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Hunter-gatherer societies have played a pivotal role in anthropology as a discipline. Early anthropologists including Émile Durkheim, A. R. Radcliffe-Brown, Julian Steward, and Claude Lévi-Strauss used hunter-gatherer data to address broad anthropological topics such as kinship, division of labor, and the origins of religion (Kelly 2013). In fact, hunter-gatherers have been so foundational to anthropology that the entire history of the discipline could be viewed in terms of hunter-gatherer ethnography (Yengoyan 1979). Foragers can be seen as the *quintessential* topic of anthropology (Bettinger et al. 2015). After more than a century of study, hunter-gatherer societies are now well documented and known to be extremely diverse.

Given the central role of hunter-gatherers in creating foundational theories and principles of anthropology, ethnographic studies of these living groups were common. Thus, hunter-gatherer diversity is primarily known from ethnographic data. These ethnographic cases, however, provide only a small sample of the extensive variability in hunter-gatherer adaptations.

The central problem facing anthropologists interested in documenting the entire range of human behavior, and archaeologists interested in hunter-gatherer diversity in the past, is that most of our pictures of prehistoric hunter-gatherers are based on ethnographic analogy rather than archaeological evidence. Given the tremendous range of variability present among ethnographic foragers explored by Robert Kelly (1995,

2013), Lewis Binford (e.g., 2001), and others, such diversity must have been even greater in the past when foraging was the most common (or only) mode of subsistence. Over the course of foraging lifeways on the planet, there are vast amounts of time and space available to the archaeologist that are not represented in the ethnographic record. Therefore, in contrast to ethnography, archaeology has access to a greater range of hunter-gatherer phenomena in the recent and remote past. Robert Kelly (1995, 2013) has highlighted diversity in the ethnographic record, has championed human behavioral ecology as a method for understanding foraging adaptations, and has identified the problem of trying to explore and appreciate diversity among hunter-gatherers in the past.

The goal of this book is to address this problem explicitly—to discuss how to explore diversity in the past—and essentially move the *Foraging Spectrum*, Robert Kelly's seminal work, back in time. In order to take the first steps toward recognizing and documenting forager variability in prehistory, this volume covers a wide range of time and space as well as theoretical perspectives and methodological approaches. It is our belief that such a diverse theoretical and methodological toolkit is essential for exploring variability in past human behavior.

NORMATIVE VIEWS OF HUNTER-GATHERERS IN ANTHROPOLOGY

The term *hunter-gatherer* most often refers to a mode of subsistence, but disparate cultures fitting these economic criteria have traditionally been grouped together despite variation in demography, mobility, foraging behavior, and sociopolitical organization. Because of this, there is considerable debate concerning who actually *is* a hunter-gatherer (Ames 2004). There are two primary definitions. The first is economic, referring to people without domesticated plants and animals (except dogs) and incorporates a number of different social forms (Kelly 1995, 2013). The second is social, referring to band societies or small groups who are egalitarian, with flexible membership, and with differences among individuals based primarily on age, gender, and charisma. This social definition encompasses a variety of economies (Lee 1992). The existence of two distinct definitions makes of *hunter-gatherers* a broad analytical category that masks significant sociocultural and economic variability. Anthropological archaeologists continue to struggle with this variability.

Contemporary, historic, and ethnographic hunter-gatherers are extremely diverse in all aspects of life—from economy, to social organization, kinship,

and ritual (e.g., Ames 2004; Binford 2001; Kelly 1995, 2013; Kent 1996; Panter-Brick, Layton, and Rowley-Conwy 2001). Variability was presumably even greater in the past. However, due to the wealth of ethnographic data, and the inherent problems of poor preservation of hunter-gatherer remains in the archaeological record, the issue remains: most reconstructions of prehistoric hunter-gatherers conform to a single normative view:

We have built up remarkably detailed pictures of early human society complete with family bands of twenty-five people who share food, trace kin relations bilaterally, reside bilocally, and eat a generalized diet with women gathering plant food and men hunting . . . But this detailed picture comes not from archaeological evidence as much as from ethnographic analogy . . . *If prehistoric hunter-gatherers all look the same, it is because we supposed them to be that way from the outset.* (Kelly 1995:339, emphasis added)

The central problem concerning prehistoric hunter-gatherer archaeology is surpassing the limited view of foragers drawn from the ethnographic record and the resulting normative characterization of simple, highly mobile, acephalous bands with limited property. Ethnographic cases that do not fit this model are referred to as “complex” hunter-gatherers, as they are influenced by historical contingency or a unique resource suite. These restricted views of forager lifeways are largely due to inherent biases in the ethnographic record. The picture drawn from ethnographic data is incomplete, limited, and (out of necessity) considers only modern humans.

LIMITATIONS OF THE ETHNOGRAPHIC RECORD

The ethnographic record of foraging societies is an incomplete and biased sample, as certain groups have been overrepresented and others underrepresented, and yet others are left out of more general hunter-gatherer studies completely. As different forager groups wax and wane in popularity, their particular behaviors and view of the world have become the general model of hunter-gatherers (Kelly 1995). Historically, Kalahari groups, Arctic groups (specifically the Nunamiut), and more recently the Hadza, have come to dominate archaeological interpretations of foragers. This handful of ethnographic cases has been overrepresented in models of hunter-gatherers and used to characterize foraging style as egalitarian, highly mobile, and with few material wants. Other ethnographic groups have been historically underrepresented, such as South American foragers living in tropical rainforests. While these groups are generally thought to be too reliant on cultivation to be true foragers (Politis 2015),

archaeological evidence demonstrates that hunter-gatherers have a long prehistory of occupying similar environments (Roberts et al., chapter 5, this volume).

Furthermore, other societies have been left out of more general studies and are relegated to other categories, such as “complex” hunter-gatherers. In many classic anthropological works concerning foragers, certain ethnographic cases that did not conform to general models were left out. For example, Service (1966) did not include Native Americans of the Northwest Coast in *The Hunters*, and many other societies—including the Tlingit and Nootka, the Calusa of Florida, and the horse-riding groups of Native Americans from the Great Plains—were excluded from *Man the Hunter* (1968). The rationale behind these analytical choices was that these were extreme cases of either environment (e.g., concentrated resources in both time and space, such as salmon runs on the Pacific Coast) or historical contingency (e.g., the importation of Spanish colonial horses) (see Garvey and Bettinger 2014 on unique local circumstances versus diffusion). Historical contingency is often linked to contact with state societies, but it must be stressed that *all* ethnographic foragers were in contact with states, and *all* ethnographic foragers were subject to their own unique historical contingencies. Significantly, archaeological evidence has demonstrated that many traits believed to be the result of culture exchange, such as social complexity, social inequality, and complex economies, in fact *predate* colonial contact (e.g., Prentiss et al. 2007; Zedeño et al. 2014). These traits are perhaps more characteristic of prehistoric hunter-gatherers than traditionally assumed (Lemke 2016).

In addition to these biases, ethnographic data are inherently limited by the small amounts of both time and space in which ethnographers have been working with foraging groups. Historic ethnographic research with hunter-gatherers was often considered “salvage ethnography” as these cultures and economies were rapidly changing (see the frontispiece from *Man the Hunter*, Lee and DeVore 1968). The time and space available to ethnographers is particularly narrow when compared to the broad stretches available in the archaeological record. Not only were prehistoric foraging populations more numerous but over the great stretch of time when humans were hunting and gathering, massive environmental changes took place. Among the most significant are global fluctuations in both ice sheets and sea level, which submerged and reexposed large portions of the prehistoric landscape over the last 2 million years. These coastlines, particularly on the continental shelf and in many inland lakes and karstic features, were likely some of the most attractive habitats for hunter-gatherers. These sites, and the evidence of prehistoric foraging lifeways they preserve, are now underwater and are only available

through submerged archaeological research (see Lemke, chapter 3, this volume). These processes in the past resulted in unique environments that have no modern analog, and it is likely that such environments supported novel hunter-gatherer lifeways unlike any known from the ethnographic record.

Finally, the ethnographic record is limited to biologically and culturally modern humans. Prior to modern human culture, our early human ancestors, such as Neanderthals, *Homo erectus*, and Australopithecines were likely very different kinds of hunter-gatherers (see Kitagawa et al., chapter 7, this volume; Kuhn and Stiner 2001, chapter 8, this volume; Roberts et al., chapter 5, this volume).

Significantly, even within the biased and limited ethnographic record, diversity is clear. Ethnographic data demonstrate that even within small regions, such as the Kalahari Desert or Southeast Asia, a variety of hunter-gatherer lifeways are observed (e.g., Kelly 2013; Kusimba 2005; Stewart and Mitchell, chapter 6, this volume). Some hunter-gatherer groups are highly mobile, others more sedentary, many are band societies whereas others have different social systems. Hunted animals are sometimes a large part of the diet in some geographic regions, such as the Arctic, and gathering plant foods and smaller animals are more important in other areas, or at different times of year. In certain groups, hunting is done exclusively by men, while in others women do the hunting, (e.g., Bird and Bird 2008; Kelly 2013). Given this diversity in the ethnographic record with limited time and space parameters, it can be expected that variability in the past was much greater, and certainly extends beyond the limited view of foragers still pervasive in anthropology. With a limited range of groups and adaptations, the ethnographic present is just the tip of the iceberg; the archaeological record preserves the rest of the iceberg.

ENTER ARCHAEOLOGY

In marked contrast to the ethnographic record, archaeology has access to a broader range of contexts, including time, space, and environments, and likewise a greater range of hunter-gatherer lifeways. Archaeology's greatest contribution to general anthropology is the vast time scale at its disposal (Jochim 1991; Marcus 2008). It is the only method available for anthropologists to view all the variable aspects of behavior in both space and time, from the individual to groups, from the small settlements to large regions, from single events to patterns over millennia (Wobst 1978:307)—and to see evidence of behaviors that predates colonial contact. For these reasons, archaeologists should not be limited by the range of behaviors known from the ethnographic record

and the resulting biased characterization of hunter-gatherers. Furthermore, archaeology is the approach best suited for investigating forager diversity since it is the only discipline that explicitly and directly deals with prehistoric hunter-gatherers and the remnants of their actual behavior.

Archaeologists are in an ideal position to push forager theory forward. To date, the primary goal for anthropologists concerning hunter-gatherers has been to characterize the 99 percent of human history when foraging lifeways were dominant; while this 99 percent still represents a significant stage in human prehistory, it is far from homogeneous (Kuhn and Stiner, chapter 8, this volume). The long-term perspective available to archaeologists provides a window into changing patterns of human behavior, and an incomplete but accurate record of hunter-gatherer diversity and adaptations. In this way, archaeology will always serve as the definitive test for hunter-gatherer variability.

Given the vast range of time, space, and unique environments at its disposal, the archaeological record provides evidence of novel forms of social and economic organization that are only available in the deep past. The creative and challenging role for archaeologists is to produce new portraits of hunter-gatherer diversity in the past, *de novo*, drawing on but not reproducing the ethnographic present.

RECOGNIZING VARIABILITY IN THE PAST

While contemporary studies of hunter-gatherers acknowledge that ethnographic hunter-gatherers are not living a prehistoric lifestyle, and that forager lifeways are extremely diverse (e.g., Ames 2004; Binford 2001; Kent 1996; Panter-Brick, Layton, and Rowley-Conwy 2001), documenting diversity within *prehistoric* foraging societies remains elusive. How do archaeologists recognize novel forager adaptations in the deep past? To achieve this goal, archaeological investigations must move away from the normative characterization of hunter-gatherers, and work instead with models and hypotheses that are explicitly designed to capture variability.

This volume presents seven distinct geographic and temporal case studies that examine forager diversity. It moves back through time from ethnographic to historic contact periods to considerations of Pleistocene foraging and our early human ancestors. Each case study focuses on a particular geographic region, including the North American Arctic; southern South America; the North American Great Lakes; the Andean highlands of Peru, Bolivia, Chile, and Argentina; tropical rainforests in Sri Lanka; southern Africa; Central Europe; the Mediterranean; and the Near East. Many chapters also track

change through time in these areas (see herein Rademaker and Moore, chapter 4; Roberts et al., chapter 5; Stewart and Mitchell, chapter 6; Kitagawa et al., chapter 7; Kuhn and Stiner, chapter 8).

Two central, related questions connect the diverse case studies presented in each chapter: How should ethnographic data be used in the archaeological study of hunter-gatherers? How can we discover novel foraging lifeways in the past?

ON THE USE OF ETHNOGRAPHY

There is no alternative to using our knowledge of modern peoples to help us penetrate the past. Abandoning the ethnographic record makes archaeology like a paleontology cut off from the biology of living organisms. The real issue is not whether we do it, but *how* we do it.

KEN AMES (2004:366, EMPHASIS ADDED)

The archaeology of prehistoric hunter-gatherers is deeply rooted in ethnographic analogy—and while ethnographic data are helpful in providing generalizations, creating models, and exploring human lifeways, those analogies may limit archaeological discoveries of novel human behavior. Archaeologists should not expect to see “whole” societies from the ethnographic record represented in the past, but rather be prepared to recognize some familiar elements that may be put together in novel ways.

For example, Garvey (chapter 2, this volume) presents a critical use of ethnographic data to establish first-order predictions concerning sources of hunter-gatherer diversity. Similarly, I (Lemke, chapter 3, this volume) use ethnographic data to examine variability in ethnographic and archaeological hunting strategies. Both case studies explicitly acknowledge the limitations of the ethnographic data but still find ways to use such data either to identify sources of diversity (see also Garvey and Bettinger 2014) or to document diversity (Lemke 2016). As Garvey outlines, ethnographic data can be used to explore potential sources of diversity, where a greater level of detail is available to identify such sources as environmental, ecological, technological, or social mechanisms, as well as their interconnections. Furthermore, ethnographic data can be used to build models of hunting behavior to form predictions concerning the nature of hunting sites to aid in the identification of such sites in difficult contexts (e.g., underwater; Lemke, chapter 3, this volume). In the first case study, the environment is held constant to understand cultural diversity between two groups living in similar climates. In the second case, animal behavior is held constant to address hunting strategies over time.

Along these lines, ethnographic data are useful for identifying uniformitarian assumptions that can be made to guide archaeological research. Certain patterns of behavior or phenomena seen in ethnographic accounts were likely the same or similar to phenomena operating in the past, such as the observation that caloric contributions of vegetables to forager diets decline with latitude, for obvious ecological reasons (see Garvey, chapter 2, this volume; Kuhn and Stiner, chapter 8, this volume), or that certain patterns of animal behavior which can be observed today were similar in the past, ultimately conditioning aspects of human hunting strategy and behavior (Lemke, chapter 3, this volume). In both cases, ethnographic data serve as a hypothesis-generating tool within an integrative research design that ultimately tests theory with empirical archaeological data rather than applying a direct ethnographic analogy (*sensu* Kelly 2013).

While ethnographically documented foragers look like prehistoric foragers in many important ways, there are also anomalies (Kuhn and Stiner, chapter 8, this volume). As illustrated in Stewart and Mitchell (chapter 6, this volume), ethnographic and prehistoric foragers differ when considered either at regional or global scales, as southernmost African hunter-gatherers differ from Kalahari groups within Africa and from the broad range of other foragers observed ethnographically around the globe as well. For example, Stewart and Mitchell test Binford's predictions for foragers inhabiting environments within a certain "effective temperature" derived from ethnographic data (from Binford 2001). The expectations are only partially met with archaeological data, with the prehistoric case providing evidence for different behaviors. However, this should not be surprising, because we should not *a priori* expect prehistoric hunter-gatherers to always conform to generalizations drawn from ethnographic cases.

Broad comparative ethnographic comparisons like Kelly's (1995, 2013) and Binford's (2001) are significant first steps toward documenting forager variability. Cases in this volume further demonstrate that comparisons between the ethnographic and archaeological records are important, as prehistoric deviations from the expected pattern of behavior derived from more recent accounts give archaeologists something to explain. However, given historical circumstance, environmental fluctuations, the rates and nature of technological innovation, population growth, and increasing world connectivity and globalization, ethnographic foragers operate in vastly different social, environmental, and cultural contexts than did prehistoric foragers. The next step involves similar studies of *archaeological* data. These comparisons are instrumental for detecting diversity in foraging adaptations over time and space across different contexts, and are essential for discovering novel social forms in the past.

ON DISCOVERING NOVEL FORAGING LIFEWAYS:
ENVIRONMENT AND ECOLOGY

Indeed, many environments and geographic regions have a limited or absent ethnographic record to draw upon, making archaeological studies especially important. For example, high-altitude areas in general and the Andean puna specifically, as well as tropical rainforests, are often viewed as formidable barriers to hunter-gatherers. Therefore, prehistoric hunter-gatherer populations were not expected to live in either of these environments, or, if they did, their use of them would be fleeting, characterized by logistical forays, short-term occupation, or diets supplemented by other resources. However, contrary to expectations drawn solely from the ethnographic record, evidence of prehistoric hunter-gatherer groups has been found in both places—puna and rainforests—to a much greater extent than traditionally assumed (Rademaker and Moore, chapter 4, this volume; Roberts et al., chapter 5, this volume). Indeed, rather than being “marginal,” these zones often have greater resource abundance than adjacent areas. This evidence points to pull (e.g., access to a broader range of resources) rather than push (e.g., population pressure) factors to explain early human occupation of these areas.

What both of these case studies highlight is a source of diversity, the environmental and ecological background. While it has long been acknowledged that these factors are related to diversity in foraging groups (i.e., human behavioral ecology), the picture drawn exclusively from ethnography is limited. Archaeological evidence, on the other hand, shows that people had access to a greater range of environments. These case studies reveal that environmental *flexibility* is a hallmark of humanity (Roberts et al., chapter 5, this volume, and references therein), and more specifically, a hallmark of hunter-gatherers. For example, humans are the only hominin thus far to demonstrate reliance on closed-canopy rainforest resources. In contrast to ethnographic foragers, who were often territorially circumscribed at contact, the archaeological record preserves evidence of foragers who utilized diverse environments and ecologies in the past. These societies peopled every continent on the planet except for Antarctica, and in so doing encountered every possible environment, all the while demonstrating tremendous flexibility in food-getting strategies. Prehistoric foragers occupied a wider range of environments than their ethnographic counterparts, and within these environments they displayed variable patterns of settlement and mobility strategies.

Rather than environmental determinism, the analysis of such flexibility can be referred to as *environmental possibilism*, the understanding that while the resource structure (including access to freshwater, primary production, and so

on) may limit how intensely some areas can be used, foragers make choices to avoid or limit use in more marginal areas (see Rademaker and Moore, chapter 4, this volume). It is not that high altitudes, rainforests, or other environments could not support human populations or that people could not live there; rather, foragers made active choices between more or less marginal areas, and these patterns of landscape use and settlement change over time. As pulses of environmental change shifted areas of primary productivity, forage for animals, the animals themselves, and other critical resources (e.g., firewood/fuel), people shifted as well. Such alterations in mobility regimes and landscape use can be documented diachronically in the Andean puna (Rademaker and Moore, chapter 4, this volume), southern Africa (Stewart and Mitchell, chapter 6, this volume), and tropical rainforests (Roberts et al., chapter 5, this volume). In these cases, and likely others, forager decision-making and environmental flexibility can be documented in great detail. Such diverse settlement and mobility patterns are not due to foragers' incapacity for long-term or permanent residence; instead, these patterns ultimately correspond with those documented for so many foragers—that mobility was adaptive (Kelly 1995; Rademaker and Moore, chapter 4, this volume) and that foraging lifeways characterized by mobility provide nearly infinite flexibility in their ability to exploit different environments.

This focus on the environment, particularly the concept of environmental possibilism—that all environments were open to hunter-gatherer exploitation and that diverse landscape use results in diverse archaeological records—is significant both theoretically and methodologically. Evidence of prehistoric forager occupation of “marginal” or barrier environments provides new ideas into how flexible these societies were, and analysis of such behavior can draw on one of archaeology's greatest strengths.

Whereas many anomalies between ethnographic and archaeological records of foragers are due largely to inherent differences in context, archaeology has the ability to reconstruct the ancient context, especially in terms of the environment. Paleoenvironmental analyses are increasingly more sophisticated, and such data are crucial for understanding different types of local and regional landscapes. Paleoenvironmental contexts can be reconstructed in great detail; particularly when aided by underwater preservation (see Lemke, chapter 3, this volume), but also in more challenging preservation contexts, such as tropical rainforests (Roberts et al., chapter 5, this volume). There are clear, documented cases of radically different environments in the past, not just in terms of broad characterizations such as cold Pleistocene and warm Holocene, but down to smaller details of resource structure. For instance, there were greater

numbers of animals and exploitable resources in the past and these larger populations resulted in different food-getting strategies in prehistory than those documented either historically or ethnographically (see Lemke 2016; Stewart and Mitchell, chapter 6, this volume).

Examples of detailed paleoenvironmental studies are found throughout this volume (for example, Rademaker and Moore, chapter 4; Roberts et al., chapter 5; Stewart and Mitchell, chapter 6), as are calls for finer grained data and studies to aid future research (Garvey, chapter 2 and Bettinger 2014). Because indirect comparisons between archaeological sites and sometimes poorly dated “off-site” lake or marine cores can mask significant spatial and local/regional variability, finer grained, “on-site” paleoenvironmental studies are needed to support analyses such as Garvey’s (chapter 2, this volume; Garvey and Bettinger 2014) for prehistoric cases, especially as characterizations of certain environments as “favorable” or “unfavorable” can change with the scale of the analysis (Rademaker and Moore, chapter 4, this volume). One proposed method to improve paleoenvironmental studies is additional long-term, multispecies, stable isotope studies, particularly as these analyses provide *direct* measures of resource exploitation (Roberts et al., chapter 5, this volume).

Ideally, future research will provide studies similar to Garvey’s, using archaeological data, holding the environment as a constant variable, and comparing cultural adaptations. For example, new analyses could compare the use of tropical rainforests in Sri Lanka, southeast Asia, and Africa. While there are hints that foragers use these similar environments in different ways (Roberts et al., chapter 5, this volume), future studies could move beyond simple detection to systematically document variability in the past. Traditionally, hunter-gatherer anthropologists and archaeologists have often proceeded from the known to the unknown (ethnographic present to prehistoric foragers) in their interpretations, but new studies indicate that we may be able to reverse this trend and use methods derived from archaeological studies (e.g., stable isotopes) and apply them to increasingly younger phenomena, such as protohistoric foragers, perhaps to track the gradual incorporation of agricultural foods into forager populations near tropical rainforests.

As is often the case for ethnographic foragers, variability in one factor is linked to variability in others. This is significant because the same kind of local variability that we document in environments is likely to generate corresponding variability in local cultural adaptations—particularly given the demonstrated relationships among resource structure, mobility patterns, reproductive costs, demographic growth, and intra- and intergroup connectivity, for example. Within such broad categories as the Pleistocene or the Holocene, we

have documented local variations on a theme across time and space—a similar solution is needed for the extensive category “prehistoric hunter-gatherers.”

ON DISCOVERING NOVEL FORAGING LIFEWAYS: DEMOGRAPHY AND CULTURAL TRANSMISSION

Exploring diversity in the past is easier said than done, particularly in the deep past when sites and behaviors of foraging societies are particularly ephemeral. In documenting modern human behavior, simple trait lists have been the traditional method for describing aspects of prehistoric hunter-gatherers. However, it is now clear that this method has limited analytical utility (Kitagawa et al., chapter 7, this volume; Kuhn and Stiner, chapter 8, this volume; see also McBrearty and Brooks 2000; Shea 2011).

The hallmarks of “modern” human behavior are found increasingly farther back in time. Instead of simple presence-or-absence trait lists, the frequency and flexibility of behaviors can be documented and compared (Kitagawa et al., chapter 7, this volume; Kuhn and Stiner, chapter 8, this volume; Shea 2011). Simple presence or absence of certain traits does little to explain the cognitive and/or cultural capacities of Neanderthals—for example, while items of personal adornment are present, they are far from ubiquitous. Furthermore, the frequency of these items (and the social and cognitive mechanisms behind them) are still notably different between the Middle Paleolithic and the early Upper Paleolithic (Kitagawa et al., chapter 7, this volume; Kuhn and Stiner, chapter 8, this volume). Kuhn and Stiner attribute this and other differences to demography, more specifically the size and nature of social groups of Neanderthals and anatomically modern humans. They relate the homogeneity of Middle Paleolithic technology to smaller social groups—small and locally unstable populations that are spatially dispersed. Kuhn, Stiner, and others (e.g., see Gilligan 2007 for discussion of clothing and cold stress) have argued that it was the demographic and reproductive capacities of modern humans that may have given them the edge over our Neanderthal relatives.

These arguments find parallels with cultural transmission theory as shown by Garvey (chapter 2, this volume). Garvey outlines archaeological expectations for cultural and behavioral mechanisms that mediate the negative effects of cold stress and resource shortfall on health, longevity, and reproduction. These expectations include visible diversity either directly as evidence of larger populations and the social dynamics they involve, or indirectly through the material culture outcomes of larger populations. Rates of cultural transmission, either of ideas or tangible technologies, are drastically influenced by the size

and connectivity between populations. For example, small populations with limited connectivity (i.e., intra- and intergroup interaction) often result in low technological diversity (Garvey and Bettinger 2014). In their reevaluation of the Middle Paleolithic record, Kuhn and Stiner find that Neanderthals demonstrate technological homogeneity across significant spans of both time and space, likely indicating smaller, less-connected populations (Kuhn and Stiner 2001). This in turn suggests that Middle Paleolithic Neanderthals did not have the culturally mediated behaviors to offset reproduction costs, such as large populations and social connections between these populations, in contrast to ethnographic foragers, who are essentially hard wired for density (Hamilton et al. 2007).

It has long been acknowledged that these variables—environment, ecology, and demography—are critical for a general understanding of hunter-gatherers and the diversity inherent within this category. While these new insights gleaned from the archaeological record do not radically alter our understanding of such variables and their relationships, they do amplify it. In addition, social ties and collaborative strategies (e.g., hunting in groups, working to share food, creating fictive kin to buffer times of shortfall, etc.) are powerful ways to explain the diversity of hunter-gatherers, ultimately demonstrating that some familiar elements identified during the ethnographic study of foragers were put together in novel ways in the past.

ON DISCOVERING NOVEL FORAGING LIFEWAYS: MOVING FORWARD

Simple trait lists, similar to other typological categories used to classify hunter-gatherers, are incapable of dealing with such complex relationships. Both methods are limited in their analytical power, and more often serve to mask important variability. Certain binary oppositions common in conceptualizing hunter-gatherer behavior—*forager versus collector, simple versus complex, specialist versus generalist, mobile versus sedentary, etc.*—disguise significant variation. One of the primary goals for future studies should be to move away from such typological categories. Instead, hypotheses and models of hunter-gatherer behavior need to be designed to capture variability—not dismiss or underemphasize it.

This volume makes a first explicit attempt to explore diversity among prehistoric hunter-gatherers. It pulls together geographic and temporal case studies to demonstrate that hunter-gatherers in the ethnographic record are not nearly as diverse as those that preceded them. The contributors show the importance of employing integrative and interdisciplinary approaches for explaining novel

lifeways and diversity among prehistoric foragers. Exploring cultural diversity is a central goal of archaeology and of anthropology more generally, because we cannot truly understand what is shared among humanity without understanding what is different (Kelly 1995, 2013). We hope to contribute to this ongoing investigation.

REFERENCES CITED

- Ames, Kenneth M. 2004. "Review: Supposing Hunter-Gatherer Variability." *American Antiquity* 69(2):364–374. <https://doi.org/10.2307/4128427>.
- Bettinger, Robert L., Raven Garvey, and Shannon Tushingham. 2015. *Hunter-Gatherers: Archaeological and Evolutionary Theory*. New York: Springer. <https://doi.org/10.1007/978-1-4899-7581-2>.
- Binford, Lewis R. 2001. *Constructing Frames of Reference: An Analytical Method for Archaeological Theory Building and Using Ethnographic and Environmental Data Sets*. Berkeley: University of California Press.
- Bird, Rebecca Bliege, and Douglas W. Bird. 2008. "Why Women Hunt: Risk and Contemporary Foraging in a Western Desert Aboriginal Community." *Current Anthropology* 49(4):655–693. <https://doi.org/10.2307/20142695>.
- Garvey, Raven, and Robert L. Bettinger. 2014. "Adaptive and Ecological Approaches to the Study of Hunter-Gatherers." In *The Oxford Handbook of Archaeology and Anthropology of Hunter-Gatherers*, ed. Vicki Cummings, Jordan Peter, and Marek Zvelebil, 69–91. Oxford, UK: Oxford University Press.
- Gilligan, Ian. 2007. "Neanderthal Extinction and Modern Human Behaviour: The Role of Climate Change and Clothing." *World Archaeology* 39(4):499–514. <https://doi.org/10.1080/00438240701680492>.
- Hamilton, M. J., B. T. Milne, R. S. Walker, and J. H. Brown. 2007. "Nonlinear Scaling of Space Use in Human Hunter-Gatherers." *Proceedings of the National Academy of Sciences of the United States of America* 104(11):4765–4769. <https://doi.org/10.1073/pnas.0611197104>.
- Jochim, Michael A. 1991. "Archaeology as Long-Term Ethnography." *American Anthropologist* 93(2):308–321. <https://doi.org/10.1525/aa.1991.93.2.02a00020>.
- Kelly, Robert L. 1995. *The Foraging Spectrum: Diversity in Hunter-Gatherer Lifeways*. Washington, DC: Smithsonian Institution Press.
- Kelly, Robert L. 2013. *The Lifeways of Hunter-Gatherers: The Foraging Spectrum*. Cambridge, UK: Cambridge University Press. <https://doi.org/10.1017/CBO9781139176132>.
- Kent, Susan, ed. 1996. *Cultural Diversity among Twentieth-Century Foragers: An African Perspective*. Cambridge, UK: Cambridge University Press.

- Kuhn, Steven L., and Mary C. Stiner. 2001. "The Antiquity of Hunter-Gatherers." In *Hunter-Gatherers: An Interdisciplinary Perspective*, ed. Catherine Panter-Brick, Robert H. Layton, and Peter Rowley-Conwy, 99–129. Cambridge, UK: Cambridge University Press.
- Kusimba, Sibel B. 2005. "What Is a Hunter-Gatherer? Variation in the Archaeological Record of Eastern and Southern Africa." *Journal of Archaeological Research* 13(4):337–366. <https://doi.org/10.1007/s10814-005-5111-y>.
- Lee, Richard B. 1992. "Art, Science, or Politics? The Crises in Hunter-Gatherer Studies." *American Anthropologist* 94(1):31–54. <https://doi.org/10.1525/aa.1992.94.1.02a00030>.
- Lee, Richard B., and Irven DeVore, eds. 1968. *Man the Hunter*. Chicago: Aldine Press.
- Lemke, Ashley K. 2016. "Anthropological Archaeology Underwater: Hunting Architecture and Foraging Lifeways beneath the Great Lakes." PhD dissertation, Department of Anthropology, University of Michigan, Ann Arbor.
- Marcus, Joyce. 2008. "The Archaeological Evidence for Social Evolution." *Annual Review of Anthropology* 37(1):251–266. <https://doi.org/10.1146/annurev.anthro.37.081407.085246>.
- McBrearty, S., and A. S. Brooks. 2000. "The Revolution That Wasn't: A New Interpretation of the Origin of Modern Human Behavior." *Journal of Human Evolution* 39(5):453–563. <https://doi.org/10.1006/jhev.2000.0435>.
- Panter-Brick, Catherine, Robert H. Layton, and Peter Rowley-Conwy, eds. 2001. *Hunter-Gatherers: An Interdisciplinary Perspective*. Cambridge, UK: Cambridge University Press.
- Politis, Gustavo. 2015. *Myths about Tropical Rainforest Hunter-Gatherers: A Reappraisal from South America*. Paper presented at the 18th Annual Meeting of the Society for American Archaeology, San Francisco, CA.
- Prentiss, Anna Marie, Natasha Lyons, Lucille E. Harris, Melisse R. P. Burns, and Terrence M. Godin. 2007. "The Emergence of Status Inequality in Intermediate Scale Societies: A Demographic and Socio-Economic History of the Keatley Creek Site, British Columbia." *Journal of Anthropological Archaeology* 26(2):299–327. <https://doi.org/10.1016/j.jaa.2006.11.006>.
- Service, Elman. 1966. *The Hunters*. Englewood Cliffs, NJ: Prentice-Hall.
- Shea, J. J. 2011. "Homo sapiens Is as Homo sapiens Was." *Current Anthropology* 52(1):1–35. <https://doi.org/10.1086/658067>.
- Wobst, Martin. 1978. "The Archaeo-Ethnology of Hunter-Gatherers or the Tyranny of the Ethnographic Record in Archaeology." *American Antiquity* 43(2):303–309. <https://doi.org/10.2307/279256>.

- Yengoyan, Aram A. 1979. "Economy, Society, and Myth in Aboriginal Australia." *Annual Review of Anthropology* 8(1):393–415. <https://doi.org/10.1146/annurev.an.08.100179.002141>.
- Zedeño, María Nieves, Jesse A. M. Ballenger, and John R. Murray. 2014. "Landscape Engineering and Organizational Complexity among Late Prehistoric Bison Hunters of the Northwestern Plains." *Current Anthropology* 55(1):23–58. <https://doi.org/10.1086/674535>.

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