mackenzie and Liard Rivers had already begun to call themselves by their own fully appropriate term, meaning 'Big river people.'

4. As I had studied colloquial Tamil for two years and had become acquainted with their dialect, language problems did not generally arise.
5. Settlements being small, such groups necessarily include youths of differing age.
6. Games are as diverse as swimming in forest pools, making propellers with reed blades and thorn axles, and playing a non-competitive version of prisoner's base – emphasis being on dancing rather than capture of opponents.
7. Only a third of the adults had much facility with English. Preliminary training by linguist Marshall Durbin plus work on language during a 1973 pilot project allowed me to conduct some later sub-projects entirely in Dene. Jane Christian built on her previous Athapaskan linguistic research.
8. One extra share went to the person who moved in and struck the first blow, but it appears ultimately to have been distributed to those in special need.
9. One occurred when a youth accidentally re-broke his own leg when demonstrating a karate chop to a friend. Another was the result of a drunken, snowmobiling teenager careening into a tree. The series was ended by a famous Cree shaman whom the two families flew in from southern Alberta.

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Chapter 14

The sharing of lithic technological knowledge

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The sharing of lithic technological knowledge among foragers, as a subject, encapsulates two of the central themes of this book. First, the item being shared is not a subsistence item such as game meat, so frequently the focus of hunter-gatherer studies. Second, lithic technological knowledge is something which must be shared through practice to be learned, and as Lavi & Friesem state in their introduction to the conference that led to this book, the significant value of studying a practice 'lies in its ability to open a window to more intangible aspects of life such as sociality, morals, values, ideas, knowledge, daily conduct, relationships and social, self and environmental perceptions'. The knowledge of how to flintknap is certainly an intangible component of the lived experience by which the world of hunter-gatherers is constituted, or was, until very recently for most foraging populations. Yet the material requirements of the sharing and learning of flintknapping skill, which we can take as knowledge put into practice, is in many ways counter-intuitive. The practice produces the most tangible of results, in the form of artefacts that preserve across the entire duration of the archaeological record, almost regardless of the preservational environment. This archaeological ubiquity gives non-specialists the impression that lithic technology is as readily learnable as it is abundant. Yet flintknapping as a learnable performance in real time is more ephemeral than most material practices, including pottery, textile weaving, and basketry. The delivery of a blow that produces a flake is so fast in its execution that learning the bodily performance with anything akin to accuracy through a single observation is difficult and unlikely. And deciphering the behavioural specificities of a sequence of such blows through the examination of a single artefact varies greatly depending upon a number of technological and contextual variables. As a result, the successful sharing of this intangible content imposes distinct material requirements for its complete acquisition by the receiver. The nature of these requirements are such that anthropologists and archaeologists may need to anticipate a greater range of results from the sharing of lithic knowledge among foragers than from the sharing of other intangible bodies of knowledge, such as ideas and beliefs (Tostevin 2019). Given flintknapping's counter-intuitive nature, the processual understanding of how it is learned, practiced, and shared by modern human knappers has not translated well to the world of the experimental archaeology, cognitive sciences, and fields such as cultural transmission theory, which utilize stone tool technology as a subject from which to learn how knowledge was shared in the past. Indeed, some recent experiments within these fields have incorrectly characterized the process by which flintknapping skill can be transmitted. This paper, which presents a processual discussion of what anthropological archaeologists know about how flintknapping knowledge *can and cannot* be shared, thus comes at an opportune time to contextualize these experimental results. At the same time, such a discussion can help clarify where future experimental work is needed to test the boundary conditions for when the intuitive perspectives of modern human knappers constitute appropriate vs. inappropriate assumptions to use in interpreting learning processes across the temporal scale of human evolution.

Framing the question

One of the questions I am most frequently asked when I mention my interest in how our human ancestors learned to make their stone tools is, *when did hominins first start to teach this knowledge?* This is an important and omnipresent question but it is not my proximate goal for this paper. Instead, I will treat it as an ultimate goal towards which the discussion I offer here is aimed. By focusing on the gradual accrual of mechanisms

available to foragers for sharing 'knowledge put into practice', I hope to emphasize (or, perhaps, re-emphasize in a new frame) perspectives from modern flintknappers and anthropological archaeology that will help, in the end, to answer that ultimate question.

The goal of the present paper is thus not to summarize the current data on when we first recognize the teaching of flintknapping in the archaeological record. That goal itself is worthy of treatment but, for the purposes and scale of this volume, the necessary data are compromised by two limitations that make the results more informative about these limitations than about the evolution of pedagogy itself. First, site formation processes result in the behavioural resolution of lithic data decreasing as the age of the sites increase, biasing our view of pedagogy towards recent periods. Second, the interpretation of the different forms of preserved lithic data expose more about methodological problems in archaeological interpretation than about when the sharing of lithic technology actually began. The contrast between the interpretation of refitting and typological data will help illustrate this point. For instance, a synthesis paper would be able to discuss a number of extremely well-preserved archaeological sites that most scholars would agree can be interpreted as the earliest solid evidence of some type of flintknapping 'school' or at least a close spatial association between the debris of a skilled knapper's activity and that of a number of individuals of lesser skill. These likely flintknapping apprenticeship sites would include at a minimum three French localities, Étiolles (Pigeot 1987, 1990), Pincevent (Bodu et al. 1990), and Solvieux (Grimm 2000), and one Danish site, Trollesgave (Fischer 1989, 1990; Riede 2006). The close synchronicity of these sites at the end of the European Upper Palaeolithic, however, may be less relevant than their geoarchaeological commonality: In each case the artefacts are encapsulated within very short occupations with little taphonomic distortion during the site formation processes which led to their geological preservation. Such geoarchaeological contexts preserve artefact associations that allow analysts to reassemble individual nodules of rock through the refitting of most of the removed flakes back onto cores, assuming that they were in fact left at the site by the knappers (e.g. Goring-Morris et al. 1998). Through the counting of knapping errors vs. successful removals throughout the reduction of a nodule, analysts may recognize differential skill levels between very complete refitted sequences. Such sites are rare, however, both in terms of taphonomic preservation and the completeness of the refittings, and they get rarer the further back in time one looks. These four sites are also the creations of modern humans rather than pre-modern hominins, making the interpretations less controversial. Yet it is notable that none of the few sites with extensive refitted sequences from pre-modern contexts, such as Lokalalei 2C of the Oldowan (Delagnes & Roche 2005), Boxgrove of the Acheulean (Pitts & Roberts 2000; Hallos 2004, 2005), or Maastricht-Belvédère of the Middle Palaeolithic (Schlanger 1995, 1996), have been argued to evidence a pattern of differential skill levels to suggest anything akin to a case of apprenticeship.

If rare refitting data can be demonstrative (if not straightforward), the interpretation of the pedagogical significance of specific artefact types that are more frequent in the archaeological record, such as Acheulean handaxes or the blade cores of later periods, is far from clear. On the one hand there are archaeologists (including McPherron 2000; Davidson 2010; Moore 2011) who conclude that simple rules of production, acquired without instruction, can produce the variability seen among Acheulean handaxes. On the other is the view that complex forms of instruction and apprenticeship are necessary for their production (e.g. Wynn 2002; Shipton 2010; and Hiscock 2014). There has even been a recent argument that these artefact forms are as genetically controlled as birds' nests (Corbey et al. 2016). As the commentary within Tennie et al. (2017) makes apparent, Palaeolithic archaeology has a long way to go in developing a quantitative and anthropologically sound body of archaeological theory to disprove some of these diametrically opposed hypotheses about artefactual learning in the earlier periods of the archaeological record.

Therefore, rather than jumping into the synthesis of contested data, I will take the present opportunity to examine the process of sharing as it relates to the learning of a material skill as a way to highlight what we would expect for the learning of flintknapping skill under the assumptions of both behavioural ecology as well as the perspectives of modern human artisans engaged with this skill. Taking Whallon's (2011) framework within which to view the role of information in hunter-gatherer bands as a model, this treatment will also highlight where our modern assumptions for such a process may be of suspect utility. I will explore this framework through a series of questions, including: Why should one share flintknapping knowledge? What are the limits on sharing such knowledge? How is the knowledge structured in practice and how does this structure affect sharing and experimental investigations of learning? What does it mean to share a process that is composed of the interactions of different cognitive, artefactual, and agent-dependent scaffolds? What are the repercussions of sharing space as well as sharing time within

the process of learning flintknapping? What are our current problematic assumptions related to when flintknapping knowledge must be shared to be learned vs. learned through self-guided, trial and error learning?

Why should one share flintknapping knowledge?

In comparison to the sharing of food and other resources, how is the sharing of lithic technological knowledge different? The ethnographic literature on flintknapping, when limited to foraging societies (e.g. Australian groups in Tindale 1965; Gould et al. 1971; Hayden 1979; Gould and Saggers 1985), is not abundant and unfortunately is not as well documented as other aspects of hunter-gatherer behaviour. Our better documented ethnographic descriptions of the learning of flintknapping come from populations (mostly agriculturalists, horticulturalists, and herders) which no longer rely on stone cutting edges as their main interaction with the material world (Brandt et al. 1996; Clark 1991; Gallagher 1977; Hayden & Nelson 1981; Sillitoe and Hardy 2003; Stout 2002; Weedman 2000; White and Thomas 1972). Yet, as with other shared resources used by foragers, one can use behavioural ecological theory to make predictions to supplement the lessons learned from ethnographic observations to inform our framework for studying behaviours deeper in prehistory.

From evolutionary theory, one would predict that as soon as an individual's costs of procuring raw material and making lithic cutting edges were outweighed by the benefit s/he received from the cutting edges' improved access to food resources, whether in the form of direct meat/plant food processing or through the shaping of other tools (e.g. wood) for food acquisition, there would have been evolutionary selection for behavioural incentives to encourage kin-based sharing of the skill to produce those edges. In other words, hominins would have assisted their kin in the learning of the creation and use of stone tools, to the extent that their cognitive capacities for shared attention would have allowed (a caveat which will be explored in more detail below). Following Torrence's (1989a, b) focus on time as the limiting resource for modern human foragers and thus the most suitable unit of optimization within a lithic economy, one would predict that the cost to the facilitator of this sharing would likely be in terms of the added time spent in providing raw material, which would depend upon the interaction between toolstone provisioning and the mobility strategy (per Surovell 2012), and in the time lost as delays while slowing activities to assist the learner's observation, as is done with the learning of hunting skills in living foragers (MacDonald 2007). Such costs could be as low as tolerated scrounging of toolstone during any knapping event (equivalent to chimpanzee mothers allowing infants to pull scraps of food from their mouths (Winterhalder 1997)), to intentional initiation of knapping at locations already provisioned with stone (Shea 2006), to the high costs of planned forays to locations with distant stone even if for only the purposes of information gathering on distant locales (Whallon 2006). The examples of the costs above are clearly incremental through evolutionary time and not all of them are likely to have been relevant to early sharing of flintknapping knowledge, but are provided here to illustrate the range of possibilities.

Given the likely existence of even minor costs, one would predict that the sharing of flintknapping knowledge would follow Hamilton's Rule under kin selection (Hamilton 1964), in which the cost to the actor must be less than the benefits to the receiver, devalued by the degree of relatedness between actor and receiver. Such costs would include the life history trade-offs implicated in Trivers' (1974) parent-offspring conflict, although the costs associated with lithic technology would pale in comparison to the direct reproductive costs usually associated with such life history conflicts. Additionally, the sharing of flintknapping knowledge would also follow Trivers' (1971) rules for reciprocal altruism among non-kin. This would be more likely through time as hominin social structure evolved from the last common ancestor with the non-human apes, to take on the unique form of living human foragers in which the majority of co-residing adults are unrelated (Hill et al. 2011) and reciprocal altruism rather than kin selection dominates food sharing (Allen-Arave et al. 2008). Given this transition from a social structure of chimp-like kin selection and sex biased natal dispersion to a social structure of fictive kinship with flexible membership (Read 2011), one would predict that the selective pressures for knowledge sharing would have adjusted accordingly.

The role of stone tool cutting edges also changed within the hominin adaptation during these changes to hominin social structure. As Shea (2017) argues using the large-scale analysis of variation in the technological treatment of stone (his Modes A–I, Shea 2013, rather than epistemologically suspect industrial types), the use of lithic cutting edges became habitual by 1.7 million years ago, rather than just occasional – as with non-human primates – as before this date, involving the greater foraging radii needed for a more carnivorous biped. This essentially pushed hominins further along the trajectory of increased logistical mobility relative to that of non-human primates. By

0.3 million years, stone tool cutting edges had become essential or obligatory for a successful bipedal hunter-gatherer adaptation, as seen with recent living foragers. Through these changes in stone tool use from occasional, to habitual, to obligatory, I would add to Shea's reconstruction that the increased need throughout the Pleistocene for individuals to master the skill of flintknapping would have created a context for a cascade of selective pressures towards the cognitive, emotional, and social parameters associated with the prosociality of living humans. Despite our obvious selfish natures and propensity for Machiavellian intrigue, human cooperative behaviour stands in striking contrast to the emotional instability and uncooperative sociality of chimpanzee societies. Kim Sterelny's *The Evolved Apprentice* (2012) makes an eloquent argument in this direction, positioning flintknapping within the gradual evolution of information-sharing practices across generations that resulted in both the cooperative foraging adaptation and prosocial mental abilities of modern humans. His account solves many of the problems associated with the difficulty of evolving cooperation in game theory out of a world of cheaters. His argument also fits much of the logic of niche construction theory (Laland & O'Brien 2011), whereby the future inheritance of the environment that is shaped by current behaviour allows for the evolution of more complex structures than through the oscillation of traditional selective forces. In his account, our prosociality could have resulted from the selective forces of niche construction during the tumultuous Pleistocene Epoch, requiring us to 'Stay Calm, and Carry On Knapping!', as I like to put it. Hiscock (2014) has taken this logic further, if perhaps into more controversial territory, considering the evolution from one lithic technology to another as merely the incremental elaboration that facilitates competition within a social niche, rather than the evolution of new technologies to solve functional requirements which could not already be solved with existing cutting edges. While each of these theoretical perspectives has its attractions as well as disadvantages, they all point to the need to consider how the changing mechanisms by which lithic technological knowledge was shared could have shaped both the large scale pattern of lithic technology itself and the shape of the hunter-gatherer adaptation as well.

But to what extent *can* one share one's flintknapping knowledge?

While behavioural ecological theory predicts that individuals should share lithic technological knowledge when possible and that the archaeological record should display an increasing role for such sharing as material culture took on a more central role in the bipedal foraging adaptation, the hard question remains, *is it possible to really share one's knowledge of such a skill at all?* This may sound like a strange question but the fact is that conceptually half of what constitutes the knowledge to do the activity – to actually perform the appropriate choice in the technological procedure once one knows what the appropriate choice should be – is not vocalizable nor expressible in gesture without its actual demonstration. It can only be shared as a performance that is followed by the observer practicing the motions her/himself, through abundant repetitions, in order to replicate that uncommunicable knowledge within her/himself. As I have put it elsewhere (Tostevin 2012, 2019), it is necessary to make the observer's etic (cognitively separate) perspective into an internalized, emic (internal) perspective as a knapper through the observer's own practice. This is due to the fact that the flaking gesture requires the control of thousands of timed muscular contractions to deliver a successful blow of the stone hammer to strike a flake off a core. The motion of the arm delivering the blow occurs in less than a second and can rarely be altered after it has begun. Once the hammer stone touches the core (at a rate of approximately 2.4 meters per second), the rate of fracture propagation separates the flake from the core at a speed of 630–1100 meters per second, depending on the hardness of the stone (Cotterell & Kamminga 1987, 680). In neither the delivery of the blow nor the physics of its result is there time for a knapper to think about the delivery or consequences of the action. This near simultaneous action-result package makes it impossible for a knapper to consciously understand all of the neuromuscular components of the action and so put them into any communicative act other than repetition. The physics of knapping also make it impossible to slow down the gesture to a speed at which an observer can, by simply looking, perceive all of the necessary bodily details. If this were otherwise, none of the controlled experiments in flake fracture mechanics, from those of fractographers (Tsirk 2014; Quinn 2007) to those of experimental archaeologists (Speth 1972, 1974, 1975, 1981; Dibble & Pelcin 1995; Pelcin 1997; Dibble & Rezek 2009; Rezek et al. 2011), would have been necessary. Conversely in other material media, we can just observe and ask potters and basket weavers how they perceive the skill in order to learn much (although certainly not all!) of their skills. And to judge by the more recent attempts at flake fracture studies (Magnani et al. 2014), even these experimental approaches are not able to disentangle the known variables under the control of the knapper.

The description above relates to the basic behavioural unit of flintknapping, the striking off of an individual flake. The order and strategy behind a sequence of flakes, if not their removal, however, are declarative knowledge and can be communicated with greater ease. Thus flintknapping is like all other items of material culture, in that to learn how to make the item is to learn two different and highly structured bodies of knowledge, i) knowing what you *should* do in the conceptual sense, the readily communicable knowledge or *connaissance* of the behavioural gesture in the parlance of the French *chaîne opératoire* school (Pelegrin 1990); and ii) knowing *how* to do it as a bodily action, through the development of the patterned neural connections that enable the correct choice of bodily gesture to be enacted in the correct way (i.e. the relatively uncommunicable know-how or *savoir-faire*, as it is termed in the French school). This is a distinction which is also recognized in the cognitive sciences and has been further clarified in recent experimental imaging analyses (Stout & Khreisheh 2015; Stout et al. 2015). In another paper (Tostevin 2019) which could serve as a companion piece to this one, I unpack the *connaissance* vs. *savoir-faire* distinction, following the work of others (Apel 2008; Wynn and Coolidge 2004) and illustrate how the entire lithic operational sequence can be understood as a combination of flintknapper decisions (nodes) that are reflected within either tactical domains, comprising the non-declarative know-how of *savoir-faire* involved with individual flake production, or within strategic domains, involving the knowledge (*connaissance*) of the plan for a sequence of removals within core reduction, including contingency plans for error corrections. The most significant ramification of this distinction is that there is a greater fidelity of transmission between a demonstrator's and an observer's strategic knowledge after one or two observations but less fidelity without longer exposure and practice between a demonstrator's tactical know-how and that of an observer (a subject to be explored below). The second most significant ramification of this distinction is that the patterning at each decision node is as archaeologically visible to modern lithic analysts as it was to the prehistoric observer at the beginning of their etic learning experience, before their own trial-and-error practicing transformed the etic to an emic understanding of the tactical know-how. This is a result of most (although not all) of the knapper's decisions (conscious, unconscious, and errors) being preserved as physical attributes on the resultant artefacts which can serve as etic proxies for later analysts. If lithic technology were not reductive and did not preserve the marks of previous removals on the dorsal face of each flake and on the surface of each core, this would not be possible.

The relatively strong know-how vs. knowledge distinction in flintknapping may result in the incomplete sharing of flintknapping knowledge between individuals to a greater extent than with other types of knowledge. *All human learning* of course has such a potential since it is a receiver-oriented process (Thayer 1967; Schiffer 1999), despite our perverse linguistic willingness to describe learning as a sender-oriented 'communication', what Reddy (1979) calls the Fallacy of the Conduit Metaphor. Yet the knowledge sets of bodily action and material culture production have by necessity more of an emphasis on know-how and so it is significant that ethnographers of foraging societies in the present volume, such as Gardner and Hewlett et al. (and Hewlett et al. 2011), consistently note the de-emphasis of verbal instruction in most foraging skill sets, even when there is danger or disadvantage in the failure to learn. To me, it remains a fascinating subject of further research whether this overall de-emphasis on verbal instruction is a result of an evolved pedagogical efficiency in letting learners of most foraging tasks 'observe and then practice', rather than 'listen and then do' (as with the more non-material learning of non-foraging societies), or if the restrictions on verbal instruction among what Gardner calls 'taciturn' foragers is a result of the de-emphasizing of superior knowledge among the knowledgeable as part of the foundational schema of the egalitarian ethos (Hewlett et al. 2011). Of course, it will be important to keep in mind the fact that multiple processes may result in similar foundational schema among different forager groups, as Boyette & Lew-Levy (this volume) show through the contrast in why resource sharing is pursued by the Aka and Ngandu through the action of different core cultural values.

The importance of the tactical vs. strategic knowledge distinction for the experimental investigation of the sharing of flintknapping knowledge

Unfortunately, it is precisely the distinction between tactical know-how and strategic knowledge which has been lost within several recent and important experiments designed to investigate the cognitive requirements for the cultural transmission of flintknapping and the evolution of language during human evolution (the exception being Stout & Khreisheh 2015 and Stout et al. 2015). Morgan et al. (2015), in an impressive and influential study, trained 184 individuals in flintknapping under five varying mechanisms of transmission. The mechanisms included 1) 'reverse

engineering' in which the naïve observer was given a hammer stone and a core and shown stone tools but never shown a knapper in action; 2) 'imitation/emulation' in which the naïve observer was shown a knapper in action over a sequence of flake removals, simulating imitative learning (Whiten et al. 2009) in which the means to achieve the goal as well as the goal was visible, but the observer was not allowed any interaction with the demonstrator; 3) 'basic teaching' in which the demonstrator could alter the grip of the learner on the core and slow his own demonstrations but not use gestures beyond these; 4) 'gestural teaching' in which the demonstrator could interact with the naïve observer through unlimited gestures and physical motions in an effort to improve the transmission but was not allowed to speak; and 5) 'verbal teaching' in which no limits were placed on the demonstrator's communication abilities. What is immensely positive in the experimental design of Morgan et al.'s study is first, the large sample size of learners that would allow for the first time a knapping experiment to produce statistically analysable results. Second, the participants were articulated into transmission chains of learners teaching learners in iterations of 5 to 10 'generations' to test the fidelity of the transmission in the form of independent evaluations of the success of each blow and the efficacy of each flake product. What was missing from the study, unfortunately, was the realization that flintknapping tactical know-how, which was what was being measured on the resultant flake products in each transmission chain, cannot be learned in 5 minutes, which is all that each naïve observer was given to practice and learn themselves before being required to demonstrate to the next naïve observer in the transmission chain. Had the study tested the transmission of strategic knowledge, such as the discrimination ability of the observer to learn what steps should be taken in a core reduction without having to flintknap themselves, the results would have had some meaning for the research question at hand. However, the participants were being tested on their tactical know-how without giving them any time to generate that type of knowledge. Shea (2015) argues that at least an hour is necessary to teach Early Stone Age flaking techniques and that does not include the learner's practice time, whereas Stout and Chaminade (2007) provide data showing that 4 hours is insufficient for developing more than a little motor skill improvement with Oldowan knapping. The results of the Morgan et al. (2015) study show that the transmission mechanisms all ultimately failed, as even the best performing mechanism at the end of its transmission chains produced results as poor as the most sparse mechanism, reverse engineering. The results are thus clearly understandable from the point of view of the tactical/strategic distinction, but this distinction was not recognized during the interpretation of the results, producing an error in concluding that 'verbal teaching' constitutes the only statistically successful mechanism for transmitting flintknapping skill beyond the level of the Oldowan.

Other experimental studies designed around transmission questions have also recently declined to take advantage of the standard flintknapper's wisdom concerning the tactical/strategic distinction. Two experiments designed and executed by the same team endeavoured to replicate aspects of flintknapping to test different concepts of the cultural transmission of stone tool making (Lycett et al. 2015). Kempe et al. (2012) endeavoured to evaluate the effects of size mutation by asking naïve participants to use a tablet computer's touch-screen to resize an image of an Acheulean handaxe to that of an example image. In a separate study, Schillinger et al. (2014) investigated shape mutation in the copying of an Acheulean handaxe by asking participants to use a stainless steel table knife to carve the shape of a model Acheulean handaxe out of a standardized plasticine block. While their overall purpose in creating a 'model organism' context to stimulate cultural transmission research (Lycett et al. 2015) was both laudable and insightful, neither experiment made any effort to approximate the material reality of the process involved in acquiring or utilizing the tactical know-how necessary for flintknapping. Studying the effects of size mutation (Kempe et al. 2012) might arguably be a question of strategic knowledge but surely the rate of shape mutation (Schillinger et al. 2014) relies upon the fidelity of the transmission of tactical know-how far more than strategic knowledge. Removing tactical know-how from the experiment made the recruitment and retention of participants far easier but certainly compromised the applicability of the results for the understanding of the origin of shape variation in flintknapping stone.

In all of these examples, the rationale for the experimental design not to include the meaningful distinction between tactical and strategic knowledge is understandable as a practical decision. The length of time it takes to generate tactical knowledge in a naïve participant is a burden, particularly with the typical college student participant pool. Those well executed studies which pay due attention to the tactical vs. strategic distinction in fact can suffer from participant drop-out and/or failure to follow the procedures (Bamforth & Finlay 2008; Ferguson 2008). Yet the results of a study are only as meaningful as the experimental design. So it is to be hoped that these

studies will be followed by additional work to apply this distinction within longitudinal studies, as has been done so successfully elsewhere (Stout et al. 2015; Stout & Khreisheh 2015), but with the larger sample sizes these studies demonstrate so well.

What does it mean to *share* flintknapping knowledge?

The types of transmission mechanisms involved in Morgan et al.'s (2015) five transmission chains have another name within the literature of the anthropology of education, developmental psychology, and development approaches to cultural evolution, namely scaffolds. I would prefer to call such mechanisms scaffolds, building off of the artefactual metaphor for the role of teachers' and others' behaviours that facilitate a child's development (Greenfield 1984; Bickhard 1992; Lave & Wenger 1991), because the term places a dual emphasis on the importance of 'sharing' within the acquisition of flintknapping knowledge. Not only is willing transmission by a demonstrator an act of sharing with a learner but in fact certain cognitive faculties must be 'shared' (as in, 'held in common') between the demonstrator and the observer for certain mechanisms to be viable, in order for one individual to realize the need to aid the knowledge acquisition of another. Wimsatt & Griesemer (2007) recognize three types of scaffolds:

1. *Artefact Scaffolding*: 'artifacts can scaffold acts when they make acts possible, feasible, or easier than they otherwise would have been' (2007, 60).
2. *Infrastructure Scaffolding*: 'the most important mode[s] of infrastructural scaffolding are forms without which culture and society would not be here at all. Going backwards in time: written language, settlements and agriculture, and animal husbandry and trade practices (developing into economic systems) were major infrastructural innovations central to all that followed. Spoken language with oral traditions and tools use antedate all of these by many tens to hundreds of thousand years. All are generatively entrenched so deeply as to be virtually constitutive of all of our forms of life, limiting the kinds of presence-and absence comparisons we would like to have to assess their effects' (2007, 65). I take the cognitive capacities of prehistoric actors to fall in this category.
3. *Developmental Agent Scaffolding:* 'scaffolding skills in agents where the scaffold is (or includes) another agent are particularly interesting: the scaffold is or involves another person, social group, or organization, often in spatial and temporally organized dynamical arrangements with artifacts' (2007, 66).

In a separate paper (Tostevin 2019), I investigate seven conceptual scenarios of the cultural transmission of flintknapping knowledge, distinguishing between the fidelity of tactical know-how vs. strategic knowledge in each case, according to the gradual augmentation of each of these three types of scaffolds. We can use these three types of scaffolding to explore the process of sharing flintknapping knowledge according to what is being shared: space, time, and directed mental states.

Sharing space

The sharing of physical proximity is the first, basic aspect of sharing between a knowledgeable individual (the knapper) and a naïve observer. Hewlett et al. (in this volume) explore the dimensions of the social sharing of space among contemporary foragers and provide a useful discussion to contextualize and scale the arguments below.

Sharing physical proximity involves a form of social tolerance of the naïve observer by the knowledgeable individual, that provides the observer with access to artefactual scaffolds, such as a hammerstone, core, and resultant flakes, even if the knapper is not an intentional, active developmental agent scaffold, because s/he is unwilling to share her/his attention or is cognitively unable to recognize the lack of knowledge in the other (i.e. lacks the infrastructural scaffold of a theory of mind, *sensu* Dunbar 2003). The physical proximity of objects in motion can provide the learner who possesses the cognitive infrastructure scaffolding of emulation learning (for the goal of an action, *sensu* Tomasello 1996), with enough stimulus enhancement (Charman and Huang 2002; Franz and Matthews 2010; Matthews et al. 2010) to learn the object affordances of basic direct, hard hammer percussion. This etic understanding that a hammerstone can be wielded against a core to produce a sharp flake would only be actualized as true, emic knowledge of the percussive flaking gesture in the observer once s/he conducted enough trial-and-error practicing to discover the basic variables of the process for her/himself: 1) identify a location of core geometry that offers a convexity opposite a platform surface on the core that has an angle less than 90 degrees to the convex surface (for conchoidal initiation); 2) rotate, 3) turn, and 4) tilt the core across the three positional axes to line up the target platform with the percussor, such that the angle of blow of the striking gesture, aimed as a vector outward to the dorsal surface of the core, is within the 90

degree arc between the surface of the platform and a vertical blow to the platform; 5) identify the platform depth/thickness from the edge of the platform as the point of percussion to strike; and 6) strike with at least the minimum force necessary to dislodge the mass determined at the platform by the platform depth and the exterior platform angle (between the outside of the core that becomes the dorsal surface of the flake and the platform). With these six requirements, I have intentionally used Mark Moore's (2010) five ideational elements of his grammar of action for his basic flake unit but augmented them with the platform variables identified by controlled knapping experiments as those that determine flake size (e.g. Rezek et al. 2011). This is the flaking behaviour which Shea (2013) would call Mode C, the reduction of a pebble core or non-hierarchical core. Yet if the stimulus enhancement and subsequent trial-and-error learning were not sufficient for accurate replication, it is possible that the demonstration of direct hard hammer percussion could stimulate less complex behaviours in the learner, such as the use of a stone percussor against an anvil without a core in between, in which case Shea would call it Mode A and is a behaviour well known among the Anthropoids in both South American and Africa (Westergaard 1995). Alternatively, if bimanual percussion were not learned sufficiently but the affordance of the core was recognized, bipolar percussion (hammer and anvil with the core in between) might be the result. In this case, Shea would call this Mode B, which has been proposed as an antecedent to the Oldowan at the Lomekwi 3 locality in Kenya. Bipolar percussion does not require the same attention to the detail of platform angle in Requirement 1 above, since bipolar percussion produces shearing and wedge-initiated fractures (Cotterell & Kamminga 1987) that do not require an acute platform edge. While the recognition of the appropriate core geometries, correct platforms, and tilt angles of Mode C (bimanual direct percussion) were initially beyond Kanzi the Bonobo (Savage-Rumbaugh and Fields 2006; Schick et al. 1999), subsequent training of Kanzi as well as his sister Pan-Banisha resulted in the successful application of all 6 requirements above (Roffman et al. 2012). No non-human primate has been seen in the wild making Mode B or C tools, however.

It should be pointed out that the strategic knowledge acquired by the learner in the above scenario was a result of low fidelity cultural transmission (i.e. object affordances through stimulus enhancement) but the tactical know-how acquired by the learner was not a result of any cultural transmission but rather independent trial-and-error learning, what Tennie would recognize as within the 'zone of latent solutions' of a given species (2009; Tennie et al. 2017). Within the same level of physical proximity and non-pedagogical intent on the part of demonstrating knapper, a difference in the infrastructure scaffolding of the learner in the form of the cognitive capacity to use imitation learning (Whiten et al. 2009), in which the observer would pay attention to the actual sequence of movements (the means) to achieve the goal, would allow the learner to acquire the knowledge content through a different set of mechanisms, even if the resulting content were the same. Specifically, imitation learning would allow the observer to utilize all of the details of the use of the artefactual scaffolds present, rather than independently innovating a way to use them to achieve the goal (through emulation). If the core reduction demonstrated was simple, one would anticipate that the speed of acquisition of both tactical and strategic knowledge would be the same. If, however, the core reduction sequence was longer, the imitation scaffold would produce greater fidelity in the strategic knowledge and a likely faster acquisition of the tactical know-how as the learner used the demonstrator's flake products as artefact scaffolds. But the longer reduction sequence would involve the demonstrator and the learner in another form of sharing, namely that of *time*.

Sharing time

The longer the reduction sequence, the longer the physical proximity must be maintained for it to be learned by direct observation and the greater likelihood that the demonstrator would terminate the sequence before it is complete in order to devote time and energy to other living tasks. It is clear from the study of refitted sequences and distinctive raw material units that complete core reductions sequences were not always (or perhaps even frequently) executed all at one time in one location in the past but instead were fragmented across the landscape as the knapper practiced mobility in the pursuit of a livelihood (Hallos 2005; Turq et al. 2013). Yet if the knapper were able to share her/his time and joint attention with the learner, by means of a shared cognitive scaffold such as the capacity for triadic attention (Tomasello et al. 2005), observational learning could be far more faithful to the demonstrator's content, at least for strategic core reduction knowledge. It is also likely that tactical know-how acquisition would be speeded up, to the extent that the demonstrator could provide better angles of view and/or directly intrude on the learner's practicing through the readjustment of the core and hammerstone, etc., as Ferguson (2008) has shown through his own experiments to be efficacious in improving learning results among modern knappers.

At this point, the knapper and the learner are sharing a joint intention and time to produce a learning environment, such that the typical primatological situation of mere social tolerance producing physical proximity is replaced with true social intimacy in which the learner can be enculturated across many media (components of lived experience) while engaged in learning one specific content. This is the level of sharing and scaffolding that constitutes the social intimacy concept explored in Tostevin (2007), fittingly also within a McDonald Institute for Archaeological Research Monograph. It is also at this point in the incremental augmentation of the scaffolding and pedagogical environment where the knapper could do her/his utmost to assist the speedy acquisition of both strategic and tactical knowledge. As such, this is the point at which I would predict that sufficient fidelity in the transmission of the strategic knowledge of core reductions would produce ample variation in core reduction complexity between groups, within the range of equifinality between core reductions and their resultant flake products, for cultural drift to produce geographical variation in reduction strategies between populations of hominins. With the appearance of such variability between lithic operational sequences, the consistent fragmentation of the sections of the operational sequence across the localities of logistical mobility of the group would produce consistently different exposures of parts of the operational sequence to individuals of different groups, with different degrees of social intimacy. Specifically, as cores are reduced for blanks and reshaped through retouch into tools at base camps and raw material workshops, but not at logistical foray locations around the taskscape of the group's range (*sensu* Ingold 1993), the domains of core reduction would have a reduced visibility relative to the mobile tool kit transported onto the pathways of the landscape.

This concept of taskscape visibility, defined as the relationship between where, when, and with whom a cultural trait, such as a flintknapping behaviour, is performed and the possible transmission modes available for promulgating the trait into the next generation, is based primarily upon archaeological style theory, from Wobst (1977) to Wiessner (1983) to Sackett (1990) to Carr (1995). To problematize this theoretical foundation, Premo and Tostevin (2016) set out to evaluate the taskscape visibility concept using a formal, spatially explicit, agent-based model. Using an established model for the transmission of cultural traits among central-place foragers (Premo 2012a, b), the simulation evaluated the equilibrium diversity of two selectively neutral traits that differed only in their taskscape visibility (i.e. where they were learnable on the landscape). The simulation showed that the trait with the lower visibility, which was learnable only at residential base camps, had higher equilibrium diversity levels than the trait with the higher visibility, which was learnable at both base camps and logistical foray camps. Without the recognition of the role of taskscape visibility, which was the only difference between the traits, the difference in the observed equilibrium diversity levels of the two traits might have been incorrectly interpreted as resulting from qualitatively different forms of biased cultural transmission. Further, the formal demonstration of different equilibrium diversity levels resulting merely from different taskscape visibilities lends more credence to the results of archaeological studies which use differences among core reduction methods vs. the differences among mobile tool kit morphologies across assemblages to inform on the likely overlap or not between enculturating environments of social intimacy among hominin populations (Tostevin 2007; Roussel et al. 2016).

Conclusion: how do we test our assumptions about *when* a given lithic technology *must* have been shared?

As demonstrated in the above discussion of Premo & Tostevin's (2016) test of the effect of taskscape visibility on selectively neutral traits, it is necessary to test, even with such abstract means as agent-based modelling, the principles derived from the application of evolutionary theory, ethnographic analogy, and archaeological middle-range theory. Eventually, the 'ideas' must be exposed to an experimental arena outside of an archaeological application to see if they perform as expected. In this case, an actualistic experiment was impossible and so an agent-based model served the task well. Future work of this type is clearly called for and currently underway. Yet the processual and theoretical discussion I have provided in this paper, as with that of Tennie et al. (2017) who seek to reset the null hypothesis so that technologies are assumed not to be the result of cultural transmission mechanisms until proven otherwise, demonstrates that the study of the sharing of lithic technological knowledge faces some serious experimental hurdles for testing our predictions, whether based on modern knappers' understanding of their trade, on evolutionary theory, or on the concepts of learning mechanisms derived in cognitive science laboratories. These hurdles currently prevent the testing of our judgment of what technologies in which periods *absolutely* required the sharing of knowledge according to specific transmission mechanisms. We can likely agree on the ends of the chronological spectrum

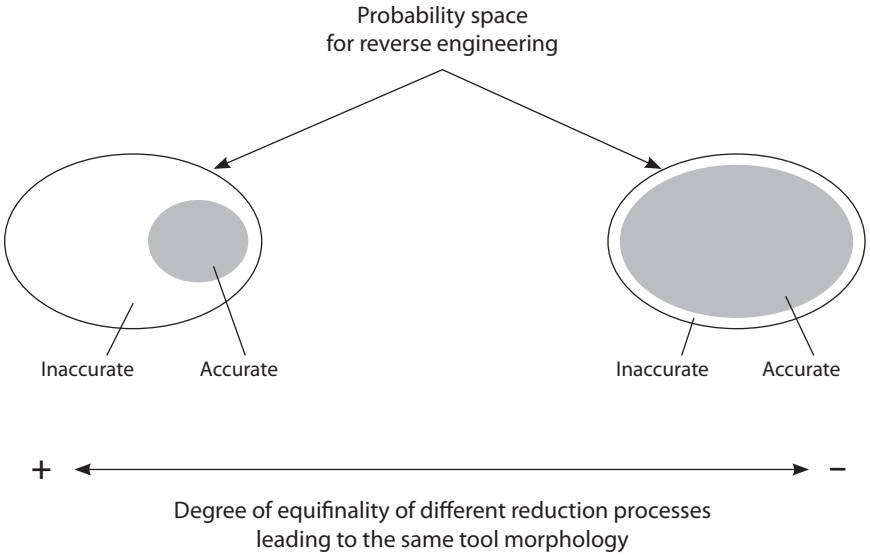

Figure 14.1. *The relationship between the assumptions of the degree of equifinality of core reduction processes that could lead to a given stone tool morphology and the likelihood of the accurate reverse engineering of the exact core reduction method responsible for the tool.*

in terms of the likelihood of being a product of cultural transmission but not on most of the archaeological record in between. Part of the problem is that these mechanisms are in fact subtle, observable mostly within controlled laboratory settings, and thus unlikely to be amenable to prehistoric recognition without serious experimental work to establish boundary conditions around specific technologies' probability spaces. As an example, consider Figure 14.1, which represents two views of how likely it is to accurately reverse engineer (Rekoff 1985) the core reduction methods that produced a specific lithic retouched tool based on exposure to the tool only, as in a scenario of stimulus diffusion (Kroeber 1940; Tostevin 2007). At the bottom of the figure is an arrow showing the spectrum of different assumptions about the amount of equifinality within core reduction (i.e. the number of core reduction methods that could produce the given tool). The greater the range of methods that produce a similar tool morphology, as seen on the left, the greater the chance of the reverse engineering finding a successful method of replicating the tool that is in fact not the accurate method in this case but produces the same result nonetheless. On the right, the assumption about the degree of equifinality, being extremely small, makes the likelihood of an accurate reverse engineering among the remaining available methods much more likely. The problem is that, at the moment, we have no independent reference to use to establish on which side of the figure a given core technology lies.

Yet this figure also replicates the basic problem with testing arguments based on the latent zone of solutions concept. This is apparent if one simply replaces the 'Probability Space For Reverse Engineering' title with the 'Probability Space For Independent Innovation within a Species' Zone of Latent Solutions'. Yet I am optimistic that careful and extensive experimental programs can be devised that would allow the new power of computer-based 3D characterization to quantify at least the range of flake products producible from a given core reduction method. This approach would allow the quantitative comparison of equifinality to ground specific technologies within the theoretical spectrum of Figure 14.1. In this way, it will be possible to test and disprove our previous assumptions through the application of the future research directions proposed by Tennie et al. (2017, 668) as well as others, including: 1) the need to quantify a lithic technological parameter space such as the one in Figure 14.1 through the power of computer learning algorithms and the application of 3D simulations of fracture mechanics to extensive experimental knapping collections of refits; 2) the need to conduct more long-term, longitudinal learning experiments with flintknapping skill across both tactical and strategic knowledge, such as Stout et al. (2015); and 3) the need to pursue more out-of-the-box experimental work such as that of Moore & Perston (2016), which experimentally limits a knapper to tactical know-how through the imposition of a ran-

dom generation of strategic movements around the core during reduction. The further development of experiments along this line may allow us to use the cognitive structure of knapping skill itself to identify when strategic knowledge is required or not to produce a given lithic technology. The more such creative experimentation is shared among the research community the more likely it is that we will be able to establish when sharing of one type or another was required in our forager past.

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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

Sharing, as lived by Inuit in Nunavut, Canada, and as depicted in the primary ethnographic literature, is a set of normatively structured and quasi-institutionalized practices that together are as critical to Inuit subsistence culture and its economic relations as is hunting. Moreover, as Inuit on numerous occasions have made clear, it is integral to their cultural ethos. According to Inuit, sharing is what sets them apart from *Qallunaat*; that is, Inuit are generous while non-Inuit behave selfishly. In no small way, *ningiqtuq* is a core cultural value.

The central focus in this paper is not on the transactional aspects of Inuit sharing – whether these are best described as generalized, delayed or balanced reciprocal relations, or a form of gifting, exchange or normatively dictated transfers (see Damas 1969, 1972; Wenzel 1991, 1995; Hunt 2000; Kishigami 2004). The focus here is on how money has affected the normative sharing system and how its antinomical effects on the modern mixed economy adaptation have made women increasingly important in the maintenance of the Inuit subsistence system and the expanded contribution of women within the traditional subsistence system.

This paper examines women's provisioning responsibilities and sharing practices *vis à vis* men's hunting in the community of Clyde River, Nunavut, focusing specifically on women's monetary contributions to subsistence practices. It seeks to understand how the specific gendered aspects of northern economic transformations, particularly increasing engagement in wage labour, have affected women's roles, responsibilities and obligations in subsistence practices.

Methods

This paper uses primary data from a research project (Quintal-Marineau 2016) conducted in the community of Clyde River between 2010 and 2013 that focused on Inuit women's socioeconomic roles within their family, community and at the territorial scale. A total of twenty-nine women and their families participated in the project (approximately 14 per cent of total population). Female participants show a wide variety of situations, ranging from full-time employed and head of their household, to unemployed women, highly involved in land-related work. In this research, all women participants were asked to record on a regular basis their personal and household income and expenditure for a one-week period (a minimum of two single week diaries were collected for each participant and overall 76 diaries were collected between April and October 2012). Diary keepers were also asked to participate in semi-structured interviews in which women discussed how resources are shared within their household, family, and extended family. These discussions, combined with economic diaries, illuminate the scope of women's responsibilities within and outside their household and the social and cultural meanings of their sharing.

These primary data and results are preceded by an overview of the traditional *ningiqtuq* system for the sharing of wild food resources in Clyde River (Wenzel 1981, 1995, 2000, 2013), as well as in other Iglulik Inuit communities (see Mary-Rousselière 1984). This overview, thus, culturally contextualizes within the Inuit social economy of transfers and reciprocity the contemporary situation between women, their hunter-spouses and money as a critical resource in the modern mixed economy that is lived in the Canadian North.

Ningiqtuq: the traditional sharing system

The literature on the traditional Inuit sharing system has generally focused on the importance of men as, first, hunter-providers and, second, economic decision makers. The emphasis in this literature has been on two features of the system. The first is its structural

Table 15.1. Ningiqtuq *interaction sets. *Copper Inuit; partially present among Natsilingmiut Inuit (Van de Velde 1956).*

Social context	Direction	Reference	Behavioural directive
1) *Ilagiit*	*Niqiliriiq* (see a & b below)		
	a. Hunters>>*Isumataq* [sons, younger brothers>>male extended family head] [son-in-law>>father-in-law]	*Tugagaujuq*	*Naalaqtuq*
	b. *Isumataq*>>Households	*Tigutuinnaq* [*Tugagaujuq-Tigutuinnaq* are complementary]	*Naalaqtuq*
	c. *Isumataq* Commensalism	*Nirriyaktuqtuq*	*Naalaqtuq*
2) Community	a. *Isumataq* Commensalism	*Nirriyaktuqtuq*	*Ungayuk*
	b. Open Distribution	*Minaqtuq*	*Ungayuk*
	c. Ephemeral Task Group	*Katujiyuk* [*Taliqtuq*]	*Naalaqtuq*
3) Inter-Personal	a. Invited Guests	*Akpallugiit*	*Ungayuk*
	b. Food Gifts	*Paiyuktuq* [*Quaktuaktuq*] [*Niqisuitaiyuq*]	*Ungayuk*
	c. 'Partnerships'	*Pigatigiit** [*Uummajusiutiit*] [*Niqitaitianaq*]	*Ungayuk*

aspects, notably the importance of consanguineal kinship, genealogical position within the viri-oriented extended family, and/or actor co-residence. In terms of behavioural framing, the dynamics of the system are that of a social economy in which the rules regulating social relations are integral to facilitating economic activity (see Damas 1972; Wenzel 1981, 1991, 1995, 2016). Inuit sharing, conceptually and in fact, is a socially embedded system. The second of its features is that the core material that shared, the currency so to speak, is harvested wild foods, mainly produced through cooperative male hunting.

The Inuit subsistence system, as a social economy, involves the production and distribution of local resources as well as the reproduction of social structural norms and the cultural values that underpin these norms (Lonner 1980; Wenzel 2000; Abele 2009). Through cooperative hunting, fishing, and gathering, Inuit produce considerable volumes of wild foods (country foods) that are shared collectively. Wenzel (2000, 63) describes sharing as a 'strategy by which participants achieve the widest possible intra-community distribution of resources', principally food and hunting resources, through a set of practices that include individual transfers and gifting, and generalized redistribution through various forms of commensalism among kin and co-residents (Wenzel 1995). Sharing and reciprocity (sometimes immediate, more often delayed) between individuals are important features of this system and, in turn, to Inuit identity (Fienup-Riordan 1983; Wenzel, 1991; Stairs & Wenzel, 1993; Searles 2002; Collings 2014).

The reality of the *ningiqtuq* system (Table 15.1) is that it is a complex of social mechanisms that may function separately or overlap depending on an individual's positionality in relation to social place, to time and to residential location. But regardless of the mechanism, the inclusion as a provider and a receiver is regulated by the two primary behavioural referents, *naalaqtuq* (inter-generational rights and obligations) and *ungayuk* (intra-generational and co-residential solidarity). And while the system provides access without reference to gender, with only occasional exception control of resources is biased toward male authority.

In point of fact, the Canadian Inuit literature offers very little information on the role of women in the sharing system. For instance, Stefansson, who spent over a year travelling in the Copper Inuit region, makes only one reference to an active presence of women in sharing,

> 'The little adopted daughter of the house, a girl of seven or eight, had not begun to eat with the rest of us, for it was her task to take a small wooden platter and carry

> four pieces of boiled meat to the four families who had none of their own to cook.' (1913, 176)

More often, references to sharing make no mention of the exact role of women or girls. Jenness (1922, 87), in his description of Copper Inuit *pigatigiit*, states that, 'Often within a community one man will show special courtesy to another by sending him the hind flippers of every seal that he catches….The two men thus become *upatitkattik*, "flipper associates"…' (authors' emphasis). While Jenness notes that seal associations included non-kin and such transfers were an act of 'courtesy', presumably the actual 'giving', as in Stefansson's mention, was through the medium of the successful hunter's wife or a daughter.

Gender has always been an important factor in Inuit subsistence organization. It is widely agreed that women and men traditionally performed distinct but complementary roles, with one married woman and man considered a 'working unit' (Giffen 1930; Kjellström 1973; Guemple 1986). While men were hunters, women maintained the household and supplied food by gathering herbs, berries, roots, and grass; women were also fishers and hunters of birds and smaller game (Giffen 1930). Though their work was mutually interdependent, many scholars have argued that authority over decision-making was unbalanced and the control of resources was biased toward male authority (Guemple 1995; Reimer 1996).

Historically, this organization of work provided the basis for resource production, distribution, and consumption, thus regulating the sharing of food and organizing economic life (Lonner 1980; Stairs & Wenzel 1993). Indeed, the flow of resources followed well-structured social principles in which a person's gender was one determinant of their status. Damas (1963) found social classification to be organized around three principles: genealogy, with structurally junior generations subordinate to members of older generations; relative age, making younger people 'follow, listen to and obey the older' (ibid., 84); and male ascendancy, implying male advantages over women.

Outside the Copper Inuit area, however, food sharing was and is predominantly regulated through kinship-based *naalaqtuq-ungayuq* relations and *isumataq* (family head; Elder) guidance, although a form of 'courtesy' transfers, *paiyuktuq*, still occurs with girls often dispatched to carry food gifts to proximal non-hunting elders and the ill. Thus, while *pigatigiit* and *paiyuktuq*-type sharing are typically understood as the *sine qua non* of generalized Inuit sharing, in fact, seal sharing partnerships were practiced by just a few Central Arctic Coast societies (Damas 1969) and *paiyuktuq* most often occurred in very specific circumstances.

Women, the mixed economy, sharing and subsistence

> '…a subsistence economy is a highly specialized mode of production and distribution of not only goods and services, but of social forms…' (Lonner 1980, 5)

> '…in the Baffin Inuit economy…cash has become as fully a part of the resource environment as food…' (Wenzel 1986)

In the Canadian North, the years following the Second World War until the founding of Nunavut in 1993 are sometimes termed 'The Government Era' in which government no longer was just an annual RCMP visit to a remote seasonal village. Rather colonization in earnest began in the early to mid-1950s, highlighted by Inuit gradually resettling in regional government-serviced settlements, the introduction of formal education and the providing of public health facilities were present, all supported by a nascent bureaucracy (Damas 2002; Wenzel 2008). It was also a time that saw a sea change in economic relations between Inuit and Euro-Canadians, the most substantive of which was the introduction of a monetized market system. This progressive integration of money and waged employment into Inuit subsistence system led researchers and government officials to predict that such drastic changes to hunting as a livelihood strategy would result in a full acculturation of individuals and the death of subsistence practices across the Arctic (Murphy & Steward 1956; Hughes 1965; Vallee 1962). Despite these predictions, traditional subsistence activities, including the production of wild foods for domestic use and as a medium of social connectivity, persists and continues to comprise an important organizing principal of Inuit society.

What emerged from this confluence of social and economic policies was a mixed economy in which Inuit, through the production of saleable commodities produced through hunting and/or the limited sale of their labour, accessed money for the technologies, such as snowmobiles and motorized boats, needed for hunting once centralization was completed (Wenzel 1989, 1991; Jorgensen 1990; Smith 1991). The melding of new technologies with traditional environmental skills and knowledge are by far the most visible aspects of the mixed economy. The incorporation of

snowmobiles, outboard engines, satellite telephones and GPS locators, however, belie the underlying reality that these incorporations are only the most apparent aspect of today's mixed economy adaptation. Most trenchant is that the successful co-production and interaction of two difficult to produce currencies, *niqituinnaq* and money, is the singular adaptive feature of modern Inuit subsistence culture. However, as will be discussed later, these two currencies function and are valued differently with traditional food reinforcing social and cultural connectivity ('Inuit are generous') and money as a facilitator of this.

Today, it is easy to view money as the consuming totality of Inuit economic life if only because that life is both startlingly expensive and that very few 'traditional' Inuit activities produce money. In this light, the mixed economy is a failing adaptation. On the other hand, forgotten is that the mixed economy flourished from the 1960s into the early 1980s, a period during which Inuit could successfully meet virtually all their monetary and socio-cultural needs from the sale of the byproducts – sealskins, walrus and narwhal ivory, polar bear hides – obtained through traditional food production (Wenzel 1991; Wenzel et al. 2016).

The immediate effects of the 1983 collapse of the world market for sealskin on the mixed economy were two fold. The most apparent was that access to money through the sale of animal byproducts (i.e. sealskins) from food harvesting was severely constrained, leading to a marked reduction in hunters' ability to operate or renew their equipment (see Wenzel 2016; Wenzel et al. 2016). The second was that wage employment shifted from being an option, albeit a problematic one given the paucity of available jobs, to a necessity in the face of ever-increasing costs of hunting.

The Federal and Territorial governments responded by expanding wage and transfer inputs to the mixed economy, although job creation has never been sufficient, hindered further by deficient skill level, especially in the case of many men literacy, and social assistance too minimal and restrictive. Moreover, men who do obtain employment are confronted by the problem of high opportunity costs as both wage employment and hunting required prodigious amounts of time. As one man put his dilemma, 'I took my job so I could buy a new snowmobile for hunting, but now if I stop working I cannot buy gas and parts. Now, if the weather is good, I only hunt on the weekend' (JQ, Clyde River, pers. comm.).

The essential outcome of this process was a socio-economic landscape in which a few Inuit became cash-secure but with little time, while a majority continued to have time but were (and are) cash-poor. Harvesting and sharing, the twin elements of Inuit subsistence culture continued, but not without friction between the two sectors of the mixed economy, a situation exacerbated not only by the increasing monetary costs of hunting but also by an expansion of material wants as a greater and greater variety of goods and services entered the North.

Today, in most northern communities, while wage employment constitutes the most effective way to access money and despite the opportunity costs that many Inuit men live, hunting has continuing importance in male Inuit cultural identity (Dorais 1997; Searles 2002; Tulloch 2015). Similarly, demonstration of traditional domestic skills remains a critical part of Inuit women's identity (Ready 2016). At the same time, it is also increasingly the case that wage employment has become an important part of Nunavummiut female identity. Indeed, Inuit women are well positioned to hold employment as they attain higher levels of education, show a preference for permanent, full-time wage engagement and have fewer opportunity conflicts than men (Quintal-Marineau 2017). Therefore, Nunavummiut women, through their wages, have become important providers of money to men.

This situation is not unique to Nunavut. Kuokkanen (2011) generally notes that in many contemporary indigenous communities, wage labour is more consistent and permanent among women, while comparable research in Alaska (Kleinfeld et al. 1981, 1983; Jolles 1997) and in Greenland (Dybbroe 1988) have identified a similar economic dynamic. Chabot (2003) reports the case of a young woman in Nunavik (Arctic Québec) receiving country food from her nephew while financially contributing to the fuel expenses and maintenance of his snowmobile. According to Natcher (2009, 90), gender influences the way money circulates within the Nunavummiut household: 'A father may receive money from his daughter who is employed in the community daycare facility. With the money the father purchases fuel and supplies to fish for Arctic char.' Rasmussen (2009, 527) mentions similar findings in Greenland, where 'a successful male hunter or fisherman very often has to be funded by wage income generated by his wife' (see also Rauhut et al. 2008). Finally, in Alaska, a few authors report women's wage employment supporting male harvesting activities (Fogel-Chance 1993; Lee 2002).

In order to understand the expanded economic role of women in Nunavut, a critical focus is the emphasis Inuit women place on country foods for the health of their families (Borré 1994). Women participants often mentioned that food and feeding their families was their main domestic responsibility: 'I have to make sure my family is healthy and this means

feeding them with good food' (Joan, 50 year old Clyde River resident). Much of literature on Inuit women and food has emphasized their 'traditional' role as food processors and preparers (Giffen 1930; Kjellstrom 1973; Briggs 1974), at best the domestic support of male hunters/food producers. This dichotomization, like many other aspects of contemporary Inuit life and livelihood, is changing as women are becoming important food providers through their wages.

Niqituinnaq is not simply a source of energy; it has strong cultural importance and 'serves as an important vehicle in the production of meaning and identity' (Searles 2002, 55; see also Lupton 1996). As Bodenhorn (1993, 184) puts it: 'Access to cash is necessary for survival; access to *niqituinaq*, real food, is necessary for social identity'. Food is thus an aspect of collective identity – of being Inuit – through not only what is eaten, but how it is acquired, distributed, and with whom and how it is eaten. Consequently, being able to provide food to one's family that is adequate in quantity and that is cultural congruent is important both for cultural as for health considerations (Borré 1994).

Today, just as Inuit families live in a mixed economy, they also live a mixed food system, combining country and store-bought foods in different proportions according to the availability of traditional foods and individual preferences. While many men continue to hunt, fish and gather to provide local foods to their family, an important aspect of food 'production' has shifted into the hands of women as the monetary costs of hunting require an investment of time that puts men, should they have jobs, more than women in serious conflict with the demands of wage employment. Numerous scholars have remarked that traditional food production has become increasingly expensive and that access to sufficient money has a direct influence on harvesting productivity (Quigley & McBride 1987; Wenzel 1991, 2000, 2016; Duhaime et al. 2002; Natcher 2009).

Since the 1980s, the work-hunt dichotomy has increased pressure on all those who have wage incomes, but especially on those earners who are in subordinate generational or gender position to related harvesters (Wenzel 2000, 2016). Thus, it is not surprising that full-time and part-time employed women are more frequently involved in financially provisioning harvesting activities than those dependent on social transfer income.

In contemporary Clyde River, Inuit women's involvement in traditional food production is twofold. First, they hunt, fish, and gather to different degrees at different periods of the year. Among the twenty-nine participants, only two (7 per cent) women did not engage in any harvesting activity during the year of the research and fifteen (52 per cent) women engaged in harvesting activities that they self-financed. Second, women not only participate in harvesting activities, they also contribute financial support to related male harvesters.

In fact, those with wage positions supported male harvesting activities at a higher rate (75 per cent) than those dependent on transfer payments (10 per cent). Also, two (7 per cent) women that were not in the labour force at the time of the research supported harvesting activities; one of whom is retired but still has access to significant income and a young college student who uses her student stipend to pay gas for her partner's hunting. Overall, among the sample population, seventeen (59 per cent) women mentioned that they had supported harvesting activities over the previous year and twelve (41 per cent) women had not. Within the 'non-support' cohort, four (14 per cent) had done so the year before when they had access to greater income. Another three (10 per cent) women stated that they would support their spouse if he should hunt.

These numbers suggest that women's contribution/support is dynamic; fluctuates according to their working status as well as their partner's ability to harvest. For example, a young woman in her mid-twenties had recently withdrawn from the labour force for a maternity leave. As she now lived on a much-reduced income and was the only one with wages in her household, she was not able to support her partner's hunting anymore although she had done so the years before. Her partner managed to continue hunting, but less frequently and was not able to finance a caribou hunt that year.

Moreover, women's contributions ranged from the woman who monthly transferred CDN$300.00 to her spouse for hunting supplies to a woman who purchased a rifle and second-hand ATV for her partner for some CDN$3,000.00 and another who secured a CDN$60,000 loan for a large boat and engines. The commonest form of support provided by women was to buy gas and food for hunting trips by male kinspersons with women, especially during weekends participating. One woman spoke particularly expansively of her situation, as every weekend she and her family, weather permitting, went to their cabin for hunting, fishing and, in summer, berry picking (and, as she added, just to relax). Regarding these trips, she recorded in her diary the camp food expenditures (approximately CDN$200.00) or cash transfers (up to CDN$1,000.00) to her husband so he could purchase fuel, oil and other needed items.

Some women also provided much larger and expensive items of equipment, such as rifles, snow-

mobiles, engines and boats, or engine parts. Those involved in such expenditures and transfers were all full-time, well-paid workers. One young woman employed full-time with a partner dedicated to and successful at hunting said,

> 'I just bought a second-hand Honda for CDN$2000 from someone in the community. And this summer I also bought a rifle, second-hand too, for my husband to hunt. It was CDN$1000 and it included ammunition. I think if men are real hunters, like hunting regularly, I agree with women working and men hunting. I like my situation, especially 'cause I always want country food so it's okay for me if he hunts and I work' (Laura, 28 year old Clyde River resident).

The primary reason given by the women in Quintal-Marineau's sample for why they monetarily support various male kinspersons' harvesting is that it gives them greater assurance of country food. Indeed, the women mentioned how difficult access to traditional food in desired quantities is for those without a hunter in their household or among their kindred. As Figure 15.1 shows, 38 per cent of the women in the Clyde River sample reported eating country food frequently (more than 3 times per week) and 17 per cent doing so regularly (at least once per week), only 3 per cent who provided funding stated that their traditional food consumption was less than one meal per week. Of those who did not or could not contribute funds to harvesting, only eight (28 per cent) reported eating country food either frequently or regularly each week.

Separate research with a small sample of unemployed or underemployed Clyde River hunters (n=21), provides some perspective from the male side of gender and sharing (Wenzel 2016). Focal in the project was frequency of harvesting activity (average number of trips per week), the state of winter harvesting gear (snowmobiles), and with whom the informant hunted and/or shared.

Fourteen reported that their activity was limited to two to three trips per month unless they could travel as a passenger with another hunter. The main explanations provided for their respective low activity frequencies were poor condition of their equipment and/or lack of funds for gasoline and oil. Two hunters reported hunting six and seven times per month, but because of the age and condition of their machines, they limited the range of their activities away from the town to approximately 25 km. (Their explanations for self-imposing a distance limit on their hunting was that in case of a mechanical breakdown, they would be able to walk back to town.) All but three of the 16 had wives or female partners, six of whom worked part-time low paying jobs, while the other 10 lived in social transfer dependent households. All were occasionally successful hunters, catching perhaps one seal per four or five trips, while one of the two 'distance-limited' men caught just one seal, but also nearly 400 ptarmigan (a small grouse-like bird that is resident

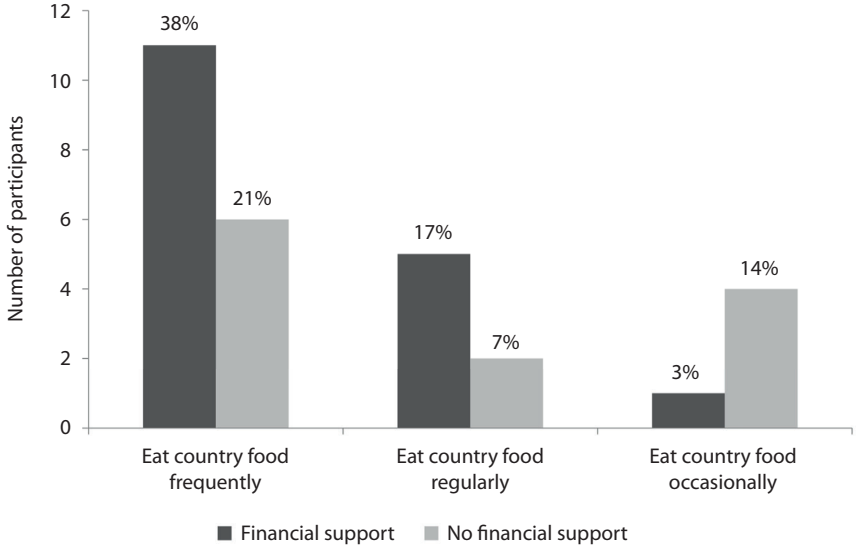

Figure 15.1. *Frequency of country food consumption for female participants according to their financial support for harvesting activities (Quintal-Marineau 2016).*

in the Clyde River area year-round) the preceding 13 months. The remaining five hunters were notable in that while they were all unemployed (two, however, did occasional seasonal work as transport drivers for adventure travel tourists), they estimated that they hunted at least three times a week. Not surprisingly, all were generally solid producers of country food.

Four reported that they were able to do so because they had a spouse or daughter(s) who were full-time wage earners (one had both). The fifth differed from the other four frequent hunters in that he was the younger sibling of a high wage brother. This older brother rarely hunted, himself, but every year or two transferred his slightly used equipment to his younger sibling, as well as frequently paying his fuel costs.

Discussion

Both classic ethnographic and more recent research on Canadian Inuit subsistence culture and economy almost exclusively relegate the role of women to one of domestic maintainer and as handler of traditional resources harvested by their male partners with little direct involvement in the production and sharing of food. What women do has been, and often still is, characterized as 'complementary' to men's foraging activities – that is, in support of men's extractive efforts (Giffen 1930; Guemple 1986, 1995; Dowsley 2014). With respect to sharing, excepting a few early ethnographic references (Stefansson 1913, Jenness 1922) and the recent work of Harder (Harder, 2010; Harder & Wenzel 2012; see also Lee 2002; Todd 2016; Quintal-Marineau 2016, 2017), there is virtually no mention of women as active contributors, as opposed to being recipients, to the *ningiqtuq* resource sharing system.

Quintal-Marineau (2016, 2017), however, suggests that women, while not necessarily or always directly involved in food sharing (allocation and distribution), have through their growing engagement with wage employment become important providers of what has long been recognized as the scarcest resource needed for successful food harvesting: money (Usher 1981; Wenzel 1989, 1991; Wenzel et al. 2016; Duhaime et al. 2002; Chabot 2003; Lambden et al. 2006). In this regard, Quintal-Marineau's work somewhat reflects results from economic research on Inuit women's workforce participation in Greenlandic and Alaskan urban centres (Kleinfeld et al. 1981; Condon 1987; Dybbroe 1988; Fogel-Chance 1993; Bodenhorn 1993; see also Kuokkanen 2011); however, only recently have women's provisioning of wild food harvesting within the overall northern economic setting begun to be examined.

The sharing practices of women in Clyde River also highlight the emergence of an economic model that is articulating around a new gender dynamic, in which women who are wage earners allow economic space for men to work as full-time hunters. This expanded role regarding division of labour is particularly interesting in informing the work or hunt dilemma (Wenzel 1991, 2016), which has resulted in some men choosing to engage in only occasional casual and/or seasonal wage work rather than full-time employment. The data presented here show that women from Clyde River who engage in wage employment make direct and indirect contributions to the harvesting activities of spouses, children, and other relatives. In many households, conducting land-related activities is made possible by female financial contributions. To a substantial degree, women provide the cash that enables hunters to continue food provisioning activities, thus securing both the traditional (*niqituinnaq*) and modern (cash) resources essential to the mixed economy adaptation.

With women engaging in wage work and sharing their income with active hunter-kinspersons, the cultural norms of subsistence are maintained. More importantly, because men's hunting, and by extension Inuit traditional food sharing practices, is highly dependent on women's participation in the wage economy, it suggests that women's role in modern subsistence practice is much more than a matter of simple 'complementary' contribution. Rather, women are positioned at the centre of food production. Though perceptions of the contribution of Inuit women to subsistence has long been limited to their domestic roles as sewers, cooks and the rearers of children and sometimes the foraging of small game and plant resources (Giffen 1930; Billison & Mancini 2007), the data presented here suggest that their roles in modern subsistence have both expanded and become, if anything, as critical as any time in the past. Women's essential economic contribution challenges the perception still prevalent in the Inuit Studies literature that female roles are statically subordinate within the ethnographically 'established' traditional Inuit social structural narrative.

Socio-economic, if not yet socio-cultural, transformations in Nunavut have favoured Inuit women's work in the wage economy, and they have become important earners within households. It is clear from the data presented here that women are assuming a wider array of responsibilities that are wider than those traditionally depicted.

This analysis of women's sharing practices in the context of the northern mixed economy as an adaptive element in Inuit subsistence Culture suggests that

women's contributions extend far beyond household boundaries. In addition to earning money, women play a key role in the circulation of monetary resources by providing food and financial support to harvesting activities that are performed by male kin. In this manner, they sustain the continuous flow of *niqituinnaq* and the social relational system that facilitates traditional resource activities (Sahlins 1971; Wenzel 1991). At the same time, through the money they provide for country food production, women are reproducing the normative sharing behaviour, albeit through a novel medium, that underpins subsistence as a social economy.

As both traditional Inuit food production and modern household needs now depend on a continuous flow of money, women's contributions have become critical to the understanding of the modern Inuit economic adaptation, and women's socioeconomic position within it. Overall, women's contributions maintain the normative cultural goal of Inuit subsistence – that is, the shared responsibility for kindred and community dietary and social well-being (Wenzel 1995, 51). Given their expanded responsibility, statements that Inuit women have become less active than men in the land economy misunderstands and underestimates their cultural and economic contribution to the mixed economy as an adaptation and to subsistence as an encompassing ethic.

> 'My husband is unemployed right now. But he hunts a lot. He hunts caribou, seal… everything… We usually always have country food in our house. Mostly every day we eat country food. The way we do it is that I pay all the bills and rent and for the food, too. I also give money to my husband when he has to buy some gas or hunting material. Every paycheque I usually transfer $300 into his bank account so he can buy his hunting gear. But I am the one responsible for buying any material in this house! I bought the two ski-doos that we have!' (Beatrice, 52 years old Clyde River resident)

Postscript

There is another aspect to this new Inuit sharing-hunting relational dynamic between women and men to be more widely considered. As is obvious, the monetary contribution by women so male relations can hunt facilitates traditional food production and so, as we have emphasized throughout, has important material and socio-cultural substance. Indeed, women make it clear that a motivation in their monetary support of men's hunting is the food that may be produced.

Whether this money–*niqituinnaq* relationship constitutes a kind of balanced reciprocal exchange, or demand sharing, or sharing as pure transfer (see Widlock 2016, 3) is an important emerging question, but also one that is beyond the scope of the present paper and so will not be addressed here. Rather, if one considers that Inuit hunting is a relational activity that joins animals and humans to each other and that Inuit understand animals to be sentient beings (Rasmussen 1929, 1931; Wenzel 2004; Laugrand & Oosten 2015) sensitive to human motivations and attitudes, it is possible to consider women's sharing in an additional and quintessentially Inuit cultural dimension.

Stairs & Wenzel (1993) have posited that the generosity animals extend to humans includes, and may depend on, an animal knowing that the hunter will be generous with the food that is obtained. In the present economic environment, the monetary provisioning of hunting through hunters' wives, sisters and daughters can be seen as a new generosity that is an extension of the traditional contributions to hunting by women (Bodenhorn 1993, 2000) and is just as critical to successful harvesting as what men do, say or think.

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Chapter 16

The pure hunter is the poor hunter?[1]

Olga Yu. Artemova

Over the last decade, I have had several opportunities to visit the Aborigines of Australia in the places where certain features of pre-colonial culture have survived, and I have been privileged to conduct field studies among them. In economic terms, in the pre-colonial period most Aboriginal groups conformed to Woodburn's model of immediate-return systems (1988). There was no institutionalized inequality in either material possessions or material wealth and all followed the norms of 'minimization of efforts' in their economic behaviour (Peterson 1993). Each individual acted according to the '*satisficing* principle' whereby, as Svizzero & Tisdell put it, 'he/she does not try to maximize his/her utility, but he/she tries to reach a pre-determined level of satisfaction. Once this threshold is reached, any additional work becomes useless' (2015, 18). These behavioural patterns tend to be quite persistent (see Peterson 2013), and I have often observed them in Aboriginal settlements such as Aurukun, Pormpuraaw and Milingimbi in Cape York and Arnhem Land, where people do not try to obtain more food – be it from the forest, river, department stores or 'takeaways' – than they need at any given moment. Nor do they take care of personal belongings, or accumulate them, or show interest in them. The same applies, to a large extent, to their attitudes towards money.

These features of Australian Aboriginal behaviour are deeply connected with the persistence of the 'demand sharing' system (Peterson 1993, 2013). Despite having almost abandoned hunting and gathering (though they fish a lot), and despite also having lost many ritual and sociopolitical traditions, contemporary indigenous Australians still retain the ideology and practice of sharing, according to which 'donation is obligatory and is disconnected from the right to receive' (Woodburn 1998, 50); people share most of the things for which they have no immediate need, and those who receive things or money from their relatives do not seek money or anything else with which to reciprocate. A number of cases observed in modern Aboriginal settlements illustrate this. The field data discussed below is framed by several theoretical underpinnings, outlined under the 'Preliminary notes' subheading below, as well as by some theoretical assumptions (with historical and evolutionary connotations), covered in the final section.

The aspects of sharing I am mostly concerned with are everlasting or permanently repeated transactions (as Widlok puts it, 'there is no end to the transfers'; this volume, 27) that represent real (actual) mutual help, very often asymmetrical and unbalanced, among the people involved in a particular social network, and also everlasting, permanently repeated transactions that predominantly or exclusively serve as symbolic manifestations of people's readiness to give and receive help.

Preliminary notes

The fundamental notion that ethnographically studied hunter-gatherer societies – such as those of the Hadza in Eastern Africa, the Paliyan in South India or the Batek in Indonesia, as well as many traditional societies of Aboriginal Australia – could have survived almost to the present day only because the people in those societies used to share hunting prey and other important food with each other, with predominantly men sharing meat with their kin, and because there were complicated rules that determined distribution, became common place in social anthropology long ago. But no less important ethnographic observations and academic generalizations which are not so often stressed by anthropologists do exist. Dr James Woodburn summarized them in his concluding remarks at the conference this paper stems from; previously, he had covered those observations and generalizations in more detail in his paper 'Sharing is not a form of

exchange: an analysis of property-sharing in immediate return hunter-gatherer societies' (1998), which although published two decades ago still remains relevant, and, it seems to me, has not yet received enough attention.

Woodburn argued (among other points) that in immediate return hunter-gatherer societies:

1. People had to share not only meat, but 'most other things for which they had no immediate need';
2. The donator had 'very limited control over who' eventually received a donation or a part of it;
3. Generosity was 'not stressed' (in contrast with Spikins' assertion[2]); 'shares were asked for, even demanded' (reference to Peterson 1993); 'the whole emphasis was on donor obligation and recipient entitlement'; 'typically, the donor is not thanked'; 'this is consistent with the notion that' the donor was doing 'no more than he should do';
4. Receiving meat or some other food, items or services did not 'bind the recipient to reciprocate'; donors tended to be 'on balance donors over long periods', recipients tended to be 'on balance recipients over long periods';
5. Donation was obligatory and was 'disconnected from the right to receive'; donation established no 'significantly greater claims on future yields that would be the case without donation' (1998, 48–50).

That is why, as Woodburn developed his considerations, 'the obligation to share cannot to be said to enhance significantly the access of successful hunters to meat and to other recourses'. The individual in such a society had almost no control over the results of his (or her) work, which prevented them from maximizing their labour efforts. The obligation to share was 'a product of system of values', 'a political ideology, backed by sanctions positive and negative'. And then the elegant conclusion follows: 'Equality is what matters and the threat of inequality is of more concern than the threat of hunger' (1998, 50).

A system in which economy, ideology and morality were indivisibly intertwined was capable of creating strong, solid and durable relations between individuals within the framework of extended social networks. An individual in such a network depended on many others and many others depended on them, but at the same time, we can assume, not being in debt to any particular person or group and not being obliged to work in order to reciprocate for goods and services received, should have meant real personal freedom. Perhaps an individual in such a society normally could not find themselves in onerous and one-sided relations with other individuals or groups,[3] which should have provided them with a high degree of spiritual comfort, though they were doomed to reject many attractive endeavours as well as attempts to obtain more material wealth and comfort.

The system under consideration (associated in hunter-gatherer studies with the concept of 'moral economy' – e.g. Peterson 2002; Peterson & Taylor 2003; Peterson 2005) should preclude any cardinal breakthrough in the economic activities of hunter-gatherer societies – preventing not only the transition to an agricultural mode of subsistence and corresponding lifestyles, but also the so-called intensification[4] of foraging. As a typical example of specialized and intensified foraging, scholars frequently refer to the traditional indigenous societies of the Northwest Coast of North America. In those societies, the economy was definitely 'immoral', having considerably moved towards so-called social complexity,[5] and possibly even towards state and civilization. Archaeology provides numerous analogies.

All this is, of course, only a schematic representation of a far more complex reality (see, for example, Tucker, this volume). Even immediate return hunter-gatherer societies with non-specialized economies (the Hadza, the Paliyan, the Batek, the Chenchu and others) considerably differed from each other in their cultures as a whole and at least partially in their systems of sharing. Many of them have interacted for hundreds of years with agriculturalists or herders (e.g. the Pygmies, the Bushmen, the hunters of India) in quite different historical and geographical contexts. Australian Aborigines, isolated on their huge continent for tens of thousands of years, have nevertheless created a vast diversity of economic strategies and styles of social relations. Ethnographic accounts also describe some hunter-gatherer societies that did not develop economic intensification and social complexity, but which obviously lacked several of the characteristic features of sharing systems outlined above. They demonstrate clear signs of inequality in wealth between individuals (for instance, the Nganasans, the Evens, the Evenks, the Nivkhs and some other hunter-gatherer peoples of Siberia) and do not conform to Woodburn's model of immediate-return systems (e.g. Бахрушин 1925, 90; Попов 1984, Chapter 1; *Л*инденау 1983, 68, 72; Туголуков 1970, 230–1; Штернберг 1905, 116, 119, 122).

Notwithstanding all this diversity, African, South Asian and Southeast Asian as well as Australian hunter-gatherer societies, which did conform to Woodburn's model, developed – judging by numerous published ethnographies and some personal obser-

vations by the author of this paper – quite specific types of sharing systems. Perhaps, for want of a better word, we could call them '*totalitarian*' sharing systems. This word has a negative connotation, especially for those of us who were brought up in the Soviet Union. However, here I use it in an axiologically neutral sense meaning only a special pattern of behaviour and moral attitudes obligatory for everybody who is included in a particular social network.

For clarity, it is worth summarizing the main features that 'totalitarian' sharing systems had in common:

- They developed the mechanisms of permanent circulation of material and spiritual values as well as services in more or less wide circles of people;
- They tended to deprive individuals or families of control over the products of their work and their possessions which were not in immediate need or were not consumed or used at once;
- They tended to level the economic status of all community members[6];
- They protected the receivers of goods or services from becoming debtors to the donors;
- They considerably reduced or even nullified the motivation for the accumulation of wealth by individuals, families or groups;
- They constantly reduced or lowered – in social and psychological contexts – the costs of material assets or material things ('easy come, easy go').

All these peculiarities of 'totalitarian' sharing systems contributed to the creation of a type of personality and – dare I say – an ethos[7] which proved to be highly resilient even when faced with the dramatic advance of European colonization and/or (e.g. in the case of India or Indonesia) forced modernization. In many cases, foraging ways of living were rapidly destroyed, and hunters and gatherers stopped hunting and gathering and started losing their ritual traditions, political structures and systems of leadership as well as many other components of their cultures; but at the same time they managed to retain (in some cases up to the present day) the behavioural stereotypes, attitudes and spiritual values determined by traditional obligatory 'totalitarian' sharing. Moreover, traditional forms of sharing in many communities of former hunter-gatherers promptly transformed and restructured themselves to accommodate the introduction of money and new forms of subsistence as well as other aspects of civilization (see, for example, Peterson 2013). Paradoxically, obligatory 'totalitarian' sharing has even acquired exaggerated or hypertrophic scope – compared to the traditional context – in some acculturated communities of former foragers: people have started to share and to demand shares much more intensively than they did in traditional conditions (Peterson 2013).

While staying in Australian Aboriginal settlements the author of this paper has had a number of opportunities to observe various examples of these new facets of 'totalitarian' sharing, which sometimes seemed to be quite bizarre or even preposterous.

Twists of fate

Sometimes we realize that the books we read many years ago have acquired a sort of mystical power over our life. As a university student, I found in one of the Moscow libraries a book by Ursula McConnell, *Myths of the Munkan* (1958), and was enchanted. I translated the book into Russian and published it in Moscow (1981). I quoted *Myths of the Munkan* and McConnell's other works many times in my early publications. Several years later, I was impressed by Ann Well's memoirs, *Milingimbi: Ten Years in the Crocodile Islands of Arnhem Land* (1963).

In 2004, after 30 years of studying Australian Aboriginal ethnographies in Russian libraries, I had the chance to visit Australia; there I learned that a permit from the local Aboriginal Council is required for entry into many Aboriginal settlements and that such a permit would not be easy for a Russian scholar to obtain. But in Canberra I was lucky to meet anthropologist David Martin, an Australian who had worked for many years in the same area of Cape York Peninsula as McConnell had in the 1920s and 1930s. For eight months, David helped me to obtain a permit to Aurukun, one of the main Aboriginal settlements of that area. Eventually the permit arrived, and I was able to spend two months in Aurukun at the end of 2005; I visited again in 2007, 2008, 2009 and 2015.

While staying in Australia, I happened to meet Sigrid Jacob, whose close relative Stuart Porteus worked as a teacher at Milingimbi, the main island of the Crocodile archipelago. Sigrid asked Stuart to invite me as his guest to Milingimbi, and finally I was able to visit the Aboriginal settlement there in April 2010. It is hard to describe how I felt looking at the remains of the ruined Anglican Church where the missionary Rev. Wells, Ann Well's husband, served in 1950s and 1960s. In 2010, it was still possible to make out his name on a partially destroyed plate in the corner of the former building. This was the location of a decade of dramatic events vividly depicted in Well's book.

Apart from Aurukun and Milingimbi, I visited Pormpuraaw, Maningrida, Yarrabah (Fig. 16.1) and a number of other communities, but most of my time in

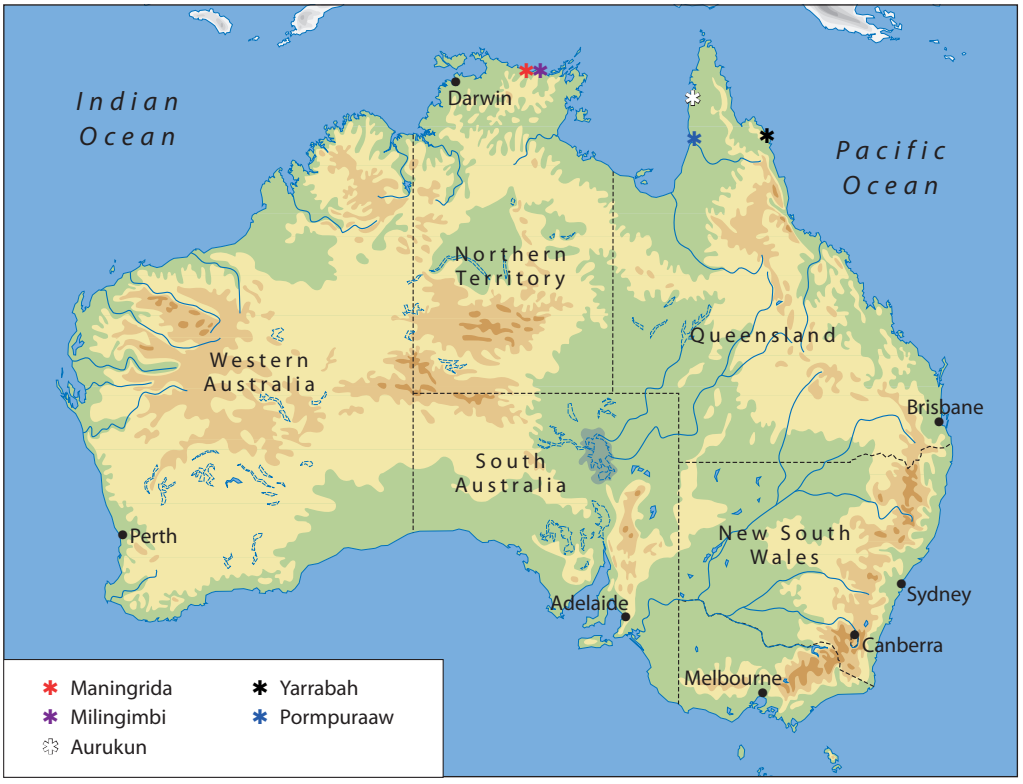

Figure 16.1. *Map of Australia.*

Australia was spent in Aurukun. During my 2008 visit to Aurukun I was accompanied by Alexey Zakurdaev, a young Russian anthropologist, and in 2009, as well as in 2015, by two other colleagues, Vladimir Klyaus and Yulia Artemova.

Aurukun

The settlement of Aurukun, which has around 1150[8] indigenous citizens (predominantly Wik-Munkan speakers) and approximately 100 aliens (mostly Anglo-Australians, e.g. officials of the administration and the police service, school teachers, General Store and Guest House managers, etc.), is situated 13 degrees south of the equator in tropical wetlands near the meeting point of three big rivers – Archer, Ward and Watson – not far from the Carpentaria Gulf beach.

Aurukun was founded as Presbyterian mission in 1904. Till the end of 1950s, many of the Wik-Munkan and other related Wik-speaking people continued to live (at least temporarily) in the bush supporting themselves (at least partly) by traditional foraging. Now, however, all the Aborigines of Aurukun live sedentary lives in standard houses constructed in the style typical for tropical Australia. While almost all of indigenous inhabitants of Aurukun can speak English, their native language remains predominant.

Welfare payments and other social benefits make up a basic part of inhabitants' livelihood. Irregular wages are available, with men working in mining, roads and house construction, and women working in shops, as Guest House cleaners, in school or in day care. Overall employment opportunities are insufficient for the settlement, and the Aborigines themselves (for the most part) do not express special interest in permanent paid jobs.

Hunting and especially fishing still remain attractive endeavours for Aurukun citizens, and people – primarily of mature age – use every opportunity to fish (Figs. 16.2 & 16.3). However, it is not productive to fish near the settlement and fishing in remote locations requires modern transport facilities (four-wheel drives and motor boats), which few of the indigenous people have the opportunity to use (and those who possess such facilities often have no money for fuel). Hunting could be a reasonably reliable food source as the forests round Aurukun abound in not only endemic game, but also in feral cattle, horses and pigs. But hunting with spears ceased long ago, and the use of firearms demands a special license and some money too. In addition, hunting is fruitless in the outskirts of the settlement and, as with fishing, travelling further afield requires modern vehicles.

One of the most popular daily hangouts involves card gambling. Here and there, under the foliage of the huge century-old mango trees planted in 'mission time', one may find dozens of players. Many of them spend days away in the 'gamble circles'.

Formally, the settlement is governed by the elected Council of the indigenous residents, headed by a Mayor and two Deputy Mayors. But in practice, decisive influence over all important community affairs belongs to the Anglo-Australians, who do almost all the bureaucratic work for the Council: chief among them is the General Executive Officer (GEO), who is the one to approach when any problem occurs.

Aurukun is notorious throughout Australia for its numerous disadvantages. Poor health, chronic malnutrition, poverty, alcohol and drug abuse, juvenile delinquency, domestic violence, child abuse, street fights, carjacking, attacks on white teachers and shop managers – these are regularly discussed in Australian media publications. Aurukun is a 'ghetto', 'a cell, fenced by rivers and forest', a 'nightmare', 'hell' – that is what white Australians write about Aurukun. However, I never felt in danger, nor was I confronted by any hostility from Aurukun inhabitants. I had heard about the fights between local warring factions and even witnessed a couple of street commotions. The

Figure 16.2. *Phillis Yankaporta throws the cast net. Photo by A. Zakurdaev, 2008.*

Figure 16.3. *Lucky family. Photo by V. Klyaus, 2015.*

saddest aspect of the settlement was the number of suicides among young people; in traditional Aboriginal cultures, according to the Berndts (in *The World of the First Australians*, 1977: Chapter 11, Death and the Afterlife), suicide was unknown. I also witnessed depressing boredom and feelings of longing, desperation and hopelessness among the inhabitants.

'Absolutely tribal people'

When I first came to Aurukun, in October 2005, local people totally ignored me, as if I did not exist. The children would make fun of my Russian accent. The days went on and no fieldwork was being done. But once Roger Cribb, a well-known Australian archaeologist (who has now sadly passed away) appeared in the settlement, things began to improve. Roger, being already included in wide networks of Wik kin relations, introduced me to several people as his sister, and they readily accepted me as their relative, and then others followed them. In this way I obtained numerous 'sisters' and 'brothers', 'daughters' and 'sons', 'granddaughters' and 'grandsons'. With some of them I developed – quite quickly – warm, cordial relations, the others at least started to greet me kindly when meeting in the street, and the pitiless young boys stopped teasing me. It later turned out that the adults had told them 'Olga is good'.

Looking at these people wearing jeans, shorts, shirts, skirts and dresses, living in modern houses, buying food and clothes at the General Store, using computers, TVs and mobile phones, riding bicycles and cars, using prams and nappies for their babies, speaking English which was often better than mine, at first I forgot all or almost all of what I had previously learned about their culture through reading – for years and years – anthropological literature. Only gradually did I realize the truth of Roger Cribb's words which I heard from him the day we met: 'these are absolutely tribal people'.

How could I forget about kinship (cf. Bird-David, this volume) and that for the Australian Aborigines there are no human relations except those which are in the framework of their classificatory kinship terminology? How could I think, with a sort of disappointment: 'Why is this woman, a descendant of hunter-gatherers for whom walking 30 km a day was not such a great distance, now ready to wait for hours until some driver passing by in his car gives her a 1.5 km lift!' Why did I not understand at once that such readiness to wait expresses much more of the hunter-gatherer ethos than a long walk? Minimization of effort! (e.g. Peterson 1993, 2002 et al.; Svizzero & Tisdell 2015).

Could it be the philosophy of foragers – with its principal pursuit of minimization of effort and risk – that deters hunting when easier and less labour-intensive and less dangerous ways of procuring a livelihood are available? It sounds a paradox, but it sounds true.

Following the philosophy of foragers and having low incomes, the people of Aurukun have ended up a lot more poorly resourced in terms of food and other necessities than would be the case if they continued to hunt, gather and fish. But the same foraging ideology and behavioural stereotype helps them to steadfastly endure deprivation and make do with what is available. Their natural environment is very rich, and they could have lived 'from the land' in conditions of 'original affluence'. Instead, they became accustomed to 'fishing for money' or 'hunting for money' in the gambling circles. For it would be unprofessional on our part to see in Aboriginal card gambling a mere entertainment; they perceive gambling as a sort of business, which among other occupations is aimed at procuring money 'here and now'. I remember what one of my Aurukun brothers said (he, too, unfortunately passed away several years ago): 'Tomorrow, I will not be able to meet you, I am going to receive my payments and I need to go gambling'. Then something like a sad sigh followed as if he wanted to add: 'What can I do?'

Usually, people in Aurukun do not bet too much while gambling, but sometimes wins reach thousands of dollars. Lucky gamblers buy in the local store or order on the Internet refrigerators, washing machines, bikes, musical equipment, very rarely even cars or motor boats. But, as a rule, none of those purchases stays for long in the winner's possession. Money is spent very quickly, things change hands, get broken down quickly and thrown away. Many old home appliances can be found lying around the houses or are hauled to the dumps. In the outskirts of the settlement, you can see impressive cemeteries of crashed automobiles. Those who lose their welfare payments in gambling circles procure what they need from their relatives.

When I first came to Aurukun in 2005, a woman who three days before had 'won' $3000 playing cards asked me for some bread and tea because she was terribly hungry and had a 'splitting' headache. I offered her some simple treatment and she vividly described what a great amount of money she had been lucky enough to win. She accompanied her story with gestures showing how difficult it was to collect and carry away the piles of cash, how she shoved the bunches of banknotes into her pockets and under her shirt, and everywhere… And there was nothing left! I wondered how she could spend $3000 in three days? Well, she had bought bicycles for her grandchildren; she had ordered from Cairns recordings of her favour-

ite singers – many discs… What else? Well, she gave some money to her daughters and also to several other people. That's it. She definitely did not regret that all the money had gone. That was normal. She smiled and even laughed.

Gradually, I was diving into the process of 'recognizing' the typical traits of hunter-gatherer cultures, frequently described in ethnography, which in unpredictable ways show themselves in the behaviour of groups and individuals having to deal with modern things. I was introduced to the people of Aurukun as a sister and very soon I myself became an element of the 'giving' or 'gifting' environment (Bird-David 1990). Very often, to my regret, I lacked professional neutrality, which could have helped me to avoid being surprised or even irritated by or resentful of some of the actions or requests of my Aurukun friends, and instead to embrace the spirit of the ancient moral economy. I wish that the habits and attitudes of my own culture had not routinely overpowered my professionalism.

In 2005, a very reputable woman used to visit me in the Guest House. Very often she had nothing to eat for her breakfast (as well as for dinner and supper) – like many others around. Once she asked me for a piece of soap, and I gave one to her. The next day she again asked for a piece of soap; I was surprised but I gave her another one. In fact, there was nothing surprising about that. She used the first piece of soap when she needed it, and then gave it to someone else, and my soap started to change hands.

Often I was asked for more expensive things. One of them was an electricity card. The houses in Aurukun are provided with electricity only when such a card is inserted into a special box-counter. Cards are sold at the General Store for $20 each, but they do not last long and without them houses sink at night into complete darkness and almost unbearable tropical stickiness (with fans and air conditioners off). You can not boil water for tea, nor fry an egg; neither can you switch on the multicoloured bulbs which often hang around the houses, even though it is such fun to sit in the yard when they shine!

As soon as I arrived in Aurukun on my return visits, requests for an electricity card would pour down on me. It was impossible to respond to all of them, but sometimes I bought cards for my closest sisters. When on the next day one of the same sisters again (whispering) asked me to buy another card for her, I could not help replying in an indignant voice: 'Why? I bought you a card just yesterday!' But there was nothing to be indignant about. She could not reject the demand of her nephew's wife. And now her own house had plunged into darkness, and multicoloured lights shine around the nephew's house, and cheerful children's voices are heard from there. She could not have acted in any other way.

There is no other way

All the gifts I presented my sisters and brothers with, as well as various things I shared with them at their request – such as blankets, clothes, CDs and DVDs, etc. – very soon were lost in the course of their circulation among relatives.

I remember a story Roger Cribb told me about a man who gave his bankcard to one relative and its PIN to another – both as acts of sharing. Those two soon decided to withdraw all the man's money. This is not a joke, nor is it stupidity on the part of the victim – this is just normal life. He could not reject the requests of his relatives.

In 2010, in Milingimbi, I happened to witness the following event. An old nurse who worked in a local medical centre was retiring, and a celebration was planned to mark the event. A new nurse, a white lady who had recently arrived at the settlement, hired an Aboriginal man (for $100) to catch enough fish to feed all the guests. She went fishing together with the man, and 40 big fish were caught. However, as soon as the boat full of fish was ashore, a crowd of the man's relatives snatched away all the fish except one, which they left for the nurse. She was frustrated and upset. She could not understand that the man could do nothing about it, that when hungry kinsmen, including children and adolescents, surrounded him, he could not shoo them away. The fact that he had been paid $100 for his work did not concern anybody apart from the poor nurse, and nobody was sad that there would be no food at the celebration, which was going to take place two days later.

Many situations where Aboriginal people who have found themselves trapped in conflicting circumstances have preferred to reject a profitable job, or violate their obligations towards white employers, or even risk going to jail for a breach of Australian law, rather than quarrelling with their relatives, have been described in the academic literature as well as in media publications (e.g. Martin 2011, 206; Martin & Martin 2016, 213–14; McRae-Williams & Gerritsen 2010).

'That's enough for me'

I also had many opportunities to learn for myself that, as evidenced in the ethnographies, those Aboriginal people who get goods or services from others do not feel indebted to the donators. For example, one day I went fishing with my Aurukun sister and her relatives. They borrowed a motorboat from someone, I

paid for the fuel and brought the things needed for a picnic: rice, tea bags, sugar, matches, etc. All these things are normally not available in Aurukun households. They catch plenty of fish, we get ashore, I make a fire, cook rice and boil water for tea, while they gut and roast the fish in the ashes. Then they start to eat; nobody offers a fish to me, but they are very much surprised that I did not catch any fish myself. 'You do not know how to fish? It is very strange!' I feel a bit hurt but there is nothing to feel hurt about. I simply forgot that I should ask for fish. Eventually, I do this and receive a portion.

On another occasion, my colleague and I rent a boat to visit one of the totemic centres up the Watson River. Two young Aboriginal men accompany us. At the place where we get ashore there are plenty of mud shells, and there is lots of room in our boat. Both men could have collected and brought home many of these mud shells, the flesh of which is greatly valued. But one of our companions is not interested at all, and the other collects not more than nine or ten. 'Enough for me', he says. Then we sail back to Aurukun. On the way, the second man throws the fishing rod into the river, gets one fish, and does not attempt to catch any more. We tell him: 'Catch more, plenty of room in the boat, plenty of fish in the river'. He replies: 'One fish is quite enough for my supper'. Every man is for himself and he does not care about feeding others. But every man knows that someone will give him food or money when he is hungry.

One afternoon, I meet in the street a woman who calls me sister. She tells me that now it is lunchtime, but she has nothing to eat. So I give her $5. An hour later she meets me again and says that she bought half a fried chicken and a bottle of cola for $3 in the 'Take Away', ate the chicken and drank the cola on the go, and then she gives me back the remaining $2.

Once, a white woman who lived in Aurukun at the time I was there showed me the staple skirts that she sewed for the black women. These skirts of very bright colours had only one patch pocket. I wondered why only one pocket? The woman replied: 'A pack of cigarettes and a pamper for a baby – nothing else is needed, she is happy!'

It is also enlightening to consider an Aboriginal woman or man who is going to visit her or his relatives in Cairns (600 km away from Aurukun). Such a traveller would wait for a plane near the Aurukun airstrip. He is dressed in jeans and shirt, she in skirt and light blouse. Perhaps there is a pack of cigarettes and some money in a pocket. But no handbag, no backpack. Everything that is needed will be provided by their relatives or obtained somehow on the spot and according to circumstances.

'We cannot be like them'

A true hunter has to be mobile and not weighed down. Today's Wik people live sedentary lives but retain the habits of nomads. Throughout my stays in Aurukun, I had only two or three opportunities personally to see the interior of the Wik-Munkan houses. A typical Aboriginal house is almost empty: a number of much used mattresses lying on the bare floor, or sometimes tapchans or bunks with mattresses; there could be a television set and good musical equipment, with plenty of CDs and DVDs (my information of 2005–2009 might be out of date now, and the Wik people may use more modern devices); and several plastic armchairs. And that is all or almost all. No kitchen utilities, no food supplies. Often various colourful pictures or rugs are glued or hung on the walls (in one Wik house, for instance, there was a 'Velvet Elvis' on the central wall – the American idol depicted full-body against a dark background, white-suited, microphone in hand and wearing a Hawaiian garland of scarlet flowers; see Fig. 16.4).

The Aboriginal people of Aurukun do not spend much time in their houses. Mostly, they spend their life in the yards or in the streets, and it is quite understandable why normally people say 'I sleep in this house', rather than 'I live in this house'. Indeed, people often change the houses they sleep in. I happened to find the people I wanted to see one day in one house, and the following day in another house.

When a person I was looking for would come out of a house and greet me, a leisurely talk would start, and some common enterprise would be planned: a fishing expedition, a visit to the cemetery, or a simple tea party in the house I lived. Preparations for a fishing expedition often would take an hour or more. If I did not have matches or a boiler (for a 'picnic' on the beach of the river), that would not be a problem. A fire could be started without matches in a number of tricky ways, water for tea could be boiled in one of the old tins which were abundant everywhere. But it is impossible to fish without a fishing gear, and the latter would not be available all the time. 'Oh! I forgot that N. borrowed my cast net yesterday!' We would walk (or drive) to N.'s house. If she was not in, we would go to a third or to a fourth house. And having not found N., we would eventually borrow a cast net from someone else. I cannot remember a situation when such a problem was not solved sooner or later in this or that way.

The Wik people have lost many of their ancient skills and customs. They have almost ceased making traditional tools, and many of the most important rites such as initiation of youths or totemic increasing

Figure 16.4. *The interior of an Aurukun house. Photo by V. Klyaus, 2009.*

rituals are no longer performed. But they have retained the norms that obligate a person to give others what is requested, and allow him or her to expect that needed things or services will be procured with the help of others. This is the key to the continuation of their communal life and the preservation of the personal integrity of the members of their communities.

I remember what was said to me by one of the most charming, intelligent and kindest Wik men, who, alas, has also since died. We talked one day (in 2007) and he said in a quiet, sad voice: 'White people want us to be like them, but we can't, simply can't.'

It seems that the social environment (the so-called constant pressure of demand sharing; Peterson 2013) does not allow the people living in the Aboriginal communities to get out of what Anglo-Australians call poverty, but among the Aboriginal individuals themselves there is also – as a rule – a lack of motivation to achieve what white people call wealth or well-being. More than that, even the 'objective scarcity of resources (finances, fuel, equipment and so forth)' (Martin & Martin 2016, 213) is not perceived as poverty by the indigenous people. I have never heard one of my Aurukun or Milingimbi interlocutors calling themselves poor.

I remember Nicolas Peterson's story (related to me orally) about a Warlpiri man; having almost no food or money, and sitting on a ripped blanket spread over the ground, he was speaking about his wish to save some money and to send it to the children of Afghanistan, because the other day he had watched a TV programme about their disastrous situation. He was especially concerned by the fact that they lacked blankets.

When generosity is stressed

In 2008, my assistant Alexey Zakurdaev and I found ourselves in a situation of conflict. The former GEO of the Council demanded an exorbitant charge for our accommodation. We did not have the funds to pay, but without doing so we risked being 'thrown out' a week or so before the end of our expedition. Although we did not tell anybody about our problem, the people in the settlement learned about it quite quickly. A woman who calls me aunt came to our place and said that she and all the kinsmen would not leave us in trouble, they would get the money together. 'I will give $200', she said. 'H. will give $100, A. will give $150, others also will give money to you.' 'But how will you find such an amount of money if yesterday neither you nor H. had even $5 for food?', I asked. 'It is our business', was the answer. Fortunately, everything worked out, and we did not have to pay more than had been agreed at the beginning of our stay in Aurukun. Perhaps our

Figure 16.5. *The children of Aurukun. Photo by O. Artemova, 2005.*

friends had managed to exert some influence on their relatives who were members of the Council.

In 2009, my colleague Vladimir Klyaus, an Aboriginal man who called me sister and I got into real trouble. We rented a boat to sail up the Watson River to a place which interested us very much. But the expedition failed because we did not estimate properly the amount of fuel required. We barely managed to get ashore and find our way back to Aurukun (we walked through the forest in the night). Half sunken, the boat had become stuck in the mangroves, and we could not pull it out ourselves. We had to confess the whole thing to the owners of the boat. They, a man and his mother, without a word of reproach went together with us to pull out the boat. Several other volunteers accompanied us. After the boat had been recovered, we suspected that the engine had broken down. We had no money for a new engine, but none of the Aboriginal people even mentioned this.

The cases described above, as well as several others that some of the Wik people and I were involved in together, show that at times 'generosity is stressed'[9] without any requests (in accord with Spikins' concept of the 'socio-emotional dynamic of *sharing through generosity*' – this volume, 61). Motivations to save money or obtain it in considerable amounts can also arise at times. Mostly, they are not connected with individuals' or families' desire to be wealthier or more prosperous; instead such motivations could be provoked by feelings of empathy towards somebody who is in trouble, or by a wish to feel aesthetic pleasure, or by a desire to participate in some existing enterprise – in other words, something eliciting strong emotions rather than a response to a utilitarian need.

The strongest example in Aurukun is the death of a relative, which motivates people to save large sums of money and to store food and various things in huge amounts. Any improvidence or the usual tendency to live 'day to day' are absolutely out of the question. Funerals, complicated mourning rites, and mourning feasts attended by numerous people are carried out assiduously, which entails big material investments on the part of the families of the deceased people. A relatively new trend is the installation of expensive natural stone monuments or tombs, ornamented with totemic symbols; such monuments require considerable financial means.

The high death rate[10] among the Aurukun people is the most convincing evidence of the profound dysfunction in their social life (see, for example, Sutton 2009; Ford 2013). Perhaps it will be sufficient to say that when I first came to Aurukun there were many men whom I called 'brother' (aged 50–55), and now I have only sisters left. Many people much younger than me also have passed away over the last 10 years.

It seems that the two cultures which have clashed here (on Wik land) cannot coexist, and that the stronger is winning. In 2015, during my last stay in Aurukun, I sensed that some families and individuals had made a decision to 'get out of the vicious circle'. They had reduced sharing, started to accumulate things and money,[11] and send their children to study or work somewhere in town. As a result, those whose sharing demands were being rejected felt frustrated, and those rejecting such demands felt separated from others (cf. Peterson 2013). The danger which these changes in the behaviour of some people might pose to the Wik people's communal life as a whole cannot be overestimated.

Quite a number of colleagues (and not only Australians) might reproach me for being unrealistic, romantic but outdated, and even inhuman. They claim that for the Aboriginal people to survive and live a decent life, to become self-sustaining, independent members of civil society, they should 'sell their labour', 'free themselves from the shackles of demand sharing', 'be built into mainstream society', etc. But what will remain of their traditional culture? Nothing but public festivals – pseudocorroborees – and the serial production of pseudototemic bark paintings, while the main achievements of their extraordinary culture will be lost forever. That brings to mind the words of Donald Thomson who in early 1930s went on an expedition to northeastern Arnhem Land to carry out a heroic mission– to resolve the severe conflict between the Aborigines and Anglo-Australian authorities: 'I think that it should always be remembered that in making black white men of these people we do them the greatest of all wrongs, since with our rigid adherence to the "white Australia" policy, we are not prepared to admit them to real social equality, which would obviously be the only possible justification for such action' (Thomson 2003, 186).

This was said more than 90 years ago (perhaps in 1937). Since then, Australia has changed beyond recognition: the notorious 'white Australia' policy has been abandoned while multiculturalism with its humanistic and democratic ideals has prevailed; the government attitude to interaction with the Aborigines has changed for the better as well as the public opinion of 'white Australians' towards 'black Australians': the latter have been recognized as fully fledged citizens of the country and many of them have been granted the legal right to live traditionally on their lands. And at last the Aborigines' religious and artistic heritage has become highly valued. The guilt of the colonizers has been repeatedly recognized publicly and legally, and there have been many acts of atonement. However, a yawning gap remains between indigenous and alien cultures, and threats to the autochthonous cultures are not removed completely, but modified, and new ones continue to develop.

Retrospect

It is very important to emphasize that the phenomenon under consideration, namely the system of 'totalitarian' sharing, could and very often did exist without any paraphernalia that would be visible in the archaeological record. However, such phenomena are crucial from the evolutionary point of view.

In 1929, Russian ethnologist Aleksandr Maximov published *On the Eve of Agriculture*, in which he meticulously summarized all the data on Australian Aboriginal gathering practices available at the time in published sources. Having analysed this data he argued that the Australian Aborigines in many parts of the continent used techniques of harvesting of wild crops, tubers, roots and fruits, as well as techniques of processing various kinds of wild plants before consumption, which were quite similar to those used by horticulturalists. He concluded that the Australian Aborigines, in the framework of their foraging economy, developed all the preconditions needed for farming. According to Maximov, 'the indigenous Australians did not have to commit any "revolution" to shift to cultivation' (Максимов 1929, 325). *Technologically*, they were completely ready for farming.

In 1986, referring to a number of Australian studies, another Russian scholar, Vladimir Kabo, wrote: 'The latest research has shown that the Aborigines of Australia were even closer to horticulture than it seemed to Maximov.' Apart from so-called 'fire-stick farming', Kabo mentioned simple forms of irrigation – the construction of dams, artificial water reservoirs and irrigating channels – which evidenced 'conscious and targeted impacts on nature – even more impressive than the experiments involving the cultivation of yams and other plants which are also known in Australia' (Кабо 1986, 233).

In 2011, Bill Gammage, in his book *The Biggest Estate on Earth: How Aborigines Made Australia*, attempted to show (based on extensive data and on the conclusions of a number of contemporary researchers – archaeologists, anthropologists, historians, palaeobotanists, etc.) that Aborigines throughout the whole of Australia really farmed their land and, in particular, purposefully grew and harvested many plant species. According to Gammage the Aborigines were farming but did not become farmers; that is, they did not turn cultivation into their main occupation and main source of subsistence, and they did not invest into farming as much time and labour as real farmers do. In other

words, they did not change their way of life for the farming way of life. True farming is sedentary, but the Aborigines were absolutely committed to mobility. Gammage sees precisely this as the reason why foraging remained prime.

It appears that all the traits of Aboriginal culture discussed above are of no less importance: totalitarian sharing as a whole, and in particular the *satisficing* principle of economic behaviour, minimization of effort and risk, mechanisms that considerably reduced or even nullified the motivation of individuals, families and groups to accumulate wealth, as well as mechanisms that constantly reduced or lowered (in social and psychological contexts) the costs of material assets or material things.

However, the question 'why did the Australian Aborigines not become real farmers?', quite frequently posed in the literature, seems to be academically incorrect. Many hunter-gatherer peoples experimented with cultivation of plants, which is richly evidenced ethnographically and archaeologically, but only a few of them independently made farming their main mode of subsistence – and soon after farming rapidly spread, mostly via colonization processes, almost all over the world (see, for example, Bellwood 2011; Özdoğan 2011; Rowley-Conwy 2011; Bar-Yosef 2017). The move to farming was determined by concrete evolutionary choices made by concrete societies in concrete periods of human history; the majority of other societies found themselves in the orbit of those choices. Only some preferred and managed to retreat to environments that were not attractive to farmers or happened to settle in such environments before the spread of the farming economy started.

The Australian Aborigines were lucky to live on land that was suitable for farming but which was not available for an external colonization till relatively recent times. They had good opportunities to choose to farm or not to farm. For it seems to be absolutely obvious that reasonably acting and determined individuals, associated in groups, did make historical choices (cf. Widlok, this volume) and did so deliberately, generation after generation, and that they understood what they were doing, 'experimenting consciously with different social strategies in different contexts', 'being aware of multiple social possibilities' as well as of possible results and consequences of their 'social strategies' (Wengrow & Graeber 2015, 603) and also manipulating 'their environment while being fully aware, probably not always, of changes caused by their behavior' (Bar-Yosef 2017, 300).

The indigenous Australians knew how to procure what they needed in the volumes they perceived as sufficient for them. An overwhelming proportion of their time spent outside the sphere of necessity was taken up with their religious cults and other spiritual occupations (e.g. Berndt & Berndt 1977, 519). They invested much into procuring, collecting and accumulating food and other valuables – skins, down, feathers, shells, stones, ochre, honey, plant fibres and many other different things – in quite a large quantities when that was needed for their collective ceremonial activities and aesthetical requests. So we may assume that the Australian Aborigines did not become agriculturalists because of conscious human moderation. 'Enough is as good as a feast', the English proverb says; 'He will always be a slave who does not know how to live upon a little' (Horace).

Tiger, in his book *Manufacture of Evil* (1985), no less impressive or provocative than his *Men in Groups* (1969), claimed that 'the rot set in with agriculture' and saw the essence of World Evil in the industrial system. He wrote, 'it would be foolishly naïve to ignore the obvious role… of simple greed, or complex and thoughtful greed' in the processes of creation of that system. The crucial issue is that once started, industrial system is 'implacable!' 'But was it inevitable to begin with?', asks Tiger, and he replies: 'Of course not'. 'A carefully litigated near-madness covers over the almost unbelievable financial facts which resulted from the foolish belief in the inevitability of productivity' (Tiger 1985, 75, 82, 103, 109).

Was the shift to agriculture thus inevitable? Of course not, think some archaeologists. Thus, Rowley-Conwy argues: 'There is no archaeological evidence that hunter-gatherers display an inherent trend from simple to complex…. Numerous examples reveal complexity coming and going frequently as a result of adaptive necessities…. There was… nothing about the Natufian that made agriculture inevitable…. Most hunter-gatherer historical trajectories would never have resulted in agriculture had that way of life not impinged on them from the outside' (2001, 53, 62–4).

If this is true, then instead of asking why the Australian Aborigines did not move to a new mode of subsistence, it would be much more reasonable to ask why some ancient hunters and gatherers *did* move to a productive economy? Of course, this question has been asked by archaeologists and anthropologists more than once, and various hypothesis have been suggested (e.g. Boehm & Flack 2010; Boehm 2012; Flannery & Marcus 2012; Hayden 2014, etc.). But no definite answer is forthcoming (for an analytical survey of various approaches to the problem see, for instance, Price & Bar-Yosef 2011 or Bar-Yosef 2017).

Such trivial explanations as overpopulation and lack of natural resources are not supported by recent data (Price & Bar-Yosef 2011). The centres of original

agriculture were localized in the regions which at the beginning of Holocene experienced an unprecedented affluence of wild food (see, for example, Price & Bar-Yosef 2011; Finlayson, Mithen & Smith 2011, 129; Hardy-Smith & Edwards 2004, 258; Byrd 2005). It appears, paradoxically, that some people started systematically to produce food and generate other material values in artificial ways not because they were in shortage, but because they had much and wanted to have more. This means that the reasons for the developments should be searched for in the specific features of social relations and social values which the creators of early agriculture had.[12] Applying such reasoning, we should doubt that all 'the pure hunters were the poor hunters' and assume – contrary to Rowley-Conwy – that there was *something* about the Natufian that helped their descendants to shift to productivity, and that set them apart greatly from those hunters and gatherers who have survived almost till the present day (including the Australian Aborigines and many other foraging peoples).

The traditional culture of the Wik-Munkan people as well as the cultures of other indigenous Australians and some modern hunter-gatherers of Africa, South and Southeast Asia were absolutely unique thanks to their economic egalitarianism. Apparently, the development of such cultures was the result of quite specific trajectories of social evolution. This is why we have to agree with the scholars who posit that these cultures do not provide background for a valid reconstruction of the remote past (e.g. Sassaman 2004), and disagree with those who assume that contemporary or recent 'simple' foragers have maintained their egalitarian lifestyles from extreme antiquity to the present and that these societies represent a once universal form of social relations (e.g. Boehm 1993, 1999, 2012; Flannery & Marcus 2012). As Testart put it, referring to ethnographically studied hunter-gatherers, they 'might not have been such and probably remain such only by reason of restrictive social forms that for them are quite possibly a distant and glorious heritage' (1988, 13). This, perhaps, applies not only to ethnographically studied hunter-gatherer societies with immediate return systems but also to the so-called complex ones as well. As Finlayson, Mithen & Smith assert, 'Neither the Natufian/Harifian nor the PPNA appear to have good ethnographic analogues, and the use of generalized models of hunter-gather complexity and sedentism serves more to mask the specifics of each culture, rather than help us understand it' (2011, 137).

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Notes

1. An allusion to Owen Lattimore's famous line 'it is the poor nomad who is the pure nomad' (1940, 522). See also Lattimore 1938, 15 ('*The poor nomad is the pure nomad, best able to survive under the strictest conditions of the old life, and at the same time best able to evolve into new ways of life*').
2. That the long-term economic pay-offs of sharing are only possible through '…complex emotional relationships of generosity, trust and response to vulnerability…' (this volume, 58).
3. As Widlock puts it, for example, sharing 'takes place in a way that downgrades the act of giving (see, for instance, Lee 2003) as part of levelling any potential attempts of the giver to take political advantage from his or her economically advantaged position' (2013, 21).
4. There are archaeological data that allow some scholars to assume that in separate areas of southeast Australia the processes of the so-called intensification of economic activity took place during certain periods of Aboriginal history (e.g. Lourandos 1997). As Smith (1999, 327) wrote, 'It seems, Australian hunter-gatherer societies moved toward a different social and economic mode in some parts of the continent in the postglacial period but it was not a unilinear process nor was it continuous or uniformal across the continent.' Nothing of the kind, as far as I know, was observed among traditionally oriented Aborigines.
5. The notion of *complexity* is much debated among social anthropologists and archaeologists (see, for example, Sassaman 2004, 231–6; Boehm & Flack 2010; Hayden 2014). However, these debates are not directly relevant to this discussion.
6. Conscious use of so-called levelling strategies has been described in many ethnographies and discussed in theoretical publications (for example Biesele 1999, 208;

Boehm 1993, 1999, 2012; Cashdan 1980; Gardner 1966, 2006; Endicott 1981, 1988; Endicott & Endicott 2012, 59–168; Lee 1979, 245–8; Marshall 1976, 194–5; Silberbauer 1982; Tanaka & Sugawara 1999, 198; Turnbull 1965; Wiessner 1996; Woodburn 1979, 1980, 1982).

7. In Russia, scholars usually avoid this term because of its apparent obscurity. In Western publications, including hunter-gatherer studies, it is used without any special reservations (e.g. Bird-David 1992, 38–41; Martin 2011, 203, 206). Perhaps, the expression *hunter-gatherer ethos* could be regarded as synonymous to Barnard's construct *hunter-gatherer mode of thought* (Barnard 2000).
8. 'For the 2016 Census in Aurukun, there were 1,144 Aboriginal and/or Torres Strait Islander people' (2016 Census QuickStats).
9. cf. Woodburn's words quoted earlier in this chapter: 'generosity is not stressed'.
10. I could not find any reliable official statistics on the Aurukun death rate. A high death rate does not mean a decreasing Aurukun population, because the birth rate is also high: 'In Aurukun (Indigenous Areas), the median age of Aboriginal and/or Torres Strait Islander people was 27 years. Of the Aboriginal and/or Torres Strait Islander people 31.2 per cent were children aged 0 to 14 years and 4.5 per cent were people aged 65 years and over' (2016 Census QuickStats).
11. cf.: 'However, there is evidence of an increased desire for a wider range of goods and services in outstations that require cash' (Peterson 2016, 60).
12. e.g. Bender 1975; Belfer-Cohen & Goring-Morris 2011; Hayden 2014; Bar-Yosef 2017. Unfortunately, reliable archaeological data on the social systems of those hunters and gatherers who were first to move to farming is still very scarce.

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Chapter 17

Ecological, historical and social explanations for low rates of food sharing among Mikea foragers of southwest Madagascar

Bram Tucker

> Of anything they have, if it be asked for, they never say no, but do rather invite the person to accept it, and show as much lovingness as if they would give their hearts.
>
> Christopher Columbus speaking of indigenous Taino of Hispanola, quoted in Josephy (1994, 115)

> I only share food with those who give food to me.
> I don't give to other people [outside the household] because they are stingy.
> I take care of my own first.
>
> Mikea informants during social network interviews, June 2017

Generous, public division and distribution of food to distant kin and non-kin is a staple of hunter-gatherer ethnography (Altman & Peterson 1988; Bird-David 1990; Kaplan & Hill 1985; Marlowe 2010; Wenzel et al. 2000; Wiessner 2002) and of textbook descriptions of foraging societies (Ember et al. 2011, 297; Guest 2014, 536; Haviland 2002, 165; Kottak 2015, 311; Miller 2010, 63; Park 2006, 204; Scupin & DeCorse 2012, 327). For example, among Ache hunter-gatherers of Paraguay, households give away 70 to 90 per cent of all of the wild and domesticated foods they obtain, both in the context of forest foraging and when living on reservation farms (Gurven & Kaplan 2002). In this chapter, I describe the case of Mikea, a hunting and gathering population of southwest Madagascar, who do not share food in this manner. In a previous study, I documented that Mikea in one community transferred less than 15 per cent of raw plant and animal foods from one household to another, and only a third of prepared meals (Tucker 2004).

In this chapter I consider potential historical, evolutionary, and social explanations for non-sharing. But first, allow me to clarify what I mean by food sharing, and what I mean when I say that Mikea rarely share. Division and distribution of food is to some degree a human universal; raising human offspring requires that parents provide food to their children, and this is a hallmark of the human species (Hrdy 1999). Hereafter, I refer to sharing among close relatives or within a household as 'household provisioning'. I restrict the term 'food sharing' for distribution of food beyond the immediate family. Among Mikea, household provisioning is routine, but food sharing is rare.

Mikea do not think of themselves as stingy; they have a sharing ethic, and they place a high value on generosity. To call someone generous (*matarike*) is the best compliment Mikea give, just as stingy (*matity*) is among the worst insults. In common with all peoples of Madagascar, when Mikea sit to a meal, if others in their vicinity are not eating, it is customary to call out, 'welcome to our food' (*mandroso sakafo*)! The most common response is yes (*eka*), a polite way of saying no.

And yet, when Mikea consume meals inside their cramped houses, they are not obliged to call out 'welcome to our food', except if a neighbour happens to be at the right place to witness the meal through an open doorway. Mikea camps and villages are not organized to encourage public view of private, indoor spaces; typically, doors point north, in contrast to some Kalahari and Congo foraging settlements where doors point inward to public space (Kitanishi 2000; Tanaka 1980). Mikea foragers often return from foraging in secret and stash their prey inside houses before appearing in public view, claiming, if asked, that they were unsuccessful and had not caught anything. Once, when a young forager reported this to me, I pointed to the obvious bundle of freshly dug tubers sitting just inside his doorway; he then felt obliged to give me a portion. Mikea have a sharing ethic, but they avoid situations where the ethic should be fulfilled.

Anthropologists study food sharing because the simple acts of giving and receiving food exemplify

sociality and cooperation, and reveal social norms of generosity, property, and value (Bird-David 1990; Hunt 2000; Wenzel et al. 2000; Winterhalder 1996a). Both evolutionary and social anthropologists have published prolifically about hunter-gatherer food sharing, but without much obvious intellectual cross-pollination. Perhaps this is because evolutionary and social scholars begin with different assumptions about human nature.

Neo-Darwinian evolutionary anthropologists of the late twentieth century tended to assume that individual organisms are self-interested and competitive, for the simple reason that if particular individuals are more interested in the good of others than in their own good, these individuals would be less likely than their selfish competitors to survive and reproduce, and less likely to pass their generous behaviours on to future generations. (More recently, some evolutionary anthropologists have embraced an alternative vision human nature, expecting widespread generosity among distant kin and non-kin based on group selection arguments; I discuss this at the end of this chapter). From the perspective of self-interest, the challenge of food sharing studies is to explain how apparent altruistic generosity could in fact provide selfish advantages for the giver (Gurven & Kaplan 2002; Hawkes & Bliege Bird 2002; Hawkes et al. 1991; Kaplan & Hill 1985; Winterhalder 1996a).

In contrast to neo-Darwinian approaches, social anthropologists tend to assume from the outset that humans are social, and focus instead on how material exchanges create, maintain, and change social structure (Hunt 2000). The challenge for social anthropologists has been to explain how the morality food sharing changes with new commodities, new values, and new trading partners (Bird-David 1990; Fortier 2000; Kitanishi 2000; Wenzel 2000).

I begin my analysis of Mikea food sharing by considering explanations based on history and property institutions. Unlike some of the foraging societies that populate the anthropological imagination, Mikea have only been foragers for the past few centuries, their recent ancestors having been herders and farmers (Tucker 2003; Yount et al. 2001). It could be that Mikea rarely share because they maintain agro-pastoral norms and institutions within which food is the property of corporate descent groups. There are some valid cultural-ecological reasons to expect this (Netting 1968; Bates 2005), and indeed, agro-pastoral traditions probably do explain why Mikea share livestock meat. But I question why anthropologists have historically framed food sharing as a 'species-typical trait' exclusive to hunter-gatherers. This framing, I argue, is a residue of discredited Victorian-era unilinear social evolutionism, and earlier Enlightenment-era constructions of 'man in the state of nature' lacking private property (Barnard 1999). A quick glance at the ethnographic record for farmers and herders finds ample evidence that food sharing is not the exclusive domain of foragers (in agreement with Sillander, chapter 5). Agro-pastoral ancestry alone does not explain low rates of food sharing among Mikea.

Second, I consider possible evolutionary explanations for why Mikea rarely share, explanations which assume individual self-interest: kin selection, reciprocal altruism, trade, costly signalling, and tolerated scrounging. I revisit an explanation that I have offered in a previous publication (Tucker 2004), that Mikea rarely share food because their foods are either too small to satisfy other claimants, or are equally available to everyone so that sharing is not necessary, consistent with the 'tolerated scrounging' model (Blurton Jones 1984; Winteralder 1996b). I critique my previous argument on the grounds that while it is sufficient-- the evidence matches the predictions of the tolerated scrounging model), it is not necessary-- it does not demonstrate that Mikea food sharing results from a contest of self-interests.

Third, I consider the act of not sharing from a social exchange perspective; does *not* giving food to others constitute, as Mauss (1967 [1925], 11) said of the unreturned gift, 'a declaration of war; a refusal of friendship…'? Among Mikea, not sharing seems to be an accepted norm that coexists with the obligation to share. As Mikea have been increasingly drawn into the market economy, they may have shifted to thinking of foods as commodities and private property. As they have become increasingly impoverished, they may find themselves not wanting to share the few resources they have.

I offer ethnographic and theoretical conclusions. I argue that Mikea sharing behaviour is a complicated result of history, strategy, and social institutions. Sharing and not sharing are behaviours that result from an overlapping set of contradictory norms of common, clan, and private property, resulting from massive social changes over the past centuries. I argue that we should expect hunter-gatherer food sharing to be a complicated mix of history, strategy, and social facts. This, then, suggests that researchers should embrace theoretical pluralism. Researchers must search for causes of behaviour rather than associations between invented categories such as hunter-gatherer and behaviours such as sharing. I argue that recent advances in evolutionary anthropology associated with group selection may offer a bridge in the historical gap between evolutionary and social anthropologists, so that the time right for fruitful theoretical cross-pollination.

Mikea of Madagascar

The people of rural southwestern Madagascar, north of the provincial capital of Toliara, classify themselves as Mikea, Masikoro and Vezo based on dual criteria: subsistence specialization and family history. To be Mikea means that one is a hunter-gatherer, whereas Masikoro are agro-pastoralists, and Vezo are coastal fishers and sailors. To some degree, purported subsistence specializations are symbolic of political fealty or resistance to the precolonial Andrevola Kings, rather than accurate descriptions of economic specializations. Masikoro are those whose ancestors were loyal vassals to the kings, paying tribute in slaves, cattle, and agricultural staples. Vezo remember ancestors who evaded the kings by sailing away to sea (Astuti 1995; Poyer & Kelly 2000; Tucker 2003; Yount et al. 2001). Mikea recall that their ancestors were Masikoro and Vezo who moved their families and livestock into the dense, dry, deciduous Mikea Forest (*Alamikea*), and transitioned to hunting-and-gathering, to establish independence from the Andrevola Kings, and later, French Colonial agents.

Mikea, Masikoro and Vezo identify first and foremost as Malagasy people (*olo gasy*), and generally think of themselves as the same basic 'kind of person' (*karazanolo*). The three groups share an overlapping set of clan memberships and genealogical and commercial ties, and they have similar dialects and customs. But in a recent survey (N=30), 83 per cent of informants said that it was impossible for a Mikea to ever become a Masikoro or a Vezo, and vice versa.

Mikea hunt and gather for a living. Mikea forage for wild *ovy* tubers (*Dioscorea acuminata*), water-engorged *babo* tubers (*Dioscorea bemandry*), honey (*Apis melifera*), and small game, including tenrecs (African hedgehogs, *Echinops telfairi* and *Tenrec ecaudatus*), mouse lemurs (*Microcebus murinus*), a variety of birds, and wild cat (*Felis silvestris*). In the basins of Ihotre, Namonte and Bevondro they fish for tilapia (*Paratilapia* spp.) and the invasive snakehead fish (*Channa striata*), and some Mikea forage for marine prey in the Bay of Fagnemotse. Mikea are unlike other foragers in that there is almost no available large game, the exception being the exceedingly rare bushpig (*Potamocorus larvatus*).

Foraging has probably never been the exclusive profession of Mikea. Fields and pastures feature prominently in Mikea oral histories (Tucker 2003). Nineteenth century Mikea archaeological sites in the Namonte Basin show evidence of cattle pens (unpublished results of Douglass & Tucker, 2017). In the 1990s when I started working with Mikea, most households had forest swiddens for growing maize (then a popular cash crop) and sharecropped manioc and rice fields owned by neighbouring Masikoro.

In common with other hunter-gatherer populations, Mikea are mystified and exoticized by neighbouring non-foragers (Poyer & Kelly 2000). City folk have told me repeatedly that it is impossible to see Mikea because they instantly flee into the forest when visitors approach. When I insist that I have met many Mikea, I am usually told that these must have been 'false Mikea', for 'true Mikea' are extremely timid and can vanish in plain sight. Others have told me that Mikea are pygmies, lack language, eat their food raw, and sleep in burrows within the sand. In the Masikoro village of Antanimieva, only a dozen kilometres from the Mikea Forest, a community leader told me in 1996 that Mikea are descendants of Vazimba, aboriginal inhabitants of Madagascar. All of these statements are false. Mikea are normal human beings, not dwarfs or mutes or hiders or ancestors. They speak the same language and follow many of the same customs as other Malagasy.

Madagascar National Parks established the Mikea Forest National Park in 2012. Park rules permit Mikea live in some parts of the park, and to forage throughout the park. But in practice, Mikea who exercise these rights have found themselves confronted by false park guards, who demand phony fines. As a result, many Mikea have voluntarily left the forest to settle near agricultural communities, where sharecropping and agricultural wage labour provide meagre subsistence. Foraging continues to play a major role in the food supply.

Mikea food sharing

In order to systematically document how frequently Mikea do and do not share food, I observed meals in the forest camp of Belò in January-March of 1998 (Tucker 2004) as part of my dissertation research (Tucker 2001). Each time I observed a meal at Belò, I recorded the kinds of foods eaten, and the names of consumers, food preparers, and food producers (the persons who obtained the food from nature, fields, or pens). If producer, preparer and consumer were in the same household, I classified the meal as 'household provisioning'. If the producer and preparer were in different households, this indicated sharing of raw (unprepared) foods. If the preparer and consumers were in different households, this was evidence of sharing of prepared meals.

Kaplan & Hill (1985) and Gurven & Kaplan (2002) used similar methods to quantify food sharing among Ache of Paraguay, who spend part of the year foraging nomadically and part of the year in agricul-

Table 17.1. *Per cent of different types of food given away to other households among Mikea of Madagascar and Ache of Paraguay.*

	Mikea of Madagascar (Tucker 2004)		Ache of Paraguay (Gurven & Kaplan 2002)	
	Raw	**Meals**	**Forest**	**Reservation**
Wild plants	6	28	70	91
Wild animals	0	13	89	90
Honey	8	28	87	
Agricultural	10	36		78
Livestock meat	14	77		91
N (observations)	85	403	5609	380

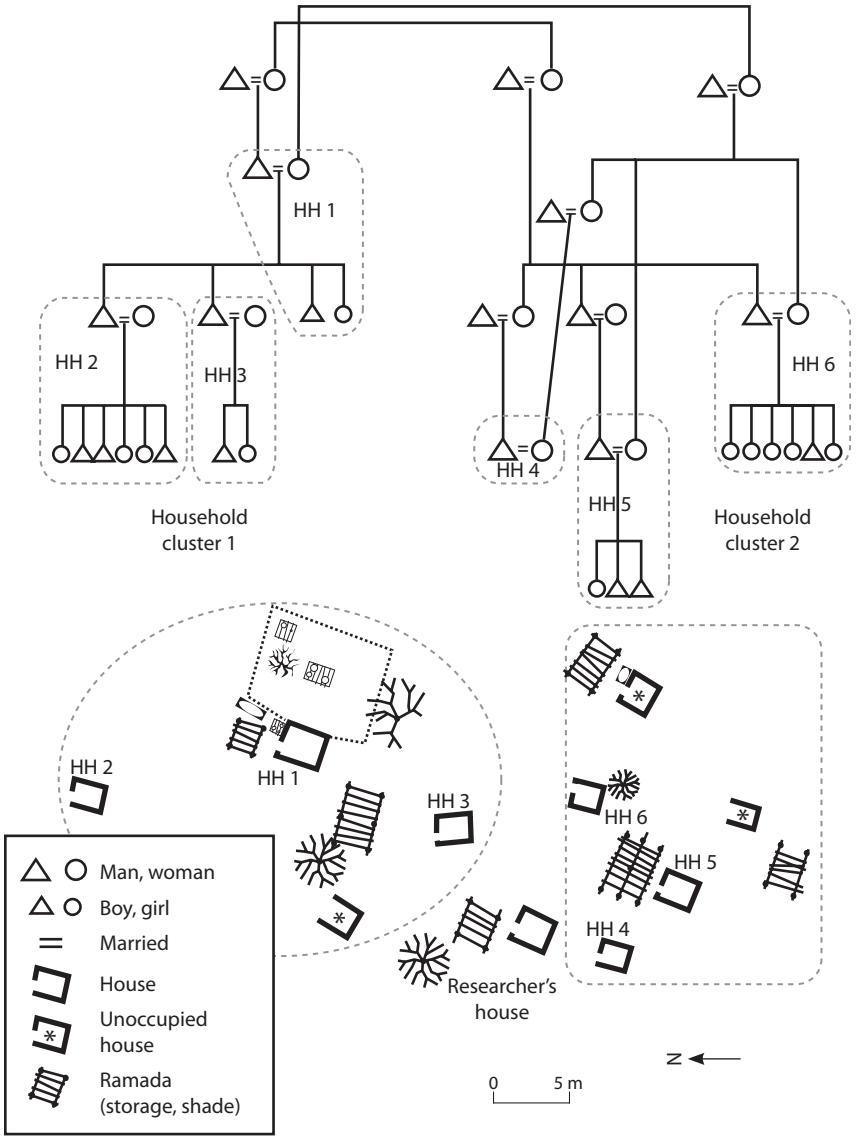

Figure 17.1. *Map of the forest camp of Belò in 1998, when food sharing data were collected. Mikea households formed two clusters, differentiated by space and kinship. Cluster 1 self-identified with the Marofote clan, and Cluster 2 with the Tsimitiha and Tsimamorike clans. This figure was originally published elsewhere (Tucker 2004) and is reprinted with permission.*

tural villages. Table 17.1 contrasts the frequency that different kinds of foods were shared among Mikea (Tucker 2004) and Ache (Gurven & Kaplan 2002). Mikea shared less than 15 per cent of raw foods, and 0 per cent of animal prey, contrasted to Ache, who shared 70 to 90 per cent of all foods, and 89 per cent of animal prey, specifically.

Mikea shared prepared meals of wild and domesticated plants and honey roughly one-third of time, and meals involving game meat 13 per cent of the time.

Meal sharing was patterned by kinship and proximity. As Figure 17.1 displays, the six household that were resident at Belò during the observation formed two clusters of three households each, separated by physical space and kin distance. Households within the same cluster would sometimes share cooking responsibilities or accept the customary invitation to join meals. Of meals in which preparers and consumers came from different households, they belonged to the same household cluster 90 per cent of the time (Tucker 2004).

The only food that was widely shared was meat from slaughtered livestock. Because this is a relatively rare event, the frequency of sharing of raw livestock meat in this table, 14 per cent, does not match longer-term observation. When a cow or goat is killed, it is customary to deliver a portion of raw meat to all households, including visitors. The one time I was present when foragers brought home a wild bushpig, this large game was also distributed in this manner.

Why Mikea rarely share, explanation 1: culture history and property relations

Theory

Why do anthropologists expect hunter-gatherers to share, and, by implication, why we do expect farmers and herders *not* to share? Barnard (1999) argues that, from the genesis of the hunter-gatherer category, a forager was a person without private property. Seventeenth-century European social philosophers constructed the forager (referred to as a natural man, a man in the state of nature, a savage, a primitive, or a hunter) primarily from speculation, as a heuristic foil to 'civilization'. Hugo Grotius and, a century later, Jean-Jacques Rousseau, asserted that man in the state of nature had only common pool resources. Domestication, they argued, led to violent attempts to monopolize property, resulting in the need for the state, law, and private tenure. Samuel Pufendorf and Thomas Hobbes lamented that, without law and the state, man in the state of nature was unable to trust his fellows sufficiently to allow for property, accumulation, technology, art, and commerce. In the eighteenth and nineteenth centuries, classical economists like Adam Ferguson, Adam Smith and Karl Marx transformed 'natural man' into the earliest evolutionary stage, characterized by either an absence of property or rudimentary property rights of transitory resources. Schemes like Smith's proposed trajectory of hunters-shepherd-farmers-merchants inspired Victorian-era schemes like Morgan's savagery-barbarism-civilization.

Twentieth-century anthropology was borne from a rejection of unilinear evolutionism, which proved factually insufficient and inspired by racist and colonial agendas (Stocking 1974). However, the association of foragers with common pool resources, and farmers and herders with private property, persisted in different forms.

For example, cultural ecology texts by Netting (1968) and Bates (2005) among others offer basic formulae linking environmental challenges, subsistence modes, property relations, and social organization, with the caveat that we should expect variation from these formulae. The formula for foragers starts with the key environmental challenge of resource unpredictability, caused by dispersed, seasonal and migratory prey. Foragers solve this problem with social flexibility and interconnectedness, which facilitates mobility and fluctuating band size, allowing foragers to form opportunistic aggregations around temporary resources. Foragers achieve social flexibility by levelling status differences, through flexible and inclusive notions of kinship, and of course, by routinely sharing food and other items, which builds friendships and minimizes status differences.

The formula for farmers and herders begins with a different set of environmental challenges. Because they control the reproduction of crops and livestock, they must worry about tenure, about who has access rights to the animals and lands in which their labour is invested. The social solution is corporate descent groups (Bates 2005, 122–3). Descent groups own, allocate and bequeath property, schedule labour, and adjudicate property disputes. We do not expect farmers and herders to share food equally with close kin, distant kin and non-kin, because food is property, and legally must be divided according to kinship and descent calculus.

History and property among Mikea

Mikea conform to some aspects of cultural ecologists' formula for foragers, and some aspects of cultural ecologists' formulae for farmers and herders. Like many foragers, Mikea tend to be quite mobile, moving, according to opportunity and ability, among

numerous patches of wild foods, agricultural fields, and cash earning activities. Mikea community formation corresponds with what Sillander (in chapter 5 of this volume) call 'open aggregation', meaning that communities easily expand to welcome new members. Wild resources are common pool but are not open-access. One must ask permission of the camp's elders before foraging near an established camp. The elders legitimize their own right to live where they do by citing the actions of recent ancestors. Although Mikea lack the kind of open kinship rules documented among Ju/'hoansi by Lee (1979), or the forms of bilateral 'relatedness' that Sillander (chapter 5) argues facilitates sharing, visitors wishing to join a camp can often find some kin relationship to justify their request.

Mikea, like other agro-pastoral Malagasy and East Africans, traditionally managed rights to livestock, agricultural land, and people through membership in patrilineal corporate clans. Before the French conquest of the Andrevola kings in 1898 and for many decades after, livestock and land were clan property. The clan head (*mpitankazomanga*) and other clan elders organized labour, distributed resources, adjudicated disputes, and organized ceremonies to honour the ancestors with cattle sacrifice, including marriage (*soratse*), rights of filiation (*soroanake*), circumcision of boys (*savatse*), healing ceremonies (*soro* and *bilo)*, and funerals (*faty*). Like other African agro-pastoralists, marriage requires the payment of brideprice in cattle, and children remain in their mother's clan until the father performs rites of filiation. The authority of clans has diminished over the twentieth century, a legacy of French and Malagasy governmental efforts to privatize property, accompanied by increasing livestock poverty. Today, cattle and land are titled in the names of individuals, although clan obligations to share remain.

Agro-pastoral property norms clearly explain how and why Mikea share one class of foods, slaughtered livestock meat. Livestock are not just large resources; slaughtered cattle (and to a lesser degree, goats) symbolize links to ancestors. Sacrificed animals are divided according to a rather strict recipe, with the meat around the tail being reserved for the clan head or officiating elder, the feet, heart, and tongue eaten by the sponsor of the ceremony, the liver and zebu's hump served in small pieces to all attendees, etc. When the animal is slaughtered strictly for food purposes, a reduced set of these rules is applied. In both contexts, all in attendance receive some portion of meat.

If Mikea at Belò in 1998 considered agricultural foods to be clan property, we would expect sharing within clans. This appears consistent with the pattern of within-cluster sharing of prepared meals at Belò, for the two household clusters in Figure 1 belong to different patrilineal clans. This is weak evidence in support of food as corporate descent group property. The explanation is marginally sufficient, in that clan membership predicts sharing of prepared meals; but it is unclear why raw foods would not be shared among clan members. The explanation is not necessary, for kin-based sharing of meals is equally consistent with evolutionary and social-exchange explanations for food sharing.

Why Mikea rarely share, explanation 2: competitive self-interest

Theory

According to the individual selectionist logic that has dominated evolutionary theory until recently, altruistic individuals who provide benefits to others at a cost to themselves are at a disadvantage relative to selfish competitors, so that selfish individuals will have more children and flood future generations with selfish traits (assuming that altruism and selfishness are somehow heritable, biologically or culturally). The fact that humans perform apparently altruistic behaviours routinely suggests to the evolutionary anthropologist that such behaviours are not truly altruistic, but provide some form of selfish, competitive advantage (Hawkes et al. 1991; Kaplan & Hill 1985; Winterhalder 1996a).

Possible selfish explanations for food sharing included *kin selection*, that generosity with those who share your traits, such as kin, will promote the survival and reproduction of those traits (Hamilton 1964); *reciprocal altruism*, that people take turns giving and receiving food, potentially evening out differences in food supply and reducing the risks of unsuccessful hunts (Trivers 1971); *mutualism* or *trade*, that in sharing, foragers exchange one type of value for another, for mutual benefit (Kaplan and Hill 1985); *tolerated scrounging*, that foragers give away surplus food to pre-empt others' costly requests (Blurton Jones 1984); and *showing off* and *costly signalling,* that men share meat to gain status and mating opportunities, or to advertise their quality as a mate (Hawkes & Bliege Bird 2002). Researchers found evidence supporting each explanation in different ecological and cultural settings (*kin selection*, Ziker & Schnegg 2005; *reciprocal altruism,* Gurven & Kaplan 2002; *mutualistic trade*, Kaplan & Hill 1985; *tolerated scrounging,* Tucker 2004; *showing off,* Hawkes et al. 1991; *costly signalling,* Smith et al. 2003).

Mikea food sharing as a self-interested contest

At first glance it appears as though food sharing at Belò is predicted by kin selection, for most foods are kept

within the household by close kin, and when meals are shared, they are shared preferentially with closer kin rather than distant kin. However, kin selection theory does not necessarily predict household provisioning. It predicts a preferential distribution of food to those who share all heritable traits, genetic and cultural, a set of people who, at Belò, would include more than just parents and siblings. It is also worth noting that the individuals who did the most sharing at Belò were the food preparers, who were mostly women married into the family, who were giving food to their husbands' relatives rather than their own genetic kin. I did find evidence for reciprocal sharing of prepared meals, for the number of times household X gave prepared food to household Y is strongly associated with the number of times Y gave to X (Spearman's rho = 0.861, p=0.000). Rather than risk reduction, reciprocal sharing of meals may be a form of turn-taking (*sensu* Gurven & Kaplan 2002), given the high time costs of transforming dried staples into edible porridge. But neither kin selection nor reciprocal altruism explains why prepared meals are shared more often than raw foods. Showing off and costly signalling do not appear to be valid explanations, for Mikea foragers were very secretive about their foraging successes, and there was almost no hunting of large game.

I have argued (Tucker 2004) that Mikea food sharing is best explained with Blurton Jones's (1984) concept of tolerated scrounging, as formalized by Winterhalder (1996b). Imagine a forager returning to camp with prey, and imagine that her campmates were less successful or ambitious. Let us call this successful forager 'the producer', and her empty-handed campmates 'scroungers'. The tolerated scrounging model envisions producers and scroungers entering into a contest of competing self-interests.

The producer wants to keep as much of the prey as she can, through physical defence or subterfuge. Scroungers want to acquire food from the producer, by wheedling, demand-sharing, or outright theft. How hard the producer will work to defend portions of prey, and how hard scroungers will work to obtain portions, depends on the size of the prey and the marginal utility of portions. For a medium-to-large size prey, the utility of portions diminishes over quantity; the producer values the first several portions highly, because they will feed her family, but the n+1th portion is less valuable, and the n+2th portion is worth even less. If the value of a marginal portion is less than the costs of defending that portion from scroungers, then it makes more sense to give that unit away to scroungers. The contest between producers and scroungers may not be publicly visible. The producer, as she returns to camp, may make a subconscious mental calculation, and decide to give portions away to pre-empt neighbour's costly scrounging behaviours.

Winterhalder (1996b) offered predictions about how resource size (small versus medium-to-large) and synchrony (the number of households with access to the food at a time) predict food sharing behaviours. When foods are small, producers will work hard to defend each unit. Small food packets constitute few portions, so there are no marginal portions with diminished utility. When foods are medium-to-large, producers are more likely to cede portions to scroungers, because the utility of these marginal portions is diminished. When foods are synchronously acquired, there is no contest between haves and have-nots, for everyone is a producer. When foods are asynchronously acquired, scroungers scrounge and producers defend. These predictions correspond rather well with Mikea sharing behaviours by food type, as summarized in Table 17.2.

Box 1 contains small, synchronously acquired foods, including small fruits (*Flacourtia indica*, *Zizyphus* spp.) and wild melons (*Citrullus lanatus*). They are neither dunned nor shared because, when in season, anyone can collect them almost as easily as asking for them from a neighbour. Box 2 contains medium-to-large, synchronously acquired foods, including raw and cooked wild *ovy* tubers and domesticated maize and manioc. These foods are synchronous because all

Table 17.2. *Mikea food types and the predictions of Winterhalder's (1996b) marginal utility model of tolerated theft (based on Blurton Jones 1984).*

	Small size Producer will defend	**Medium-to-large size** Producer can afford to give away marginal portions to pre-empt scrounging
Synchronously acquired Few, if any, scroungers	Box 1: • Wild fruits & melons	Box 2: • Agricultural staples • Wild plant foods • Porridge (prepared staples)
Asynchronously acquired Scroungers actively scrounging	Box 3 • Small animal prey: tenrecs, lemurs, birds, cats	Box 4: • Slaughtered livestock • Bushpig • Baskets of tenrecs and buckets of honey

households tend to harvest and prepare them simultaneously. Producers offer to share these foods by eating in public and calling invitations to others to join them, with the confidence that few people will accept the invitation, because they themselves already have these foods. In Box 3 we find small, asynchronously acquired resources, particularly, small animal prey. Producers actively avoid sharing these foods by hiding them and consuming them indoors, while scroungers try to spot these foods through open doorways and imperfect bark or grass walls, to demand-share them. In Box 4 we find medium-to-large foods that are asynchronously acquired. Here we find livestock meat and bushpig, the only foods that Mikea share openly.

The only foods that do not fit the predictions of the model are baskets of tenrecs and buckets of honey, which are medium-to-large foods, asynchronously acquired, but are rarely shared. I argued that, despite their size, these foods are unlikely to have diminishing marginal utility. Tenrecs, which estivate (dry-season hibernate) for nine months per year, preserve perfectly without any effort on the forager's part, sleeping for months in a basket or bucket until the forager is ready to eat them. Honey can last a long time without spoiling. Each portion may be consumed (or sold) over time, so that each has equivalent value for the forager's family, delivering constant marginal utility.

There are some rather obvious shortcomings of my analysis. As with the previous explanation, this one is sufficient but not necessary: Mikea behaviour is consistent with tolerated scrounging, but this does not demonstrate that Mikea behaviour is *caused* by contests between producers and scroungers based on self-interested subconscious calculations of marginal value. It is unclear why the tolerated scrounging explanation applies to the Mikea case but not to Ache or Hadza, who widely share small fruits. Tolerated scrounging does not explain why Mikea have a sharing ethic in the first place. The theory assumes that prey are private property under the control of the producer.

Why Mikea rarely share, explanation 3: social exchange

Theory

Social anthropologists position food and gift sharing as a collectivistic act of social creation and maintenance. As one of Lee's (2003, 119) Kalahari informants said about *hxaro* gift exchange, 'we don't trade with things, we trade with people'. Sharing was the theme of the 1998 Conference on Hunting and Gathering Societies (CHaGS 8, see Wenzel et al. 2000), where scholars, inspired by the writings of Mauss, Polanyi and Sahlins, explored the many ways in which giving food and gifts builds social relations and social structure (Hunt 2000). Contributions by Wenzel (2000), Fortier (2000) and Kitanishi (2000) among others explored how contemporary hunter-gatherers, living on the frontier of agro-pastoral and industrial societies, adapted traditional morally charged gift giving traditions to money and commodities and exchanges with outsiders.

In Sahlins' (1968) well-tread terms, food sharing is generalized reciprocity, giving without expectation of receiving a return gift. Generalized reciprocity is a 'moral' exchange because it strengthens social ties, and so generalized reciprocity is expected to be the norm among close kin. Bird-David (1990) argues that some foragers extend 'primary metaphors' of close kinship to all group members, with the forest as a generous parent, facilitating generalized reciprocity. This is akin to Sillander's concept of 'relatedness' in chapter 5.

Market exchange typifies balanced reciprocity, when two parties exchange goods of roughly equivalent value. Such exchanges carry very little moral valence because they do not engender future debts or social intercourse. Economic anthropologists expect that market exchange may erode traditional social cohesion by replacing generalized with balanced reciprocity (Dalton 1965; Polanyi 1957). A classic example of this was the collapse of prestige market spheres among Nigeria's Tiv, which transformed cattle, brass rods, slaves and wives into market commodities (Bohannan 1955).

Not sharing food would appear to exemplify what Sahlins (1968) called negative reciprocity, profiting at others' expense; 'a declaration of war' (Mauss 1925, 115). Ethnographers have reported negative reciprocity resulting from extreme poverty. During famines, Ik of Uganda (Turnbull 1972) and Gwembe Tonga of Zambia (1979) neglected traditional social institutions and went out of their way to avoid sharing obligations, as have Mpimbwe of Tanzania with the collapse of traditional social institutions and rising income inequality (Kasper & Borgerhoff Mulder 2015).

Changing social relations among Mikea

As described above, Mikea have a sharing ethos, in that they value generosity and feel compelled to share when others see resources they lack. But during a social network interview that I conducted with 78 Mikea adults in the region of Bevondrorano June 2017, many informants made statements suggesting that non-sharing is also normal, as I provided in this chapter's epigraph. There would seem to be conflicting norms of generosity and property.

Many Mikea food items have become market commodities, so it is possible that Mikea do not share foods they want to sell, thus changing generalized to balanced reciprocity and communal to private property. Market exchange is not new for Mikea; Mikea sold wild silk cocoons to buyers as early as the 1920s, and have participated in several market booms since then, for butterbeans, maize, and marine products. Mikea oral historians recount that their ancestors used money since they were first visited by pirates in the seventeenth century.

If Mikea food sharing patterns reflect conflicting norms of public generosity and private property, then we might expect market commodities to be shared less frequently than foods that are exclusively consumed in the home, creating two economic spheres (*sensu* Bohannan 1955). This is not the case. Feral cat, lemurs, and wild watermelon have no market value, and yet are not shared.

A second possibility is that Mikea are abandoning traditional norms of generosity because food is too scarce, as has been documented among Ik (Turnbull 1972), Gwembe Tonga (Colson 1979), and Mpimbwe (Kasper & Borgerhoff Mulder 2015). During focus group discussions about poverty and wealth in 2006 (Tucker et al. 2011), Mikea described themselves as poorer than Masikoro and Vezo, but explained that this is not due to a lack of food, but a lack of political status vis-à-vis their neighbours. At that time, Mikea experienced less food insecurity than Masikoro (Tucker et al. 2010). But today, following their displacement from the Mikea Forest by the new national park, many Mikea are experiencing rather severe food shortages, as I witnessed in the community of Bevondrorano in June 2017. Despite their right to forage within the park, Mikea at Bevondrorano complained that even when they forage outside of the park, they are accosted by people claiming to be park guards who demand they pay fines. As a result, Mikea forage close to home, exhausting local tuber patches. Agricultural profits were very low due to severe drought, and most families had lost most of their cattle and goats to bandits and their poultry to disease. Many informants told us that their biggest struggle was finding food for their children, and that adults often slept hungry.

Changed and eroded norms could account for low sharing. But as with the previous explanations, this explanation is sufficient but not necessary. It does not explain why some foods are shared more frequently than others, and it assumes that Mikea once had norms of generosity and common property like those of other foragers, which has not been demonstrated.

Conclusions

Why Mikea rarely share most foods

I have offered three explanations for why Mikea rarely share most foods: because, due to their agro-pastoral ancestry, they treat food like clan property; because, consistent with the tolerated scrounging model, self-interested foragers are unlikely to share small and synchronously acquired foods; and because social norms of generosity and property have changed due to market involvement and poverty. I have concluded that each explanation is consistent with some of the data from Belò, but there is not sufficient evidence to conclude that property norms, conflicting self-interests, or eroded social institutions are the *cause* of observed behaviour.

I suspect that all of these explanations have some validity, for Mikea strategically negotiate a complex set of conflicting norms of generosity and property. Ancestral norms of clan property, that anthropologists associate with agro-pastoralism, continue to influence how Mikea distribute livestock meat, for livestock sacrifice to honour ancestors continues to be central to Mikea cultural life. The size and synchronous availability of foods probably plays some role in the frequency with which they are shared, even if tolerated scrounging cannot fully explain why Mikea share food so much less frequently than do many other foragers. If Mikea share food out of competitive self-interest, this could just as well be a result of historical shifts to market exchange and increased poverty, rather than the 'human nature' envisioned by individual selectionist evolutionary theory.

Mikea's sharing ethos, visible in the value they place on generosity, could be relict from time before wild foods were market commodities, and before the stresses of the National Park, and perhaps before French colonization. Some informants have made this claim; a common discourse is that in former days, two foragers who happened to meet in the forest would exchange game. Other informants claim that Mikea were more generous before the year 2000, when a joint commission of governmental and non-governmental organizations effectively halted Mikea agriculture in the forest in the name of environmental protection. When I started fieldwork in the mid 1990s, it was very common for Mikea to gift a chicken or small game to visitors; more recently, Mikea offer visitors the chance to purchase these products. Contemporary Mikea people balance sharing obligations with recognition of the market value of foods, and very real needs to feed their children daily, in the context of scarcity.

We should not be surprised that food sharing among Mikea is a complicated mix of history, strategy, and culture. Recent accounts of hunter-gatherer adap-

tation to cash economies make this clear. Canadian Inuit have renegotiated what goods should be shared according to the cultural institution of *ningigtuk* (Wenzel 2000), and gender roles for cash and food income production that enables *ningigtuk* (Quintal-Marineau and Wenzel, chapter 14, this volume). Likewise, Artemova (chapter 15, this volume) documents the continuity of indigenous Australian sharing traditions into the modern cash economy.

Social change is not a recent phenomenon. Foragers have been influenced by kingdoms, empires, exchange, slavery, and colonialism since the dawn of the Holocene (Lee & Guenther 1991; Solway & Lee 1990; Wilmsen 1989; Wilmsen & Denbow 1990). We should expect that the food sharing behaviours of prehistoric foragers were equally complicated. Nor should we be surprised that people simultaneously conform to conflicting norms. Knight & Astuti (2008) argue convincingly that people commonly accept conflicting cultural norms without acknowledging them or attempting to resolve them.

Theoretical conclusion 1: Anthropologists should not necessarily assume that food sharing pertains to foragers

Of all of anthropology's specialties, hunter-gatherer studies have had the most difficulty vanquishing the spectre of Victorian-era unilinear social evolutionism. The spectre is resurrected almost every time we voice a generalization about foragers, for example, that they share food. When researchers make this generalization, we unwittingly frame people and behaviours after a style that has less to do with the observed data, and more to do with European cultural bias; specifically, imaginings 'man in the state of nature' without private property.

I am accustomed to hearing from fellow hunter-gatherer specialists the critique that Mikea do not share food (or are not strictly egalitarian, or deviate some other way from the forager stereotype) because their agro-pastoral roots locate them outside the category of a true hunter-gatherer. There are two ways to interpret this critique.

One way imagines that there are some pure examples of the hunter-gatherer type out there, presumably African foragers in the Rift Valley or the Kalahari Desert, and that groups like Mikea are not them. This argument employs a fallacy that tends to lurk behind the spectre of unilinear evolutionism in hunter-gatherer studies: no true Scotsman (Flew 1975). No true Scotsman involves:

> Making what could be called an appeal to purity as a way to dismiss relevant criticisms or flaws of an argument.
>
> Angus declares that Scotsmen do not put sugar on their porridge, to which Lachlan points out that he is a Scotsman and puts sugar on his porridge. Furious, like a true Scot, Angus yells that no *true* Scotsman puts sugar on his porridge.
>
> Richardson, 2012,
> 'What is your logical fallacy?'

Hunter-gatherer scholars commit the No True Scotsman fallacy when they exclude societies from the forager category that do not align with models of idealized foragers, such as foragers who do not share food. Societies that do not conform to what Isaac (1990) called the 'generalized forager model' (egalitarianism, low population density, lack of territoriality, limited storage, and fluctuating band membership), are often relegated to other categories, such as 'complex hunter-gatherer', 'forager-horticulturalist', 'sedentarized forager', 'post-forager', or 'Australian' (for many Australian foraging societies defy the generalized forager model).

If we define 'hunter-gatherer' as anything other than a person or society who lives by hunting and gathering, then we risk creating a thing of bias that is arbitrary to the facts and that promotes the unilinear spectre. Perhaps worst of all, we create a thing that has causal agency based on some purported essential property, as if people do what they do because of the type of society they belong to. In actual fact, people do not naturally predicate their behaviours on the categories social scientists put them into (Kelly 2013, 21–2).

A second way to view the critique that Mikea do not share food because they are not foragers requires neither categorical purity nor unilinear progress, but instead considers what factors, common to some foragers but not exclusive to foraging societies, predict food sharing. This kind of argument does not seek cause in categorical essence, but in ecology, sociology, and politics. As I have discussed, cultural ecology provides reasons why foraging, farming, and herding subsistence modes may require specific social institutions to solve their particular ecological challenges. Sillander (chapter 5) argues that food sharing is common when societies exhibit 'open aggregation', when communities can easily incorporate new members and customs; and 'relatedness', particularly, a shared ethos of kinship.

The ethnographic record demonstrates that property norms vary considerably among foraging societies. For example, Hadza of Tanzania seem socially unable to monopolize property, which may be why they have rarely practiced agriculture (Blurton Jones 2016). Kalahari Ju'/hoansi freely give away possessions in *hxaro* exchange and consider food patches

to be common property, but family groups develop claims to waterholes (*!Nore*), so that non-members must ask permission before settling near them (Lee 1979). By contrast, many indigenous Australian societies have the kinds of corporate descent groups that we normally expect of agro-pastoralists, including clan-owned 'estates' (Barker 1976). The so-called 'complex hunter-gatherers', such as the Kwakwaka'wakw of North America's Pacific Coast, have descent groups (*numima*), and personal and clan property (Rohner & Rohner 1970).

The *performance* of food sharing also varies among foraging societies. Rebecca Bliege Bird (personal communication, 2016) has told me that after a day of foraging, Martu of Australia's Western Desert will immediately divide all foods evenly among all present without apparent negotiation, even with individuals who did not contribute much (this conforms to Artemova's account in chapter 15). By contrast, Frank Marlowe (personal communication, 2016) describes Hadza food sharing as a constant stream of demands and bluffs. Echoing my description of Mikea, Marlowe said that it was not uncommon for his Hadza informants to ask him to hide their game in his truck to avoid obligations to share.

Food sharing is not exclusive to societies we call hunter-gatherers. Evans-Pritchard writes of the Nuer of South Sudan in the 1930s:

> Although each household owns its own food, does its own cooking, and provides independently for the needs of its members, men, and much less, women and children, eat in one another's homes to such an extent that, looked at from the outside, the whole community is seen to be partaking in a joint food supply. Rules of hospitality and conventions about the division of meat and fish lead to far wider sharing of food than a bare statement of the principles of ownership would suggest…. (Evans-Pritchard 1940, 84).

Similarly, Johnson (2000, 98) says of nomadic Turkana herders, 'Food sharing, unlike livestock exchange, is a daily experience for all Turkana; food is not only shared with family members, but often with neighbours, friends, and on occasion, even with unknown passers-by'. One of Johnson's informants explained, 'Turkana is a culture of sharing' (Johnson 2000, 103). Another informant elaborated:

> …in Turkana, the generous people are many, the greedy are few… whenever you are traveling you never carry food… as long as you know that you are passing where there are people you will eat whether you know people or not (Turkana informant quoted in Johnson 2000, 99).

In Bohannan & Bohannan's ethnography of agricultural Tiv of Nigeria (1968, 143), they describe networks of gift exchange for developing social relationships. They also describe the movement of food across the landscape in lean times.

> Yam harvest can begin a week or two earlier in southern Tivland than in central areas, and baskets of yams are, on request, sent north in early August, just as grain had been sent south earlier. This movement of food is not organized; it takes place on a kinship or a friendship basis and is morally important to Tiv…. Tiv insist that these gifts are not reciprocated, even though a person is more likely to 'send hunger' to someone who has formerly sent food to him than to someone who has not (Bohannan & Bohannan 1968, 143).

In this volume, Sillander (chapter 5) describes food sharing among Bentian horticulturalists of Indonesian Borneo.

Theoretical conclusion 2: The time is right for evolutionary and social anthropologists to work together

There has been an unfortunate and unproductive degree of acrimony between evolutionary and social anthropologists during the past few decades on topics such as hunter-gatherer food sharing, stemming, I believe, from their divergent starting assumptions about human nature (Fuentes 2004; Tucker 2014). In this chapter I have contrasted evolutionary anthropologists' approach to food sharing, which is to find some selfish benefit for being nice, versus social anthropologists' approach, which assumes that human nature is social.

In the twenty-first century an increasing number of evolutionary scholars accept that humans (and other organisms) are often not self-interested, but act for the good of others or the group (Boyd & Richerson 2010; Richerson et al. 2016; Wilson & Wilson 2007). If one's membership in a group has similar or greater impact on one's survival and reproduction than one's individual traits or choices, then the survival of the group becomes more important than individual advantage. Even detractors accept

that 'group selection' occurs; they argue that this is just another way to look at individual selection and kin selection, and individual self-interest still drives the desire to work for the group (West et al. 2008, 2011). Proponents aver that group selection permits evolutionary scholars fresh perspectives on cultural phenomena, particularly social institutions such as religion, ethnicity, and exchange (Atran & Henrich 2010; Boyd & Richerson 2010; Richerson et al. 2016.).

Food sharing is one of these cultural phenomena. We need not explain away generosity with nepotism, reciprocal altruism, trade, costly signalling, or tolerated scrounging. People could be generous as the result of 'norms of strong reciprocity', shared cultural concepts that function to keep groups cohesive (Gintis 2000). We are finally at a moment when explanations based on culture history, individual's strategic interests, and social exchange may coexist within a common theoretical umbrella, facilitating exploration of the plural causes for behaviour.

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