BOOK REVIEW

Hunter-gatherer adaptation and resilience: A bioarchaeological perspective

Edited by Daniel H. Temple and Christopher M. Stojanowski


A number of influential studies in archaeology (Fisher, Hill, & Feinman, 2009; Folke, 2006; Gunderson & Holling, 2002; Holling & Gunderson, 2002; Hudson, Aoyama, Hoover, & Uchiyama, 2012; McAnany & Yoffee, 2009; McAnany & Yoffee, 2010; Middleton, 2012; Redman, 2005; Redman & Kinzig, 2003) extended resilience theory as developed in ecology (Holling, 1973) as a theoretical frame for understanding past population resilience (or lack thereof) to external forces of change. Resilience theory has enormous potential for understanding very-long term change in the past, providing a theoretical and interpretive framework for understanding how archaeological sites (and their human remains) might bear witness to episodes of major change that did not result in collapse. However, resilience theory is also an approach with significant methodological challenges. To the best of our knowledge, the authors of this review were the first to marry concepts of resilience in cultural systems to parallel concepts in developmental biology (e.g., homeostasis, canalization). The concept remains under-employed in the study of prehistoric populations, whether through culture or biology, and the volume reviewed here illustrates both the potential and problems of applying resilience theory to understand change in prehistory.

As noted by Jane Buikstra in her final chapter, this book takes North American adaptational bioarchaeology as its point of departure, an approach, that is, associated in many (though not all chapters) with a tendency to emphasize stability over radical change. As the authors of this review have noted (Hoover & Hudson, 2016), persistence of hunter-gatherers is not simply continued existence, or the opposite of collapse. The combination of archaeological evidence for cultural continuity and change alongside biological data describing human health during growth and development over time and space is powerful. The combined dataset enables researchers to understand when departures from homeostasis occur (interruptions to normal development due to internal and external stimuli) and to interpret acute changes *** shaped by larger cultural frames and chronic or even intergenerational changes as shaped by longer cultural processes. For example, populations in transition (e.g., due to climate change, immigration, and migration) may exhibit biological evidence of developmental challenges (inadequate nutrition, disease) and decline in population health that appear to lead to eventual collapse. Yet, those populations may actually be healthy when examined in cultural context—cultural and biological processes that intervene during change may absorb those stresses at the population level. Persistence may appear as radical cultural reorganization, such as a reorganization of subsistence around a new and more reliable set of resources or the adoption of a new form of subsistence and the resulting changes to material culture or site organization. Ultimately, the casual application of resilience theory to human socio-cultural systems can result in a false dichotomy between sustainability (interpreted as resilience, or lack of change) and collapse (interpreted as lack of resilience, and cultural change). Resilience is a more complex process that involves cycles of change (sometimes radical) as driven by human agency to balance cultural preservation against survival rather than attempts to sustain, wholesale, a past adaptation (Holling, 1973; Holling, 1986; Holling & Gunderson, 2002).

The introduction to what is the first collection of papers on the topic of resilience in bioarchaeology provides a simple overview of resilience theory (intellectual origins and uses in anthropology). It is well written with a good discussion of hunter-gatherer theory and how resilience differs from systems theory. The editors provide an adequate review of how their volume provides a much-needed development of resilience theory applications to bioarchaeology. The introduction serves as a position paper meant to anchor the contributions but, disappointingly, the editors failed to minimize duplication of this content in the subsequent contributions, most of which begin with summaries of what is found here. The editors stop short of their review of resilience theory by not including a discussion of the critiques levied against its applications to human socio-cultural systems (Abel & Stepp, 2003; Cote & Nightingale, 2012). The lack of critical engagement with resilience theory (as opposed to ecological and evolutionary explanations which dominated the field for some time: Abel & Stepp, 2003) is particularly disappointing because translating ecological theory to social systems remains a central challenge across disciplines. Following the introduction, there are 13 chapters that present case studies from a range of geographical locations including Africa (three chapters), the Americas (seven chapters), and Europe, Japan, and Australia (one chapter each). The focus is on hunter-gatherers, although several of the African chapters include pastoralists.

The Cameron and Stock chapter is a stand-out piece that takes a comparative approach to resilience (hunter-gatherers and herders) in Southern Africa via biomechanical markers. By examining the transformation of behavioral activities in hunter-gatherers following the arrival of pastoralists, Cameron and Stock neatly present data and then develop a rich discussion of the cycles of resilience that can be
read in the bones. Ultimately, the authors demonstrate that the persis-
tence of hunter-gatherer lifeways and use of mixed subsistence
économies characterize the period of change. Today, mobile hunter-
gatherer and pastoralist camps are more likely to overlap than not.
Although that overlap may not have been as frequent prior to the
space constraints imposed by agriculture and industry, those overlaps
occurred and provided opportunities for trade and sharing. The focus
of this chapter is on cultural adaptation to changed environments in
response to challenges and provides evidence of resilience rather than
simply sustainability (without change) of past lifeways. Another chap-
ter on African pastoralism by co-editor Stojanowski (Chapter 9) is also
a strong contribution to the volume. Stojanowski has a different take
on resilience in African hunter-gatherers. He presents evidence for
the maintenance of hunter-gatherer society over time, but one that
becomes modified in response to climate change. Specifically, persis-
tence of hunting-gathering lifeways remains at the core of the culture
but both a dietary shift and social changes accompanying it are noted
as significant buffers to external environmental changes that preclude
sole reliance on hunting-gathering across a 5,000-year period.
Stojanowski provides robust data that support the interpretation of
long-term system buffering with tolerance of some changes and
retention of some core values.

Chapter 7 by Da-Gloria and Bueno focuses on early Holocene
hunter-gatherers in Brazil. While an interesting contribution, it does
not tie together theory and data satisfactorily. The shift to a more
mobile lifestyle is argued to be evidence of how descendent
populations were maintaining their presence in a changing mid-
Holocene landscape that could no longer support larger concentra-
tions of people. There is a missed opportunity to discuss how resil-
ience does not always look as expected. Here, the population
structure is rescaled due to resource depletion and that rescaling
alters the cultural dynamic and subsistence base. This outcome is
stated in the introduction but not fully developed in the discussion of
results. Still, this contribution demonstrates that resilience is not sim-
ply sustainability. Chapter 3 on Patagonia by Bernal et al. presents an
interesting approach using demographic modeling to assess ecological
change. Resilience theory is incorporated into the questions asked by
the authors but is not fully integrated into the essay.

In Chapter 4, Rick Schulting looks at northwest Europe and the
socio-ecological changes associated with the 8,200 BP transition from
the Mesolithic to the Neolithic. Given the available archaeological
data for this transition, the evidence does not clearly support an argu-
ment for or against resilience. For example, Schulting discusses the
near abandonment of the west coast of Scotland for a millennium
after the 8.2 event, noting that this seems to be a case of loss of resil-
ience because “The time frame seems too long for this to be simply a
matter of temporarily readjusting the nature of activities across the
landscape” (p. 73). Schulting’s chapter is important because it offers a
rare, to this volume, incorporation of the concept of linked socio-
ecological systems. Schulting draws on archaeological evidence to
interpret geographic variation in response to the same environmental
challenge and provides an interesting comparative perspective. The
approach is so welcome and novel that readers would have benefitted
more from a longer discussion of comparative approaches to studying
resilience in linked socio-ecological systems than the primer on resil-
ience theory and stable isotope chemistry. Likewise, Bartelink et al.
present a novel application of resilience theory to interpersonal vio-
ence in prehistoric hunter-gatherers around the San Francisco Bay
area. This is an important topic that pushes the limits of resilience ver-
sus adaptation as an explanatory paradigm in anthropology. The
authors of the chapter conclude that “indications of heightened vio-
ence are likely to result from extreme [social] transformations”
(p. 293). This work opens an avenue for further comparative research
in the examination of similar cases of extreme social transformation
documented in prehistory, such as Neolithic Japan where major social
changes have been associated with low levels of violence.

In Chapter 5, co-editor Daniel Temple compares skeletal remains
from two Jomon sites on Japan’s Inland Sea. We agree with his basic
conclusion that the Jomon was a very resilient Neolithic culture—our
own work has demonstrated resilience and even hunter-gatherer persis-
tence for a very long time in the face of agricultural expansion into
Japan (Hoover & Hudson, 2016; Hudson et al., 2013)—but Temple
underestimates the extent of social change across the Jomon period.
This may be due to the use of skeletal series that are from old excava-
ations and poorly dated. The lack of direct radiocarbon dates on human
remains is a serious challenge to an accurate interpretation of the signifi-
cance of Jomon tooth ablation. Temple argues that tooth ablation was
an older custom that persisted into the Late/Final Jomon whereas the
standard theory in Japanese archaeology is that it was a new ritual prac-
tice that arrived from the continent and became common during the
Late Jomon period onward. Unseating conventional interpretations with
robust evidence advances knowledge, but in this case, the lack of confi-
dence in the dating of those sites and materials weakens the evidence
supporting the offered interpretation. The opportunity to soften the
interpretation in light of the problems with dating and, instead, engage
in a discussion on how resilience could be used for both interpretations
each with a separate historical significance, is missed. More broadly, the
discussion of Jomon resilience is focused on persistence and fails to
incorporate an understanding of cultural change as evidenced in archae-
ological data on legume cultivation and long-distance interactions with
eastern Jomon and Bronze Age continental Eurasia. This same focus on
hunter-gatherer persistence is a theme in several other chapters.

The authors of this review suggest that the absolute maintenance
of hunting-gathering lifestyles (dogged persistence in the face of envi-
ronmental change) is not the hallmark of resilience. Rather, inter-
preting resilience from archaeological data involves an examination of
the challenges faced and how the social system buffered that change.
In bioarchaeology, a resilience approach will include an examination of
developmental health as shaped by the cultural context. There are a
few chapters that fail to do this and are simply bioarchaeology or
archaeology research with little to no engagement with the core con-
cept of the edited volume. Merbs’ chapter on the Sadlermiut focuses
solely on collapse with no reference to resilience at all. The same ten-
dency is reflected in Littleton’s contribution, which concludes that
Aboriginal Australians in the Western Riverina region collapsed due to
violence and dispossession of European colonialism rather than
presenting evidence that indicates an end to that socio-cultural system. Yet, Aboriginal people and their cultures persisted within that system and that entire topic raises thorny political and moral questions over how we understand Indigenous peoples in the modern world.

The concluding comments by Buikstra, while sometimes a bit off topic, walk the reader through the intellectual history of approaches taken in bioarchaeological research and consider what a resilience approach within bioarchaeology might look like. Buikstra has had a long and influential career in bioarchaeology but has not engaged in resilience theory approaches to bioarchaeology. As such, her assignment to this chapter was a daring but commendable choice. Her grappling with how resilience might fit into the intellectual history of the discipline and be useful as a theoretical tool provides the bioarchaeological reader unfamiliar with resilience an engaging intellectual journey to understanding. Indeed, her journey leads to an incisive list of the problems involved in using resilience theory in bioarchaeology in Table 15.1—something these reviewers had expected to see in the introduction and were happy to find here.

Archaeological evidence, especially in earlier prehistory, is rarely fine-grained enough to develop convincing analyses of long-term change within adaptive cycles. This is a challenge we outlined in an earlier paper on understanding archaeology and climate change (Hudson et al., 2012). Yet it should be noted that the overall approach of this book is not to develop textbook examples of resilience theory within bioarchaeology nor to provide critiques of it. Perhaps greater editorial oversight across chapter formats would have reduced the repeated primer on resilience that appears at the start of many chapters and allowed authors to specifically apply the theory to their data rather than talk about the theory generally. As it is, the authors have each attempted to present their own views on how well or how poorly resilience theory may be applied to interpreting prehistory. Given that the authors have somewhat variable understandings of resilience theory, the result is mixed and readers would have benefited from a final editorial chapter synthesizing the conclusions with a road map on where to go next. Without this, the book is more a proving ground than a model for research on when and how a resilience theory of bioarchaeology might best be applied. The book is handsomely produced by Cambridge University Press although it contains a few rather glaring errors, notably “chord-impressed” (p. 86) and “Castanae hansaihoi” (p. 88) and confusing terminology, notably “after Neolithization [sic]” (p. 11) and the use of the term “contact” without further explanation (p. 85).

Hunter-gatherer Adaptation and Resilience brings together a wide range of new and old bioarchaeological data and their interpretation with varyingly successful applications of resilience theory. It will be of interest to many readers for that reason—a starting place to think about how resilience can be developed in bioarchaeological research more broadly. The question of to what extent resilience theory can and will be adopted by the field of bioarchaeology, as explored in this volume, remains open.

Kara C. Hoover

Mark J. Hudson

2University of Alaska Fairbanks, Fairbanks, Alaska

2Eurasia3angle Research Group, Max Planck Institute for the Science of Human History, Jena, Germany

Correspondence

Kara Hoover, University of Alaska Fairbanks, Fairbanks Alaska.

Email: kchoover@alaska.edu

ORCID

Kara C. Hoover https://orcid.org/0000-0001-6394-930X

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