

**Georgetown University**

---

**From the Selected Works of Karl Widerquist**

---

2015

# The Evolution of Equality: Rethinking Variability and Egalitarianism Among Modern Forager Societies

Grant McCall, *Tulane University of Louisiana*  
Karl Widerquist



Available at: <https://works.bepress.com/widerquist/53/>

The Evolution of Equality: Rethinking Variability and Egalitarianism Among Modern Forager Societies

Grant S. McCall<sup>1</sup> and Karl Widerquist<sup>2</sup>

<sup>1</sup> Associate Professor, Dept. of Anthropology, Tulane University, New Orleans, LA, U.S.A.

<sup>2</sup> Associate Professor at SFS-Qatar, Dept. of Philosophy, Georgetown University, Doha, Qatar

**This is a preliminary version, please cite or quote from the final version, *Ethnoarchaeology* 2015**

Corresponding Author:

Grant S. McCall  
Dept. of Anthropology  
101 Dinwiddie Hall  
Tulane University  
New Orleans, LA 70118  
gmccall@tulane.edu  
Office: +1 504 862 3054  
Cell: +1 504 427 2694

Key Words: Hunter-gatherers; social systems; egalitarianism; risk reduction

## Abstract

Using hunter-gatherer societies as a focus, we argue for a heuristic continuum of egalitarian social systems ranging between relatively strong and weak forms. Weak egalitarianism is characterized by an absence of real political hierarchy, and limited differences between individuals in terms of rank, status, wealth, or power, while strongly egalitarian societies are characterized by these with some combination of powerful sharing and leveling norms, assertive social mechanisms of norm enforcement, extensive formal networks of reciprocity spanning geographical regions, and ritual practices designed to alleviate resulting social tensions. While weak forms of egalitarianism may result from some long-recognized properties of mobile foraging societies, such as group membership flexibility and universal access to both means of economic production and the means of coercion, we argue that strong egalitarianism emerged as a social strategy for coping with foraging risk at larger temporal and spatial scales. We conclude with a synthesis of ethnoarchaeological and archaeological approaches in the examination of the prehistory of egalitarianism, as well as a brief consideration of potential evolutionary implications.

**Key Words:** Hunter-gatherers; social systems; egalitarianism; risk reduction

## Introduction

By the middle of the twentieth century, egalitarian hunter-gatherer bands had been documented ethnographically across the globe. From this point onward, it was widely assumed that an egalitarian social structure was original to our hunter-gatherer early hominin ancestors. Much of this interest emerged from traditions of evolutionary thinking with a good deal of unilinear baggage, which have tended to emphasize the similarities of egalitarian social structures among hunter-gatherer groups as a universal outcome of foraging economic systems (Steward 1936, 1955; White 1959; Lee and Devore 1968, including various papers therein; Service 1971; Sahlins 1972; Woodburn 1982; Harris 1989; Bird-David 1990; Peterson 1993; Boehm 1999; Riches 2000). This perspective also generally assumed that, because a strong variant of egalitarianism is common among modern hunter-gatherer societies, it must have been innate among our early hominin ancestors, and therefore provided the baseline social context in which salient dynamics of hominin evolution took place (Washburn 1950, 1959; Washburn and Devore 1962; Washburn and Lancaster 1968; Service 1971; Isaac et al. 1971; Leakey and Lewin 1977; Isaac 1978; Bunn and Kroll 1986; Foley 1988; Dominguez-Rodrigo 2002). In short, this line of scholarship systematically compiled a list of generalizations about modern hunter-gatherer egalitarianism and projected these normative features into the past as the basic social structure of our earliest ancestors.

Spurred on by the outcomes of the *Man the Hunter* conference (Lee and Devore 1968) and the increasing prevalence of human behavioral ecology as a guiding theoretical perspective (Smith and Winterhalder 1981, and papers therein, Hill 1982; Hill et al. 1987; Hawkes et al. 1982; Kelly 1983; Kaplan et al. 1990; O'Connell 1995; Winterhalder and Smith 2000; Bird and O'Connell 2006), hunter-gatherer anthropology in late 20<sup>th</sup> and early 21<sup>st</sup> centuries increasingly embraced the documentation and explanation of cross-cultural variability as its *raison d'etre* (for book-length treatments, see Kelly 1995; Kent 1996; Binford 2001; Panter-Brick et al. 2001; Bettinger 2009; see also Ames 2004 for a review). This shift in thinking has profoundly reoriented predominant research questions and methodological orientations, with great impacts on both how we conduct our archaeological and ethnographic investigations and how we conceptualize both human evolution and modern human forager cultural diversity. This period also witnessed significant revisionist criticism, which briskly awakened many to the historical complexities associated with the lifeways of modern hunter-gatherer groups around the world (Schrire 1980; Headland and Reid 1989; Wilmsen 1989; Wilmsen and Denbow 1990; Shott 1991; Kent 1992; *contra* Lee 1992). In radically different ways, revisionism and the increasing concern for variability among forager societies undermined the historical effort to generalize similarities among modern hunter-gatherer societies into a single modality of our deep prehistoric ancestry.

Our purpose in writing this paper is to bring renewed attention to the variability associated with modern hunter-gatherer egalitarianism, as well as its economic causes and issues related to its potential time depth, and to provide some

insights into the ways that ethnoarchaeological research on a variety of topics might contribute to the debate. We follow Kent (1993) in making a heuristic distinction between “strong” and “weak” forms of egalitarianism. As one axis of variability among egalitarian societies, this continuum recognizes the substantial differences in the kinds of social structures to be found, the ways in which social norms of egalitarianism are enforced, and the structural mechanisms for dealing with any resulting social stress. In this respect, we recognize that more weakly egalitarian societies may generally lack differences in wealth, status, power, rank, etc., between individuals but also lack any rigid formal structures of exchange and/or reciprocity, strict norm enforcement, and the major social tensions resulting from these (as well as mechanisms for mitigating such tensions). In contrast, we recognize that strongly egalitarian societies may have elaborate mechanisms of reciprocity that operate at a range of temporal scales and the enforcement of social norms of egalitarianism is generally strict and forceful. In such cases, a great deal of social tension results, and there are clear structural mechanisms for alleviating this social stress. This axis of variability among societies traditionally categorized as egalitarian clearly holds great significance in terms of understanding related questions of both the social context in which human evolution occurred and the causes of social structural variability among forager societies, and archaeological means of differentiating the types of egalitarianism may be critical to our understandings of hominin evolution.

In examining this variability and its causes, we concentrate on the oft-discussed case study of the Ju/'hoansi (formerly known as the !Kung; J. Marshall 1957; L. Marshall 1961; Lee 1968, 1972, 1979, 1988, 1990, 2013; Biesele 1975; Guenther 1975; Wiessner 1977, 1982, 1996, 2002, 2005; Katz 1982; Katz et al. 1997; Wilmsen 1989; Barnard 1992; McCall 2000), who have sometimes been taken as a modal manifestation of egalitarian hunter-gatherer social structure and generalized into the evolutionary past. Our examination of this case study shows that the Ju/'hoansi are, in fact, at the extremity of the strongly egalitarian pole of social structural variability. Furthermore, we show that the extremely strong form of egalitarianism in this case has resulted from numerous allied strategies of foraging risk management layered into the organization of social and economic systems. In contextualizing the Ju/'hoansi case study relative to other modern hunter-gatherer societies, we find that the strength of egalitarianism manifested here holds a clear relationship to the prevalence and necessity of risk management mechanisms, and, therefore, the ecological context.

In closing, we discuss some implications for ethnoarchaeological examinations of egalitarianism and the application of these approaches to the archaeological record. While early ethnographic research focused on certain hunter-gatherer groups, such as the Ju/'hoansi or the Hadza, as modal analogs for Paleolithic societies, recent research has been more sophisticated in considering the role of individual choice and tactical variability relative to participation in egalitarian social systems. Much of this research has been couched within the theoretical framework of human behavioral ecology and has been directed at developing testable models of early hominin evolutionary dynamics. On the one hand, we recognize the

value of these approaches in terms of the recognition and explanation of variability, and especially in contrast with older schools of analogical thought. On the other hand, we see good evidence for organizational linkages between patterns of foraging economic intensification, foraging risk at a range of temporal scales and amplitudes, and variable egalitarian social structures intended to cope with this risk. Thus, we make the case for an ethnoarchaeology and archaeology of egalitarianism forager social systems aimed at the elucidation of the organizational connections, while going beyond the traditional foci of the material manifestations of sharing and gift-giving practices.

### **Historical Views on Egalitarianism as a Basal Form of Forager Social Structure**

Modern hunter-gatherer groups figured prominently in the unilinear evolutionism of Tylor (1871) and Morgan (1877). Such views held that egalitarian social structures were a defining element or key feature of societies situated at the hunter-gatherer stage of cultural evolution. The increasing maturity of the field of anthropology, and the decline of European colonialism, ushered out unilinear evolutionism as a legitimate theoretical perspective on cultural diversity. However, as Binford (2001) notes in his comprehensive review, egalitarianism as a generalized feature of hunter-gatherer social structure did not die with unilinear evolution. In fact, it is quite clear that even strongly anti-evolutionary American anthropologists, such as Kroeber (e.g. 1935), continued to harbor these earlier views concerning the defining features of hunter-gatherer societies (see also Steward 1936, 1955; Service 1971). This view of egalitarianism as an original feature of band societies survived through the regeneration of neo-evolutionism and the emergence of the cultural ecology theoretical perspective (Steward 1955; White 1959), providing the foundation for a new generation of ethnographic and archaeological work on hunter-gatherer societies.

Thus, this viewpoint held that our earliest ancestors were “pristine” hunter-gatherers, possessing egalitarian social structures as a defining feature of their cultural lifeways, that hunter-gatherer groups largely disappeared with the rise of agriculture, and that those that remained were influenced by contact with their more complex neighbors. In spite of this, many believed that there were still a few cases in remote, geographically-isolated, and environmentally-poor regions where hunter-gatherers continued to live more-or-less as our Paleolithic ancestors did (e.g. Service 1971).

This theoretical perspective has since been overturned due to skepticism derived from three main sources: First, from *Man the Hunter* onward (Lee and Devore 1968), it was broadly recognized that many modern hunter-gatherer societies are not actually egalitarian in their social structure but, in fact, have considerable degrees of social inequality (Suttles 1968; King 1978; Testart 1982; Brown 1985; Hayden et al. 1985; Earle 1987, 1997; Ames 1994; Arnold 1996; Fitzhugh 2003; Sassaman 2004; Habu 2004; Gamble 2008). Similarly, these same scholars recognized that the emergence of social inequality among hunter-gatherers had happened in several pre-agricultural contexts and that contact with agricultural

societies was not responsible.

Second, in the 1980s and 1990s, revisionism swept through the sub-field of hunter-gatherer anthropology, collectively calling into question the “pristineness” and/or isolation from complex neighbors of some key cases of egalitarian forager societies. For example, Wilmsen (1989; Wilmsen and Denbow) demonstrated that Kalahari hunter-gatherers had experienced very complex histories in terms of relationships with neighboring agricultural societies (see also Schrire 1980 for an earlier discussion). Others, such as Headland and Reid (1989), recognized that this situation was not unique to the Kalahari but was in fact true of all modern hunter-gatherer societies. Though many were predisposed to dismiss such views by virtue of their post-modernist excesses (e.g. Lee 1992), such studies held profoundly important insights germane to the consideration of the context in which egalitarianism may be found among modern hunter-gatherer societies (see Cartmill 1994; Kelly 1995, 2013; Binford 2001 for longer discussions of this point).

On the heels of these debates, most current research on modern hunter-gatherers has embraced the explanation of cultural variability in ecological and demographic terms as its central goal (see Kelly 1995, 2013; Binford 2001 for extensive reviews). Some of this line of research has been fostered by developments within the closely related fields of socioecology, optimal foraging theory, and human behavioral ecology (see Winterhalder and Smith 1981, 2000; Hill 1982; O'Connell 1995; Bird and O'Connell 2006). More broadly, there was an increasing recognition on the parts of ethnographers and ethnoarchaeologists that modern human forager groups encompass tremendous variability in relation to their ecological and economic contexts, and that documentation of this was key to considerations of the archaeological and evolutionary past.

### **Current Ecological and Evolutionary Perspectives on Forager Egalitarianism**

Within the modern field of human evolutionary studies, the inclusion of hunter-gather ethnography began with the work of Washburn and colleagues (Washburn 1950, 1959; Washburn and Devore 1962; Washburn and Lancaster 1968), who sought to compare the baseline social structures and practices of closely related non-human primates (mostly baboons) and modern human foragers, recognizing several basic structural differences as holding key clues to dynamics of Pleistocene hominin cultural and biological evolution. Ironically, while Washburn and his colleagues had good ethological information about patterns of primate social structure and behavior, much less was known at this time about modern human foragers. Thus, the Washburn approach fostered ethnographic research on modern hunter-gatherers in the interest of building a generalized baseline model with which to compare primate patterns and, perhaps more problematically, to employ as a stand-in for our early hominin ancestors. In most ways, the *Man the Hunter* conference (Lee and Devore 1968) may be understood as a grand attempt at surveying modern forager variability as understood in its day and to synthesize a

modal model with which to approach problems of the past.

Thus, the Washburn approach employed the same basic logic to be found in the writings of Service (1971) and his contemporaries: that modern forager social structure was derived from a pattern common to all of our Paleolithic ancestors, found in its most intact form among certain isolated hunter-gatherer groups, who had experienced the least disturbance from neighboring complex agricultural societies since the end of the Pleistocene. This is a prime example of what O'Connell (1995) identifies as "strict analogy" and also one that is clearly (and dubiously) based on direct historical grounds. Furthermore, while there has been cogent criticism of both the use of ethnographic analogy as a logical basis for considering human prehistory and the direct historical connections between modern hunter-gatherer groups and our Paleolithic ancestors, a great deal of modern evolutionary theory retains elements of the Washburnian perspective.

More recent evolutionary research on modern hunter-gatherers, much of which has been framed according to the principles of human behavioral ecology, has heeded O'Connell's (1995) admonition in rejecting direct ethnographic analogy as its logical basis (Hill 1982; Hill et al. 1987; Hawkes et al. 1982; Hawkes 2000; Hawkes et al. 2001; Hawkes et al. 2010; Hawkes et al. 2014; Blurton Jones 1984; Smith 1988; Kaplan et al. 1990; O'Connell 1995; O'Connell et al. 2002; Gurven 2000; Gurven et al. 2004; Winterhalder and Smith 2000; Winterhalder 2007; Wiessner 2002, 2005; Bird and O'Connell 2006; Bird and Bliege Bird 2010; Codding et al. 2011; Bliege Bird et al. 2012). This line of investigation has more effectively focused on recognizing and explaining modern forager variability, as well as understanding individual decisions about foraging and sharing behaviors. In addition, it made progress in systematically assessing effects of the social contexts in which hunter-gatherers have lived, including the nature of economic decision-making, on patterns of both biological and cultural evolution.

Early explanations of the prevalence of egalitarian social systems among modern foragers centered on issues of risk buffering. In the absence of much ethnographic evidence, Washburn (1950, 1959; Washburn and Devore 1962; Washburn and Lancaster 1968) argued that egalitarianism and prevalent patterns of food sharing emerged in order to cope with the risks inherent within economies dominated by the hunting of large game. Augmented by early ethnographic evidence about hunting and food sharing presented by Lee (1965, 1968) and others, this viewpoint held that (1) even good individual hunters had low success rates and that (2) when they were successful, they succeeded in acquiring much more food than either they or their immediate kin could consume. Thus, egalitarianism and food sharing emerged as a set of strategies for buffering risk, evening out daily foraging returns, and assuring that no individual went hungry.

Later, Wiessner (1977, 1982, 1996, 2002, 2005) added to the risk-reduction perspective by demonstrating the roles played by other aspects of the egalitarian social systems of the Ju/'hoansi in managing foraging risk at greater temporal scales. Much of this research focused on the establishment and maintenance of *hxaro* networks, formal systematic gift-

giving exchanges, underwritten as well by broader norms of sharing and social leveling. Here, Wiessner succeeded in showing that egalitarian social practices and networks, such as the *hxaro* system, were instrumental maintaining cooperative relationships with individuals in alternative foraging territories, as well as alternative residential options, which could be exploited during periods of environmental and/or economic crisis.

Subsequently, risk management began to be recognized as a potential explanation of variability in egalitarian social systems among modern hunter-gatherers. For example, Cashdan (1980) showed that there was substantial variability in the manifestations of egalitarian social systems among different forager groups in the Kalahari and that the nature of foraging risk within these various economies went a long way toward explaining it. Kaplan and colleagues (1990) came to similar conclusions for the Ache of Paraguay. Risk appears to be a fundamental cause of variation in sharing, leveling, and gift-giving practices (Smith 1988; Kelly 1995, 2013; Binford 2001; Winterhalder 2007).

Not all ethnographic evidence, however, has supported this connection between risk, reciprocity, and egalitarianism. A number of researchers have pointed out that successful foragers lose out in the long run, since they end up providing more shared food over time than they receive (Gurven 2000; Gurven et al, 2004; Hawkes 2000; Hawkes et al. 2001, 2010; O'Connell et al. 2002; Bird and Bliege Bird 2010; Codding et al. 2011; Bliege Bird et al. 2012). Furthermore, many of these studies suggest that participation in sharing systems tends to have little noticeable effect on the nutritional status of either successful foragers or their kin. Taken together, such studies point out that the kind of day-to-day risk buffering of the sort initially suggested by Washburn (1950, 1959; Washburn and Devore 1962; Washburn and Lancaster 1968) and his contemporaries fails to adequately explain observed sharing behavior at the level of individual decision-making, in the absence of other considerations.

Within the last two decades, explanations revolving around “costly signaling” and competition between males have added some new perspective to this debate (Gurven 2000; Gurven et al, 2004; Hawkes 2000; Hawkes et al. 2001, 2010; O'Connell et al. 2002; Bird and Bliege Bird 2010; Codding et al. 2011; Bliege Bird et al. 2012). The costly signaling model suggests that successful foragers choose to share, in spite of that fact that they lose out over time, because sharing serves signals their willingness to participate in egalitarian sharing systems and “play by the rules,” and displays aspects of evolutionary fitness to potential mates (Gurven 2000; Gurven et al. 2004; Bird and Bliege Bird 2010; Codding et al. 2011; Bliege Bird et al 2012). This model suggests that males may often orient their hunting and sharing behavior to compete with one another by providing large packages of food for their group (Hill 1982; Hawkes 2000; Hawkes et al. 2001, 2010, 2014; O'Connell 2002).

### **The Continuum of Strong and Weak Egalitarianism Among Modern Hunter-Gatherers**

More than four decades ago, Woodburn (1982) provided an immensely influential definition in which he linked egalitarianism to what he characterized as “immediate-return” economies. In examining a select sample of modern hunter-gatherer societies, Woodburn offered the following list of common features of egalitarian social structure:

1. *Mobility and group membership flexibility.*
2. *Relatively equal access to potential means of coercion.*
3. *Relatively equal access to economic means of production.*
4. *Sharing.*
5. *Intolerance of material accumulation.*
6. *Exchange of material objects.*
7. *Lack of political authority or leadership.*

This list has been widely accepted as a fairly universal generalization about how egalitarian societies operate, and the nature of “immediate-return” economies as the underpinnings of egalitarian social systems. From Woodburn's time onward, when egalitarian forager social systems have been discussed, they have generally been assumed to have all or most of the features listed above.

On the one hand, there is clearly profound variability in the nature of hunter-gatherer egalitarian social systems and it is now widely recognized that many modern foragers do not fit the generalizations outlined by Woodburn (1982). On the other hand, it is rare to see this tremendous variability explicitly discussed systematically in cross-cultural perspective. There is also some terminological ambiguity in terms of how this variability has been discussed. This ambiguity has had the unintended effect of conflating different aspects of egalitarian social behavior that may have disparate causes and distinct consequences in terms of thinking about issues of evolutionary ecology. Thus, we follow Kent (1993) in heuristically distinguishing between a continuum of egalitarian social structures ranging between *strong* and *weak* poles.

Kent (1993: 480) states: “Egalitarianism is a continuum, not an absolute entity; societies are only more or less egalitarian.” Later, in discussing differences in the egalitarian social structures and sharing practices of the Hadza and the foraging societies of the Central Kalahari, Kent (1993: 501) comments: “Hadza are more egalitarian than most societies but Central Kalahari Basarwa are more egalitarian than the Hadza. This indicates that there is a range of 'more' or 'less' equality even at the highly egalitarian end of the continuum, just as there is a range at the highly non-egalitarian end.”

While we borrow certain aspects of Kent's (1993) definitions and views on egalitarianism as a continuum, we wish to clarify our definitions of weak and strong egalitarianism. Weakly egalitarian societies simply lack any major differences

between individuals in terms of material wealth, social status, political power, coercive authority, and so on. Thus, weakly egalitarian social systems may take a wide range of forms and may vary widely in other aspects of their structural organization. In contrast, strongly egalitarian social systems are defined by several key commonalities:

1. Social practices designed to assertively maintain the operation of egalitarian social systems through the strict enforcement of egalitarian norms; in other words, social systems that do not tolerate deviation from the expectations of sharing and equality between all individuals and that maintain assertive mechanisms of norm enforcement.

1a. Active leveling mechanisms in terms of both the redistribution of resources (e.g. demand sharing; Peterson 1993; McCall 2000) and the limitation of social status (e.g. “leveling the hunter”; Wiessner 1996) that coerce individuals to conform to expectations of egalitarianism in economic and political activities.

2. Extensive networks of gift-giving and the exchange of permanent non-food items to ensure relationships of reciprocity at considerable spatial and temporal scales (e.g. *hxaro* networks among the Ju/'hoansi and the ceremonial exchange system of the Yolngu of Arnhem Land; Wiessner 1977, 1982, 1996; Thompson 1949).

2a. Long-term relationships of reciprocity that operate at the level of groups rather than individuals, assuring alternatives in terms of resource access during periods of environmental crisis or periods of extreme abundance (e.g. reciprocal-access territorial systems among the Ju/'hoansi and Western Shoshoni of the Great Basin; Dyson-Hudson and Smith 1978; Lee 1979; Kelly 1995).

3. Extensive social / religious / medical systems operating at the scale of the entire group for mending relationships, healing hurt feelings, and relieving the enormous social stress caused by the pressure to strictly adhere to egalitarian norms and practices (e.g. the “trance dance” ritual of the Ju/'hoansi and similar practices among lesser known groups, such as the Temiar of Malasia; Katz 1982; Katz et al. 1997; Roseman 1990).

While some key ethnographic hunter-gatherer societies, such as the Ju/'hoansi and the Hadza, tend toward the strong end of the egalitarianism spectrum, it is important to point out that many others do not. For example, in early criticism of Woodburn (1982), Layton (1986) and Testart (1988) all note ethnographic cases in which societies with immediate-return foraging economies do not have social practices consistent with Woodburn's generalizations about

egalitarianism (and vice versa with respect to delayed-return economies). Several ethnologists have recognized that the Inuit, who have elements of both immediate-return and delayed-return economic systems, have social systems that are only partly consistent with Woodburn's definition, and are thus ambiguous relative to their degree of egalitarianism (Gubser 1965; Gould 1982; Binford 1978, 1984; Layton 1986; Burch 1988; Kent 1993). Similarly, the aboriginal hunter-gatherers of the Central and Western Deserts have social systems that are very diverse and divergent from the “classic” cases of egalitarianism in Southern Africa, despite living in quite comparable arid environments and practicing immediate-return economies with many broad similarities<sup>1</sup> (Thomson 1946; Layton 1986; Myers 1986, 1988; Dussart 2000; Hawkes 2000; Bird and Bliege Bird 2010). Even the Mbuti, who served as a key case study in demonstrating the importance of “flux” in the maintenance of egalitarian social relations (Turnbull 1968), generally lack most of the features of strong egalitarianism laid out above. A detailed consideration of a range of other key ethnographic cases spread across the New World, Southeast Asia, and New Guinea clearly demonstrates the diversity of forms that egalitarian social systems may take and that not all fit Woodburn's (1982) generalizations.

### **Strong Egalitarianism Among Kalahari Forager Societies**

The Ju/'hoansi and other San hunter-gatherer societies of the Kalahari have long been thought of as particularly isolated and “pristine” examples of hunter-gatherer society (Wilmsen and Denbow 1990; *contra* Lee 1992). Their cultural practices have often served as analogical bases for imagining less-known forager societies in other times and places, and this has been especially true with respect to their strongly egalitarian social systems.

Washburn focused heavily on issues of buffering day-to-day risk, evening out daily foraging returns, and the provisioning of potential mates with food within contexts in which large game was consistently hunted and shared. Lee's (1965) initial directions in studying the Ju/'hoansi derived directly from Washburn's evolutionary interests, also focusing mostly on issues of day-to-day foraging and sharing dynamics associated with the large package sizes of hunted game. Likewise, Lee's early theoretical orientation is manifested in his goal of building an empirical generalization about the nature of Ju/'hoansi social systems with which to think about our early hominin past.

Wiessner (1977, 1982, 1996, 2002, 2005) was among the first to recognize that egalitarianism among the Ju/'hoansi was not a holdover from our Paleolithic ancestry or an automatic derivative of immediate-return return economies. Instead, Wiessner (1977, 1982) began to argue that various aspects of the operation of egalitarian social systems served as mechanisms for coping with long-term dramatic variability in terms of the availability of foraging resources, and the nature

---

<sup>1</sup> Many of the recent descriptions of the social systems of the Martu in Australia actually do fit most aspects of our definition of strong egalitarianism (see especially Bird et al. 2010; Bliege Bird et al. 2012). Thus, even within these regional subsets, there is substantial variability with regard to the nature of egalitarianism.

of long-term foraging risk within Ju/'hoansi economies. Wiessner argued that this variability in food resource availability and the resulting need for social strategies to cope with foraging risk fostered the striking relationships of reciprocity documented among the Ju/'hoansi. She felt that these relationships relied on a social structure with equally striking egalitarian norms, values, and mechanisms of enforcement. Furthermore, while Lee (1965, 1968) had previously emphasized egalitarianism as a mechanism for pooling risk and leveling day-to-day foraging returns, Wiessner focused on broader spatial and temporal scales at which foraging risk was a concern.

These linkages between dynamics of foraging risk and egalitarian social systems quickly achieved broader recognition. For example, Cashdan (1980) provided an influential analysis of the //Gana, who are a San hunter-gatherer group living in an adjacent region of the Kalahari in Northeastern Botswana. In stark contrast with the Ju/'hoansi, Cashdan observed that the //Gana lacked strong sharing and leveling mechanisms and saw the origins of incipient inequalities between individuals. Cashdan demonstrated that the //Gana make use of a range of mechanisms for buffering foraging risk, including mixing foraging, farming, and wage-labor economies, and food and water storage. Cashdan argued that the //Gana simply did not need to employ strongly egalitarian social strategies for risk reduction. He concluded that the Ju/'hoansi engaged in such active strategies for maintaining egalitarian social relations by virtue of the necessity of coping with foraging risk in combination with the unavailability of alternative buffering strategies.

Likewise, in her analysis of G/wi sharing in the Central Kalahari, Kent (1993) argued that food sharing does not fit expectations of day-to-day efforts to even out discrepancies in food acquisition between individuals or families. She concluded that sharing functions to help cement relationships of reciprocity between individuals, which are lifelong and function at much larger spatial and temporal scales. While Kent (1993) was clearly skeptical of egalitarianism as a materialistic strategy of risk reduction at any spatial or temporal scale, she also makes apparent that the original views of Washburn and Lee were problematic in their short-term focus.

What do these longer-term and broader spatial-scale strategies of risk reduction look like? Wiessner (1977, 1982, 1996, 2002, 2005) has demonstrated that the *hxaro* gift-giving reciprocity networks, which pervade Ju/'hoansi social life, clearly function to maintain alternative residential options over a wide geographic area, allowing individuals to shift camps in order to cope with both environmental and social problems. Concentrations of major food resources (e.g. mangetti nut [*Schinziophyton rautanenii*] groves) may fail for a variety of reasons over a range of seasonal and inter-annual time scales. Regions may experience droughts and other forms of large-scale environmental crisis. Such fluctuations in resource availability may go a long way in explaining the presence of social networks of reciprocity and the egalitarian social systems that underlie them.

In addition to the ever-present possibility of environmental crisis, individuals may also run afoul of social problems

within an egalitarian society fraught with various tensions and jealousies. *Hxaro* networks ensure that individuals maintain a diverse set of back-up plans in terms of where and with whom they live. While the G/wi do not have the equivalent of the *hxaro* gift-giving social system, we speculate that their formal networks of economic resource sharing may serve much the same function in maintaining a range of back-up plans across a network of neighboring villages. Furthermore, this may also be true of some other strongly egalitarian hunter-gatherer societies that have not been noted to have formal networks of gift-giving relationships.

While the function of *hxaro* networks is quite clear in addressing issues of long-term and broad spatial-scale risk, it is less clear how strict Ju/'hoansi norms of sharing and status leveling articulate. There are several potential explanations for this problem: First, it is possible that egalitarian social norms and values are fundamental to the maintenance of larger-scale reciprocity networks because these would be prone to failure once inequality emerges and participants begin to feel that they can cheat with impunity (Wiessner 1977, 1982, 2005; Cashdan 1980; Kent 1993; McCall 2000). If individuals decide to stop sharing and begin instead to accumulate food, possessions, or even social status, inequality threatens to form a basis for non-participation or qualified participation in such all-important reciprocity systems. For example, in the conduct of McCall's (2000) research on the sharing of cash earned through wage labor, a few aspects of the underlying logic of strict norm enforcement became clear. McCall asked unemployed individuals why they felt so strongly in registering complaints of hoarding and accumulation against those with jobs, even in situations where they had little to gain directly. They uniformly responded by observing that, if individuals did not stand up for themselves and strictly enforce egalitarian norms even in situations with little at stake, those with greater access to economic resources would feel much less obliged to live up to the expectations of reciprocity in situations where it really mattered. In addition, it was widely feared that individual accumulators with increased wealth or status could effectively move themselves beyond the reach of the mutual economic dependencies that fundamentally structure systems of reciprocity. In such a situation, they could renege on their obligations without fear, since they could use their accumulated wealth (and not reciprocal relationships with others) in order to weather periods of economic crisis.

In her recent analysis of Ju/'hoansi egalitarian norm enforcement, Wiessner (2005: 136) has shown that a sizable percentage of individual punishments were staged "tit-for-tat behavior to counter defection in reciprocal relations." Wiessner's data show that from a sample of 235 instances of norm enforcement through punishment, 167 (71%) revolved around the failure of a party to live up to the economic obligations of their various relationships. While only around 2% of punishments involved any physical violence (all of which was very minor in nature), the constant pestering of individuals engaged in deviant behavior clearly serves a direct purpose in maintaining the egalitarian social framework in which all-important relationships of reciprocity exist.

It is also the case that such ubiquitous, active, and strong forms of norm enforcement are a constant source of hard feelings and emotional trauma. Ju/'hoansi individuals often experience such strong emotion from social confrontations that they feel physical pain. Our social psychology colleagues have even found that many Ju/'hoansi individuals may manifest symptoms of post-traumatic stress disorder (PTSD) following relatively minor violent confrontations (McCall and Resick 2003). In such cases, while individuals may not be hurt physically, the fear of the consequences of social confrontations in terms of ostracism and exclusion may produce striking forms of emotional injury. Thus, as Katz and colleagues (1997) have demonstrated so well, the Ju/'hoansi also maintain strong social mechanisms for mending the many emotional wounds resulting from leveling mechanisms and egalitarian norm enforcement.

Perhaps the best known of the Ju/'hoansi rituals aimed at healing emotions resulting from egalitarian norm enforcement is the so-called “trance dance” in which shamans achieve altered states of consciousness through prolonged rhythmic dancing (Guenther 1975; Lee 1979; Katz 1982, Katz et al. 1997; Lewis-Williams 1982, 1992; see also McCall 2007). As Katz and colleagues (1997) make clear, the trance dance ritual holds immense social and emotional healing potential, in addition to addressing a range of other medical/religious issues. Every individual in the group comes together in order to facilitate the supernatural activities of shamans through singing and dancing, creating an expansive sense of community. In addition, shamans relieve the sensations of physical pain stemming from the emotional demands of living in such a strongly egalitarian social system. Thus, any incipient social schisms that might also threaten the operation of reciprocity systems are mitigated and social harmony is restored. In vividly illustrating these points, Guenther (2005) argues that the recent commoditization of the trance dance with the rise of “professional dancers” has occurred in tandem with the decline of sharing practices and has significantly undermined the overall maintenance of egalitarian social systems.

### **Strong Egalitarianism, Risk Management, and Economic Crisis**

Recent human behavioral ecology research, reviewed earlier in this paper, has raised important questions and doubts about the relationship between egalitarian social systems and the mitigation of foraging economic risk. While we agree with much of this and especially the observation that various forms of sharing and social leveling behavior result from a variety of individual interests, we continue to feel that the Ju/'hoansi case suggests an important role for risk reduction through the maintenance of long-term and widely dispersed relationships of reciprocity. To begin with, there seems to be a relative consensus across a broad range of theoretical perspectives that short-term considerations of risk buffering and leveling of individual foraging returns do little to adequately explain the observed patterns. A number of recent studies have demonstrated the ineffectiveness of generalized reciprocity as strategy for buffering inequalities in foraging returns, as well as significant problems associated with collective action for the more effective individual foragers within a group (Gurven

2000; Gurven et al. 2004; Hawkes 2000; Hawkes et al. 2001; Hawkes et al. 2010; Bird and Bliege Bird 2010; Codding et al. 2011; Bliege Bird et al. 2012). Such issues are certainly also in play in the case of the Ju/'hoansi case.

We argue that social norms of strong egalitarianism function to maintain equal participation in systems of reciprocity designed to guard against regional resource failure. In this sense, individual participation in strongly egalitarian social systems represents a sacrifice of short-term foraging returns for long-term security in situations of potential major resource failure in the future. Gurven (2000) has made a similar argument, suggesting that high-producing individual foragers are willing to participate in sharing systems in which they effectively lose out over time so that they will be cared for in situations of injury or illness, common occurrences in foraging societies. In this sense, we might consider individual participation in strongly egalitarian social systems by high-producing individuals as a *costly signal* of that individual's status as a good reciprocity partner- in other words, one likely to live up to obligations during periods of resource crisis.

At the same time, studies of strongly egalitarian social systems may generally fall prey to the time-scale limitations inherent in ethnographic research, missing the actual conditions that promote egalitarian social strategies of risk management. Specifically, while there have been some direct observations of limited resource failures, such as the failure of a mangetti crop in a particular area (Wiessner 2002), there may be rarer but far more catastrophic periods of economic crisis during which networks of reciprocity take on far more serious importance. Foraging economies, such as those associated with the Ju/'hoansi, may indeed be stable under “normal” circumstances and at such moments its participants may even have the appearance of “affluence” (Lee 1968, 1979; Sahlins 1972; Altman and Peterson 1988; Bird-David 1990; Peterson 1993). However, strongly egalitarian social systems and life-long relationships of reciprocity may indeed be maintained with longer-term periods of crisis in mind.

Ethnographers have tended to view the periods in which they conduct their studies as “normal” and to present their descriptions as modal representations of their subjects. This approach is clearly problematic, though its critique has generally come from more post-modern quarters (e.g. Strathern 1988). Although good data about the specific operation of social systems during periods of catastrophe are hard to acquire through direct ethnographic observation, troubling accounts of extreme food scarcity in small-scale societies are provided by researchers such as Turnbull (1972) of the Ik, Holmberg (1969) of the Siriono, Clastres (1972) of the Guayaki (also called the Ache), Hart and Hart (1986) of the Mbuti, Headland (1989) of the Agta, and Helm (2000) of the Dogrib. These accounts show the importance of social systems during periods of severe economic crisis and the deadly consequences when such social systems fail.

Under “normal” conditions, the social stress caused by the strict enforcement of egalitarian social norms and the costly maintenance of reciprocity networks might not appear to be worth the trouble- a fact recognized in systematic and often quantitative terms in recent human behavioral ecological research (Gurven 2000; Gurven et al. 2004; Hawkes 2000;

Hawkes et al. 2001; Hawkes et al. 2010; Bird and Bliege Bird 2010; Codding et al. 2011; Bliege Bird et al. 2012). In fact, Kalahari ethnographers have often recognized the true nature of egalitarian social strategies through the kinds of social conflicts that they cause (Lee 1979; Wiessner 2005) and the healing rituals designed to mend these conflicts (Guenther 1975, 2005; Katz 1982; Katz et. al. 1997). However, sharing norms, reciprocity relationships, and other social systems for managing resource failure may provide crucial ways of enduring periods of severe economic crisis.

Here, the uniquely long-term nature of ethnographic observations among the Ju/'hoansi may help clarify these points. In her analysis of Ju/'hoansi economics and reciprocity between the 1960s and the 1990s, Wiessner (2002) shows substantial variability in terms of both foraging tactics and social systems over time. On the one hand, this study confirms the early findings of Lee (1968, 1979) and others that the Ju/'hoansi generally have been fairly economically stable. On the other hand, Wiessner also shows that this “normal” context has been periodically interrupted by periods of both political and environmental crisis during which Ju/'hoansi economic and social behavior shifted dramatically. In the later 1970s and 1980s, the Kalahari witnessed both a decadal-scale drought and the consequences of the Namibian war for independence, each of which proved highly disruptive to Ju/'hoansi economic systems. Wiessner also describes a more recent period between 1996 and 1998 during which mangetti crops partially failed, with two particular “hungry months” in which plant foods were virtually absent and hunting accounted for more than 80% of calories consumed.

During such “hungry months,” the assurance of hunting success, social networks of food sharing, and alternate residential possibilities all worked in tandem in providing individuals with access to food. While difficult to discern at the time scales inherent to ethnographic research, we argue that such periods of economic crisis represent contexts in which the social systems of strong egalitarianism operate to their fullest extent and their proper functioning may represent a life-or-death matter. Thus, such periods of economic crisis must be considered when thinking about social and economic practices that may not seem to have immediate roots in response to “normal” day-to-day contexts. We also feel that this perspective may have much to offer in considering the elaborate hunting technologies of the Ju/'hoansi and other Kalahari foragers, which would seem to be over-designed for the purposes of risk reduction (Bleed 1986; Bousman 1993, 2005).

Finally, we see aspects of this situation as also explaining the tenacity of egalitarian sharing and leveling norms, and the dispersed networks of reciprocity, even in the face of new economic conditions dominated by wage labor and cash exchange (McCall 2000). Many have puzzled over individuals in (formerly) foraging societies who have gained radically unequal access to cash earning opportunities but continue to participate in sharing systems despite resulting severe unbalance in terms of reciprocity and access to other means of risk reduction (e.g. saving money in a bank; Myers 1986; Lee 2013). Cash-earning individuals are certain to share more resources than they will ever receive in return and they no longer depend immediately on other individuals to mediate economic risk. Some might choose to explain this pattern in terms of

competition between individuals- a perspective that may hold a certain amount of truth. Individuals may continue to feel a profound attachment to egalitarian cultural practices that have been instrumental in surviving periods of economic catastrophe over many generations. Individuals may have difficulty defecting from relationships couched within strongly egalitarian social systems, and may continue to have difficulty for some time to come, given the recent arrival and continued instability of cash economies under such circumstances. Indeed, they may well be correct in fearing future periods of crisis in which current economic conditions are eliminated and they may once more depend on older networks of social relationships to survive.

In summary, we firmly acknowledge costly signaling and competition between males as real issues influencing individual decisions about both foraging and sharing behavior. In our experience, all of these phenomena do indeed occur at some level of frequency and may go a long way in explaining certain aspects of both social behavior and economic decision-making. However, we feel that the management of risk at broad temporal and spatial scales continues to hold a great deal of currency in explaining the maintenance of strongly egalitarian social systems. Individuals may indeed make decisions about sharing and wider participation in egalitarian social systems that do not make strict economic sense because these serve as costly signals of their status as good reciprocity partners, and help ensure the availability of coping strategies during periods of crisis. While the temporal scales involved may be extremely difficult to observe ethnographically, they may be the key to understanding the operation and evolution of strongly egalitarian social systems.

### **Towards an Ethnoarchaeology and Archaeology of Forager Egalitarianism**

It is clearly problematic to use direct modern analogies to reconstruct any past social systems. In the case of our earliest ancestors, it has been a temptation in imagining prehistoric hunter-gatherer social systems to analogically mirror certain prime ethnographic characterizations. The theoretical importance of these time periods for understanding the human story and the subtle, but important, variations in the types of egalitarian systems provide a special challenge to both archaeologists and ethnoarchaeologists.

Archaeological research on the presence and nature of egalitarian social systems has tended to focus on a rather narrow range of artifact types. For example, much has been made of sporadic occurrences among early modern humans and even late Neanderthals of the kinds of decorated objects and elements of personal adornment that typify gift-giving networks within modern forager networks of reciprocity (see Henshilwood 2007; Kuhn and Stiner 2007 for reviews). One possibility is that such items were significant indicators of the operation of networks of reciprocity that typify strongly egalitarian social systems. However, it is clearly overly simplistic to assume that these are unambiguous signatures of *hxaro*-like reciprocity networks. Many modern hunter-gatherer societies with what we would consider to be strongly

egalitarian social systems and social networks designed to deal with long-term foraging risk lack gift-giving relationships of this sort (and often simply do not make these kinds of objects at all). In addition, such objects are multifarious in their social functions, potentially playing a wide range of roles in terms of identity, information exchange, etc.

While human behavioral ecological research has presented a robust theoretical framework with which to examine a number of quantitatively testable behavioral hypotheses, we retain questions about the application of certain models to our deep past. Such models have succeeded in showing that, given certain sets of conditions and constraints, and according to a certain set of currencies, individuals will make consistent and predictable decisions about both foraging and sharing. As O'Connell (1995) observed long ago, this capability of modeling modern human behavior within ethnoarchaeological frameworks gives us a toolkit for thinking about archaeological circumstances that may be far outside modern ranges of variability. However, resulting evolutionary models have often ended up assuming similar characteristics to those witnessed ethnoarchaeologically. For example, Kaplan and colleagues (2009) see egalitarianism as concomitant with the evolution of the modern pattern of human life history for reasons having to do with similarities in terms of skill acquisition in foraging, complementarity in sex-based division of labor, and economies of scale in terms of sharing foraged resources. While we agree with this study's emphasis on the relationship between egalitarianism and risk reduction, we are not convinced that modern patterns of either skill intensiveness in terms of foraging behavior or sex-based divisions of labor can be assumed in our deep evolutionary past.

This frames the need for a synthesis of archaeological and ethnoarchaeological approaches in understanding the causes and variability of egalitarianism among both modern and prehistoric foragers. On the one hand, human behavioral ecology models having to do with the role of egalitarianism in human evolution need archaeological investigation or they are doomed to remain speculative. In addition, archaeological time scales may be necessary in order to investigate the relationships between egalitarian social systems and long-term dynamics of foraging risk. Yet, problems in terms of the recognition of egalitarian social behavior in the archaeological record severely complicate this effort. It is clear that archaeological investigations of the antiquity and variability of past hunter-gatherer social systems depend on better recognizing proxies for various behaviors of interest. Yet, the development of such proxies cannot simply be achieved through attention to a single class of artifacts (or any other similar form of archaeological patterning) as a signature of egalitarianism.

We see a way forward in resolving these significant problems, though there are certainly no “magic bullets” to be found. This paper has argued for an organizational link between foraging risk at various temporal and spatial scales, social networks of reciprocity to help manage risk, social norms of sharing and leveling to underwrite these relationships of reciprocity, and social mechanisms for alleviating the resulting social stresses. This set of organizational relationships

suggests to us a set of research strategies and different avenues of investigation.

The dynamics of risk within foraging economies have been well-studied ethnoarchaeologically and are clearly investigable in archaeological terms. For example, zooarchaeological research has demonstrated relationships between dynamics of foraging risk, subsistence intensification, prey selection, acquisition strategies, butchery techniques, and cooking patterns. A good deal of this research has been in the investigation of dynamics of subsistence intensification as an element of “post-Pleistocene adaptation” (Binford 1968, 2001; Deacon 1972; Klein 1972; Bayham 1979; Klein and Cruz-Urbe 2000; Stiner et al. 2000; Stiner 2001; Lupo and Schmitt 2002, 2005; Munro 2004; Steele and Klein 2009). Data such as those presented in these studies clearly holds the potential to speak to issues of foraging risk, as do other forms of subsistence data when preservation permits. Foraging technology is another domain strongly adapted to issues of risk reduction in terms of design elements intended to prevent failure during foraging activities. A wide range of technologies, including poisoned projectiles, microlithic inserts on weapons, firearms, snares, traps, and even snowmobiles have all been discussed as technological strategies for risk reduction (Bleed 1986; Bousman 1993, 2005; Winterhalder 2007; Yaroshevich et al. 2010; Hiscock et al. 2011; papers in Elston and Kuhn 2002).

Finally and perhaps most importantly, there are some material manifestations of certain aspects of social systems designed to cope with the social stresses brought about by strong egalitarianism. One of the most important of these, we believe, is rock art. Many have suggested that a good deal of hunter-gatherer rock art relates to shamanistic religious practices (e.g. Lewis-Williams and Dowson 1988). While we do not fully endorse this view (see McCall 2007), we do see evidence for the emergence of certain regional traditions of rock art production as an outgrowth of social practices aligned with the relief of social tensions endemic to strong egalitarianism. In the case of the Ju/'hoansi, for example, there is a relationship between strongly egalitarian social systems, the “trance dance” ritual, and more general practices of shamanic religion. To the degree that rock art relates to the “trance dance” ritual in Southern Africa, it also therefore relates to strong egalitarianism as a prehistoric phenomenon.

Some scholars engaged in research on faunal assemblages, prehistoric technology, or rock art may not consider themselves to be engaged in research on social systems, yet we see these disparate interests as having important relationships with one another and with social behavior, because all have implications for understanding various forms of human response to foraging risk. We believe that a synthesis of ethnoarchaeological and archaeological research centered on the recognition of the organizational relationships between different kinds of human behavior aimed at coping with foraging risk at various spatial and temporal scales has great potential in elucidating the prehistory of egalitarianism and its evolutionary role. In addition, this synthesis must go further in developing our ability to recognize archaeological proxies of the various phenomena that may relate directly to different forms of social organization and behavior- obviously no small

task indeed.

## **Conclusions**

The primary goal of this paper has been to illustrate a major aspect of social variability among egalitarian forager societies. On the one hand, we recognize that there are well-known aspects of sharing behavior and other dynamics of egalitarian social systems that are derived from group membership flexibility and/or buffering day-to-day discrepancies between individuals and families in their foraging productivity. On the other hand, we have attempted to show that other intrinsic features of egalitarianism in terms of sharing practices and leveling mechanisms are aimed at securing social networks of reciprocity. In turn, we have tried to show that these networks of reciprocity represent social strategies for managing risk over larger spatial and temporal scales, which may often manifest as rare but deadly periods of severe economic crisis. We have characterized the mechanisms of egalitarianism resulting from group membership flexibility and day-to-day economic concerns as weak forms and those resulting from longer-term interests in managing economic crises as strong forms of egalitarian social behavior. While not necessarily new, this under-discussed distinction helps to illustrate key differences in the operation of social systems among various hunter-gatherer societies traditionally classified as egalitarian.

Our next goal has been to demonstrate that many influential examples of modern egalitarian hunter-gatherer societies are characterized by a predominance of strong forms of egalitarian social behavior. We have focused mainly on the paradigmatic case study of the Ju/'hoansi, as well as other San hunter-gatherer groups in the Kalahari. Here, we have illustrated the ways in which many seemingly distinct aspects of Ju/'hoansi social behavior articulate in the management of social networks of reciprocity and also the tensions produced by the strict enforcement of strongly egalitarian social norms. If nothing else, this review clearly suggests that the Ju/'hoansi should not be taken as typical of Paleolithic egalitarian social systems. Instead, it likely indicates that the Ju/'hoansi are quite exceptional in the prevalence and strength of their egalitarian sharing practices, leveling mechanisms, and social networks of reciprocity. We have also provided some tentative links between the operation of these social networks as strategic approaches for managing risk during periods of severe economic crisis.

Finally, we call for a synthesis of ethnoarchaeological and archaeological approaches in recognizing the organizational relationships between foraging risk at various temporal and spatial scales, social networks of reciprocity to mediate risk, egalitarian social norms to insure these relationships of reciprocity, and social mechanisms for alleviating resulting social stress. We feel that this approach will lead to the recognition of better forms of proxy evidence for the nature of prehistoric

forager social systems- a crucial step forward in the investigation of related evolutionary dynamics.

Specifically, while the exact nature of early hominin forager social structures must largely remain a topic for future work, a few implications are apparent. First, the social structures of strongly egalitarian modern forager societies are overwhelmingly divergent from those of our early hominin ancestors. Continuing to use modern hunter-gatherer societies as simplistic analogs for our early hominin ancestors represents an anachronistic dead end. Second, recognizing variability in the manifestations of egalitarianism among modern human foragers is first step toward making inferences about the real nature of early hominin social structure. While early hominin social systems must have been quite variable and also well outside the range of modern cultural variability, understanding the causes of the various forms of modern forager social structure represents a cogent approach to making inferences about our evolutionary past. We suspect that strong egalitarianism of the sort documented among the Ju/'hoansi is a relatively recent phenomenon, with its earliest manifestations occurring first in the Upper Pleistocene. Thus, it is far too late to have been relevant to dynamics of early hominin evolution, as has been commonly proposed.

## References

- Altman, Jon, and Nicolas Peterson 1988. Rights to game and rights to cash among contemporary Australian hunter-gatherers. In *Hunters and Gatherers: History, Evolution and Social Change*, edited by T. Ingold, D. Riches, and J. Woodburn, 75–94. Oxford: Berg
- Ames, Kenneth M. 1994. The Northwest Coast: Complex hunter-gatherers, ecology, and social evolution. *Annual Review of Anthropology* 23: 209-229.
- Ames, Kenneth M. 2004. Supposing hunter-gatherer variability. *American Antiquity* 69(2): 364-374.
- Arnold, Jeanne E. 1996. The archaeology of complex hunter-gatherers. *Journal of Archaeological Method and Theory* 3(1): 77-126.
- Barnard, Alan. 1992. *Hunters and Herders of Southern Africa: A Comparative Ethnography of the Khoisan Peoples*. Cambridge: Cambridge University Press.
- Bettinger, Robert L. 2009. *Hunter-gatherer foraging: five simple models*. New York: Eliot Werner Publications.
- Biesele, Megan A. 1975. *Folklore and Ritual of Kung Hunter Gatherers*. PhD diss., Harvard University).
- Binford, Lewis R. 1968. Post-Pleistocene adaptations. In *New Perspectives in Archaeology*, edited by L. Binford and S. Binford, 313-341. Chicago: Aldine.
- Binford, Lewis R. 1978. *Nunamiut Ethnoarchaeology*. New York: Academic Press.
- Binford, Lewis R. 1984. Butchering, sharing, and the archaeological record. *Journal of Anthropological Archaeology* 3(3): 235-257.
- Binford, Lewis R. 2001. *Constructing Frames of Reference: An Analytical Method for Archaeological Theory Building Using Hunter-Gatherer and Environmental Data Sets*. Berkeley: University of California Press.
- Bird, Douglas W. and Rebecca Bliege Bird 2010. Competing to be leaderless: food sharing and magnanimity among Martu Aborigines. In *The Evolution Of Leadership: Transitions In Decision Making From Small-Scale To Middle-Range Societies*, edited by J. Kanter, K. Vaughn, and J. Eerkins, 21-49. Santa Fe: SAR Press.
- Bird, Douglas W., and James F. O'Connell. 2006. Behavioral ecology and archaeology. *Journal of Archaeological Research* 14(2): 143-188.
- Bird-David, Nurit. 1990. The giving environment: another perspective on the economic system of gatherer-hunters. *Current Anthropology* 31(2): 189-196.
- Bleed, P. 1986. The optimal design of hunting weapons: maintainability or reliability. *American Antiquity* 51(4): 737-747.
- Bliege Bird, Rebecca, Scelza, Brooke, Bird, Douglas W., and Eric A. Smith. 2012. The hierarchy of virtue: mutualism, altruism and signaling in Martu women's cooperative hunting. *Evolution and Human Behavior* 33(1): 64-78.
- Blurton Jones, Nicholas G. 1984. A selfish origin for human food sharing: tolerated theft. *Ethology and Sociobiology* 5(1): 1-3.
- Boehm, Christopher. 1999. *Hierarchy in the Forest: The evolution of Egalitarian Behavior*. Cambridge: Harvard University Press.
- Bousman, C. Britt. 1993. Hunter-gatherer adaptations, economic risk and tool design. *Lithic Technology* 18(1/2): 59-86.

- Bousman, C. Britt. 2005. Coping with risk: Later stone age technological strategies at Blydefontein Rock Shelter, South Africa. *Journal of Anthropological Archaeology* 24(3): 193-226.
- Brown, James A. 1985. Long-term trends to sedentism and the emergence of complexity in the American Midwest. In *Prehistoric Hunter-Gatherers: The Emergence of Cultural Complexity*, edited by T.D. Price and J. Brown, 201-231. New York: Academic Press.
- Bunn, Henry, and Ellen Kroll. 1986. Systematic butchery by Plio/Pleistocene hominids at Olduvai Gorge, Tanzania. *Current Anthropology* 27(3): 431-452.
- Burch, Ernest S. 1988. *The Eskimos*. Norman: University of Oklahoma Press.
- Cashdan, Elizabeth A. 1980. Egalitarianism among hunters and gatherers. *American Anthropologist* 82(1): 116-120.
- Cartmill, M. 1994. Reinventing anthropology: American Association of Physical Anthropologists annual luncheon address, April 1, 1994. *American Journal of Physical Anthropology* 37(S19): 1-9.
- Clastres, P. 1972. *Chronique des Indiens Guayaki. Ce que savent les Aché, chasseurs-nomades du Paraguay*. Paris: Plon.
- Codding, Brian F., Bliege-Bird, Rebecca, and Douglas W. Bird. 2011. Provisioning offspring and others: risk–energy trade-offs and gender differences in hunter–gatherer foraging strategies. *Proceedings of the Royal Society B: Biological Sciences* 278(1717): 2502-2509.
- Deacon, Hillary J. 1972. A review of the post-Pleistocene in South Africa. *South African Archaeological Society Goodwin Series* 1: 26-45.
- Domínguez-Rodrigo, Manuel. 2002. Hunting and scavenging by early humans: the state of the debate. *Journal of World Prehistory* 16(1): 1-54.
- Dussart, Françoise 2000. *The Politics of Ritual in an Aboriginal Settlement: Kinship, Gender and the Currency of Knowledge*. Washington D.C.: Smithsonian.
- Dyson-Hudson, Rada, and Eric A. Smith. 1978. Human territoriality: an ecological reassessment. *American Anthropologist* 80(1): 21-41.
- Elston, Robert G., and Steven L. Kuhn, eds. 2002. *Thinking Small: Global Perspectives on Microlithization*. Washington D.C.: Archaeological Papers of the American Anthropological Association Volume 12.
- Earle, Timothy K. 1987. Chiefdoms in archaeological and ethnohistorical perspective. *Annual Review of Anthropology* 16: 279-308.
- Earle, Timothy K. 1997. *How Chiefs Come to Power: The Political Economy in Prehistory*. Palo Alto: Stanford University Press.
- Fitzhugh, Benjamin. 2003. *The Evolution of Complex Hunter-Gatherers: Archaeological Evidence from the North Pacific*. New York: Springer.
- Flannery, Kent V. 1969. Origins and ecological effects of early domestication in Iran and the Near East. In *The Domestication and Exploitation of Plants and Animals*, edited by P. J. Ucko and G.W. Dimbleby, 73-100. Chicago: Aldine.
- Foley, Robert. 1988. Hominids, humans and hunter-gatherers: an evolutionary perspective. In *Hunters and Gatherers 1: History, Evolution and Social Change*, edited by T. Ingold, D. Riches, and J. Woodburn, 207-221. Oxford: Berg.

- Gamble, Lynn H. 2008. *The Chumash World at European Contact: Power, Trade, and Feasting among Complex Hunter-Gatherers*. Berkeley: University of California Press.
- Gould, Richard A. 1982. To have and have not: The ecology of sharing among hunter-gatherers. In *Resource Managers: North American and Australian Hunter-Gatherers*, edited by N.M. Williams and E.S. Hunn, 69-92. Canberra: Australian Institute of Aboriginal Studies.
- Gubser, Nicholas J. 1965. *The Nunamiut Eskimos, Hunters of Caribou: Hunters of Caribou*. New Haven: Yale University Press.
- Guenther, Mathias G. 1975. The trance dancer as an agent of social change among the farm Bushmen of the Ghanzi District. *Botswana Notes and Records* 7: 161-166.
- Guenther, Mathias G. 2005. The professionalisation and commodisation of the contemporary Bushman trance dancer and trance dance, and the decline of sharing. In *Property and Equality, Volume II: Encapsulation, Commercialisation, and Discrimination*, edited by T. Widlok, and W.G. Tadesse, 208-230. New York: Berghahn Books.
- Gurven, Michael, Allen-Arave, Wesley, Hill, Kim, and Magdalena Hurtado. 2000. "It's a wonderful life": signaling generosity among the Ache of Paraguay. *Evolution and Human Behavior* 21(4): 263-282.
- Gurven, Michael. 2004. To give and to give not: the behavioral ecology of human food transfers. *Behavioral and Brain Sciences* 27(4): 543-559.
- Habu, Junko. 2004. *Ancient Jomon of Japan*. Cambridge: Cambridge University Press.
- Harris, Marvin. 1989. Life Without Chiefs. *New Age Journal* November/December: 42-45.
- Hart, Teresa B., and Hart, John A. 1986. The ecological basis of hunter-gatherer subsistence in African rain forests: the Mbuti of Eastern Zaire. *Human Ecology* 14(1): 29-55.
- Hawkes, Kristin. 2000. Hunting and the evolution of egalitarian societies: lessons from the Hadza. In *Hierarchies in Action: Cui Bono?*, edited by M.W. Diehl, 59-83. Carbondale: Southern Illinois University Center for Archaeological Investigations, Occasional Paper No. 27.
- Hawkes, Kristen, Hill, Kim, and James F. O'Connell. 1982. Why hunters gather: optimal foraging and the Aché of Eastern Paraguay. *American Ethnologist* 9(2): 379-398.
- Hawkes, K., O'Connell, James F., and James E. Coxworth. 2010. Family provisioning is not the only reason men hunt. *Current Anthropology* 51(2): 259-264.
- Hawkes, Kristen, O'Connell, James F., and Nicholas G. Blurton Jones. 2001. Hadza meat sharing. *Evolution and Human Behavior* 22(2): 113-142.
- Hayden, Brian, Eldridge, M., Eldridge, A., and A. Cannon. 1985. Complex hunter-gatherers in interior British Columbia. In *Prehistoric Hunter-Gatherers: The Emergence of Cultural Complexity*, edited by T.D. Price and J. Brown, 181-199. New York: Academic Press.
- Headland, Thomas. 1989. Population decline in a Philippine Negrito hunter-gatherer society. *American Journal of Human Biology* 1(1): 59-72.
- Headland, Thomas, and Lawrence Reid 1989. Hunter-gatherers and their neighbors from prehistory to the present. *Current Anthropology* 30(1):43-66.

Henshilwood, Christopher S. (2007). Fully symbolic *sapiens* behaviour: innovation in the Middle Stone Age at Blombos cave, South Africa. *Rethinking the Human Revolution: New Behavioural and Biological Perspectives on the Origin and Dispersal of Modern Humans*, edited by P. Mellars, L. Boyle, O. Bar-Yosef, and C. Stringer, 123-132. Cambridge: McDonald Institute for Archaeological Research.

Hill, Kim. 1982. Hunting and human evolution. *Journal of Human Evolution* 11(6): 521-544.

Hill, Kim, Kaplan, Hilliard, Hawkes, Kristen, and A.M Hurtado. 1987. Foraging decisions among Ache hunter-gatherers: new data and implications for optimal foraging models. *Ethology and Sociobiology* 8(1): 1-36.

Hiscock, Peter, Clarkson, Christopher, and Alex Mackay. 2011. Big debates over little tools: ongoing disputes over microliths on three continents. *World Archaeology* 43(4): 653-664.

Holmberg, Allan R. 1969. *Nomads of the Long Bow: The Siriono of Eastern Bolivia*. New York: Natural History Press.

Isaac, Glynn L. 1978. The food sharing behavior of proto-human hominids. *Scientific American* 238: 90-108.

Isaac, Glynn L., Leakey, Richard E., and Anna K. Behrensmeier. 1971. Archeological traces of early hominid activities, east of Lake Rudolf, Kenya. *Science* 173(4002): 1129-1134.

Kaplan, Hilliard, Hill, Kim, and A.M. Hurtado. 1990. Risk, foraging, and food sharing among the Ache. In *Risk and Uncertainty in Tribal and Peasant Economies*, edited by Elizabeth Cashdan, 107-143. Boulder: Westview Press.

Kaplan, Hillard S., Hooper, Paul L., and Michael Gurven. 2009. The evolutionary and ecological roots of human social organization. *Philosophical Transactions of the Royal Society B: Biological Sciences* 364(1533): 3289-3299.

Katz, Richard. 1982. *Boiling Energy: Community Healing Among the Kalahari !Kung*. Cambridge: Harvard University Press.

Katz, Richard, Biesele, Megan, and Verna St. Denis. 1997. *Healing Makes our Hearts Happy: Spirituality and Cultural Transformation among the Kalahari Ju/'hoansi*. Santa Fe: Inner Traditions/Bear & Co.

Kelly, Robert L. 1995. *The Foraging Spectrum*. Washington D.C.: Smithsonian.

Kelly, Robert L. 2013. *The Lifeways of Hunter-Gatherers: The Foraging Spectrum*. New York: Cambridge University Press.

Kent, Susan. 1992. The current forager controversy: real versus ideal views of hunter-gatherers. *Man* 27: 45-70.

Kent, Susan. 1993. Sharing in an egalitarian Kalahari community. *Man* 28(3): 479-514.

Kent, Susan, ed. 1996. *Cultural diversity among twentieth-century foragers: An African perspective*. Cambridge university press.

King, Thomas F. 1978. Don't that beat the band? Non-egalitarian political organization in prehistoric central California. In *Social Archaeology: Beyond Subsistence and Dating*, edited by Charles Redman, 225-248. New York: Academic Press.

Kroeber, Alfred L. 1935. History and science in anthropology. *American Anthropologist* 37(4): 539-569.

Kuhn, Steven L., and Mary C. Stiner. 2007. Paleolithic ornaments: implications for cognition, demography and identity. *Diogenes* 54(2): 40-48.

- Layton, Robert. 1986. Political and territorial structures among hunter-gatherers. *Man* 21(1): 18-33.
- Leakey, Richard E., and Roger Lewin. 1977. *Origins: What New Discoveries Reveal about the Emergence of Our Species and its Possible Future*. New York: Dutton.
- Lee, Richard B. 1965. *Subsistence Ecology of the !Kung Bushman*. PhD diss, University of California-Berkeley.
- Lee, Richard B. 1968 What hunters do for a living, or, How to make out on scarce resources. In *Man the Hunter*, edited by R.B. Lee and I. Devore, 30-48. Chicago: Aldine.
- Lee, Richard B. 1972. !Kung spatial organization: an ecological and historical perspective. *Human Ecology* 1(2): 125-147.
- Lee, Richard B. 1979. *The !Kung San: Men, Women, and Work in a Foraging Society*. Cambridge: Cambridge University Press.
- Lee, Richard B. 1988. Reflections on primitive communism. In *Hunters and Gatherers 1: History, Evolution and Social Change*, edited by T. Ingold, D. Riches, and J. Woodburn, 252-268. London: Berg.
- Lee, Richard B. 1990. Primitive communism and the origins of social inequality. In *The Evolution of Political Systems: Sociopolitics in Small-Scale Sedentary Societies*, edited by S. Upham, 225- 246. Cambridge: Cambridge University Press.
- Lee, Richard B. 1992. Art, Science, or Politics? The Crisis in Hunter-Gatherer Studies. *American Anthropologist* 94(1): 31-54.
- Lee, Richard B. 2013. *The Dobe Ju/'hoansi, 4th Edition*. Belmont: Cengage Publishing.
- Lee, Richard B., and Irven Devore, eds. 1968. *Man the Hunter*. Chicago: Aldine.
- Lewis-Williams, J. David. 1982. The economic and social context of southern San rock art. *Current Anthropology* 23(4): 429-449.
- Lewis-Williams, J. David. 1992. Ethnographic evidence relating to 'trance' and 'shamans' among northern and southern Bushmen. *South African Archaeological Bulletin* 47(155): 56-60.
- Lewis-Williams, J. David, and Thomas Dowson. 1988. The signs of all times: entoptic phenomena in Upper Palaeolithic art. *Current Anthropology* 29(2): 201-245.
- Marshall, John. 1957. *Ecology of the !Kung Bushmen of the Kalahari*. PhD Diss, Harvard University.
- Marshall, Lorna. 1961. Sharing, talking, and giving: Relief of social tensions among! Kung Bushmen. *Africa* 31(3): 231-249.
- McCall, George J., and Patricia A. Resick. 2003. A pilot study of PTSD symptoms among Kalahari Bushmen. *Journal of Traumatic Stress* 16(5): 445-450.
- McCall, Grant S. 2000. Ju/'hoansi adaptations to a cash economy. *African Sociological Review/Revue Africaine de Sociologie* 4(1): 138-155.
- McCall, Grant S. 2007. Add shamans and stir? A critical review of the shamanism model of forager rock art production. *Journal of Anthropological Archaeology* 26(2): 224-233.
- Morgan, Lewis Henry. 1877. *Ancient Society, or, Researches in the Lines of Human Progress from Savagery, Through Barbarism to Civilization*. New York: H. Holt.

- Myers, Fred R. 1986. *Pintupi Country, Pintupi Self: Sentiment, Place, and Politics among Western Desert Aborigines*. Washington D.C.: Smithsonian Institution Press.
- Myers, Fred R. 1988. Critical trends in the study of hunter-gatherers. *Annual Review of Anthropology* 17: 261-282.
- O'Connell, James F. 1995. Ethnoarchaeology needs a general theory of behavior. *Journal of Archaeological Research* 3(3): 205-255.
- O'Connell, James F., Hawkes, Kristen, Lupo, Karen D., and Nicholas G. Blurton Jones. 2002. Male strategies and Plio-Pleistocene archaeology. *Journal of Human Evolution* 43(6): 831-872.
- Panther-Brick, Catherine, Layton, Robert., and Peter Rowley-Conwy, eds. 2001. *Hunter-Gatherers: An Interdisciplinary Perspective*. Cambridge: Cambridge University Press.
- Peterson, Nicholas. 1993. Demand sharing: reciprocity and the pressure for generosity among foragers. *American Anthropologist*: 95(4): 860-874.
- Riches, David. 2000. The holistic person; or, the ideology of egalitarianism. *Journal of the Royal Anthropological Institute* 6(4): 669-685.
- Roseman, Marina. 1990. Head, heart, odor, and shadow: the structure of the self, the emotional world, and ritual performance among Senoi Temiar. *Ethos* 18(3): 227-250.
- Sahlins, Marshall D. 1972. *Stone Age Economics*. Hawthorne: Aldine de Gruyter.
- Sassaman, Kenneth E. 2004. Complex hunter-gatherers in evolution and history: a North American perspective. *Journal of Archaeological Research* 12(3): 227-280.
- Schrire, Carmel. 1980. An inquiry into the evolutionary status and apparent identity of San hunter-gatherers. *Human Ecology* 8(1): 9-32.
- Service, Elman. 1971. *Cultural Evolutionism: Theory in Practice*. New York: Holt, Reinhart, and Winston.
- Shott, Michael J. 1991. Archaeological implications of revisionism in ethnography. *Michigan Discussions in Anthropology* 10: 31-40.
- Smith, Eric A. 1988. Risk and uncertainty in the "original affluent society": evolutionary ecology of resource sharing and land tenure. In *Hunter-Gatherers 1: History, Evolution, and Social Change*, edited by T. Ingold, D. Riches, and J. Woodburn, 222-252. Oxford: Berg.
- Smith, Eric A., and Bruce Winterhalder, eds. 1981. *Hunter-Gatherer Foraging Strategies: Ethnographic and Archeological Analyses*. Chicago: University of Chicago Press.
- Steward, Julian H. 1936. *The Economic and Social Basis of Primitive Bands*. Chicago: Bobbs-Merrill.
- Steward, Julian H. 1955. *Theory of Culture Change: The methodology of Multilinear Evolution*. Champaign-Urbana: University of Illinois Press.
- Stiner, Mary C., Munro, Natalie D., and Todd A. Surovell. 2000. The tortoise and the hare. *Current Anthropology* 41(1): 39-79.
- Strathern, Marilyn, 1988. *The Gender of the Gift: Problems with Women and Problems with Society in Melanesia*. Berkeley: University of California Press.

- Suttles, Wayne. 1968. Coping with abundance: subsistence on the Northwest Coast. In *Man the Hunter*, edited by R. Lee and I. Devore, 56-68. Chicago: Aldine.
- Testart, Alain. 1982. The significance of food storage among hunters and gatherers: residence patterns, population densities, and social inequities. *Current Anthropology* 23(4): 523-537.
- Testart, A. 1988. Some major problems in the social anthropology of hunter-gatherers. *Current Anthropology* 29(1): 1-31.
- Thomson, Donald F. 1949. *Economic Structure and the Ceremonial Exchange Cycle in Arnhem Land*. Melbourne: Macmillan.
- Turnbull, Colin M. 1968. The importance of flux in two hunting societies. In *Man the Hunter*, edited by R.B. Lee and I. DeVore, 132-137. Chicago: Aldine.
- Turnbull, Colin M. 1972. *The Mountain People*. New York: Simon and Schuster.
- Tylor, Edward B. 1871. *Primitive Culture: Researches into the Development of Mythology, Philosophy, Religion, Art, and Custom*. London: Murray.
- Washburn, Sherwood L. 1950. The analysis of primate evolution with particular reference to the origin of man. *Cold Spring Harbor Symposia on Quantitative Biology* 15: 67-78.
- Washburn, Sherwood L. 1959. Speculations on the interrelations of the history of tools and biological evolution. *Human Biology* 31(1): 21.
- Washburn, Sherwood L., and Irven Devore. 1962. Social behavior of baboons and early man. In *Social Life of Early Man*, edited by S.L. Washburn, 91-105. New York: Viking.
- Washburn, Sherwood, and Chet Lancaster. 1968. The Evolution of hunting. In *Man the Hunter*, edited by R.B. Lee and I. Devore, 293-303. Chicago: Aldine.
- White, Leslie A. 1959. *The Evolution of Culture: The Development of Civilization to the Fall of Rome*. New York: McGraw-Hill.
- Wiessner, Polly. 1977. *Hxaro: A Regional System of Reciprocity for Reducing Risk Among the !Kung San*. PhD diss, University of Michigan.
- Wiessner, Polly. 1982. Risk, reciprocity and social influences on !Kung San economics. In *Politics and History in Band Societies*, edited by E. Leacock and R.B. Lee, 61-84. Cambridge: Cambridge University Press.
- Wiessner, Polly. 1996. Leveling the hunter: constraints on the status quest in foraging societies. In *Food and the Status Quest*, edited by P. Wiessner and W. Schiefenovel, 171-191. Oxford: Berghahn.
- Wiessner, Polly. 2002. Hunting, healing, and *hxaro* exchange: a long-term perspective on !Kung (Ju/'hoansi) large-game hunting. *Evolution and Human Behavior* 23(6): 407-436.
- Wiessner, Polly. 2005. Norm enforcement among the Ju/'hoansi Bushmen. *Human Nature* 16(2): 115-145.
- Wilmsen, Edwin N. 1989. *Land Filled with Flies: A Political Economy of the Kalahari*. Chicago: University of Chicago Press.
- Wilmsen, Edwin, and James Denbow. 1990. Paradigmatic history of San-speaking peoples and current attempts at revision. *Current anthropology* 31(4): 489-524.

Winterhalder, Bruce. 2007. Risk and decision-making. In *Oxford Handbook of Evolutionary Psychology*, edited by R. Dunbar and L. Barrett, 433–446. Oxford: Oxford University Press

Winterhalder, Bruce, and Eric A. Smith. 2000. Analyzing adaptive strategies: human behavioral ecology at twenty-five. *Evolutionary Anthropology* 9(2): 51-72.

Woodburn, James. 1982. Egalitarian societies. *Man* 17: 431-451.

Yaroshevich, Alla, Kaufman, Daniel, Nuzhnyy, Dmitri, Bar-Yosef, Ofer, and Mina Weinstein-Evron. 2010. Design and performance of microlith implemented projectiles during the Middle and the Late Epipaleolithic of the Levant: experimental and archaeological evidence. *Journal of Archaeological Science* 37(2): 368-388.