Introduction

(Re)Discovery of the Strange and the Familiar: Theory and Methods for a Twenty-First-Century Biological Anthropology

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Disciplines have intellectual histories that must be worked through, and each has its own responsibility to assess its contributions to the modernist project.

(Fowles, in Alberti et al. 2011:898)

Why a Critical Reflection on Biological Anthropology?

In this unfortunate era of anti-intellectualism and fake news, it is essential that biological anthropologists engage with each other, the academy, the media, and the public about the nature of humans, how we got here, and how (and why) we vary. One of the strengths of anthropology is that we can be self-reflective. We can re-examine our questions, our theory, our methods, our data, and deal skeptically with all of them. What is a species? How do we identify groups? How do we recognize agency, or identity, or frailty, in the past? The colonial history of western science affects our interpretation of evidence (Roy 2018); now formerly colonized peoples have opportunities to produce knowledge of their own histories, so they can shift the narrative, making what was once a familiar story, strange (Rottenburg 2009; Véran 2012).

"Making the familiar strange" is a practice commonly found in ethnography and cultural anthropology (Rosaldo 1993; Thomson 2013; Véran 2012). It is seen as critical to denaturalize one's beliefs in order to open oneself to new beliefs and analytical frames (Alberti et al. 2011). Although cultural anthropologists often perform the defamiliarizing activity reflexively in their work, we biological anthropologists often consider the scientific approach as antithetical to reflexive, thick descriptive research. We are, however, not immune from the trap of reconstructing past and current peoples as timeless and stable (Rosaldo 1993), or considering our evidence as objective when it is not. Thomson (2013) writes:

I'm of the view that the notion of making the familiar strange is actually first of all about the researcher's state of being. It's about how we actually ARE as researchers in the world. (In other words it's as much ontological as it is epistemological and methodological.) It's about not taking anything for granted, being prepared to question everything, and certainly putting the things we think we know out for interrogation. But then it's about that shift, that disruption, being made apparent, being represented, so that the reader understands things anew as well.

In the philosophy of science, evidence (whether an object, experience, mental state, or physiological event) must inform knowledge. We do have evidence biases in

biological anthropology, some of our own making, some not. The position of evidence in biological anthropology varies, from the objective absolute position with unassailable power ("data speak for themselves"), through the position of conceding the relative, qualitative value ("we need better, more data"), to the critical approach ("data are inherently biased"). Véran (2012:S252) argues "the power of biological anthropology relies on its capacity to provide hard evidence in key contemporary political issues such as origins, ancestry, anteriority, restitution claims, objective biological differentiations, or the impact of racism on human growth. This power is all the stronger in that it is reversible." The sense of objectivity of this evidence can work as much for, say, colonial groups as for the colonized – new discoveries can legitimize a native myth or challenge the African claim to the homeland of humanity.

Background on this Volume

Both of us have a long history of interest in exploring the nature of evidence, epistemology, and methodological approaches. Sang-Hee Lee questioned the parametric assumptions in statistical methods and explored alternative approaches including bootstrapping (Lee 2001; Lee and Wolpoff 2003), now a widely used approach. With Rachel Caspari, she redefined longevity, moving away from age-at-death estimations, which cannot be done accurately for older individuals (Caspari and Lee 2004, 2006). In an extensive literature review, Cathy Willermet (1993) documented that only 11 percent of the reported data used by modern human origins researchers was shared in tests of replacement or continuity models (Willermet and Clark 1995). She also questioned the boundaries of the sacred species concept, suggesting that species be better modeled using a fuzzy set approach (Willermet 2012; Willermet and Hill 1997).

So when we saw that the 2015 theme for the American Anthropological Association (AAA) meetings was "Familiar/Strange," we proposed a session that focused on examining our field, entitled "Scientific Approaches to Biological Anthropology: The Strange and Familiar." We undertook the process of "defamiliarization" to apply it to our own practice (noting that to describe our scholarly activity as "practice" already can be contentious) in biological anthropology. Besides ourselves, our presenters were Sharon DeWitte, Michelle Glantz, Robin Nelson, and Adam Van Arsdale. Rachel Caspari served as discussant for the papers.

In this session, we took a critical approach to models and methods that we practitioners take for granted as "familiar" and made them "strange." We asked our speakers to reflect on these three questions to address in their papers: What happened as a result of making the familiar strange? What new insights resulted? How did this change the process and practice of your research? (Adapted from Thomson 2013.) Papers in this session covered topics such as dealing with the inherent fuzziness of past human social behavior through biological distance modeling; using established methods, such as "body counts," in human biology research; the longstanding Osteological Paradox – acute deaths by disease leave no skeletal mark, yet lingering debilitation may, through frailty, an unfamiliar approach; how the familiar thinking on markers (cultural or anatomical) and chronology (Upper or late Paleolithic) bias

our views; the balance between the incorporation of statistically rigorous methodologies in paleoanthropology and the limits imposed by a fragmentary and limited fossil record; the different intellectual traditions and center and edge modeling in the Central Asia late Pleistocene. Both ethnocentric views and unquestioned assumptions of research traditions can affect paleoanthropological model formation, and shape expectations of what we will (or should) find in the fossil record.

As it happened, the 2016 AAA theme was "Evidence, Accident, Discovery," which fit nicely as a continuation of the discussion we had started in the previous year. We proposed a second set of papers in a session entitled "(Re)Discovery of Evidence in Biological Anthropology: A Critical View." In this session, we explored what constitutes "evidence" in biological anthropology. What does constitute "evidence" in biological anthropology? Is it a physical object that can be placed in a bag and sent to the lab? Is it a part of a logical argument? In epistemology, evidence is required for factual, justified belief. Our session explored discovery, and sometimes rediscovery, of evidence and interpretations in biological anthropology. Our participants (Melanie Beasley, Virginia Estabrook, Julie Lesnik, Katherine C. MacKinnon, Ann Stodder, and Caroline VanSickle) took a critical look at the nature of our evidence, and how it is "discovered," collected, and interpreted. Ann Kakaliouras served as our discussant. Here we asked these questions: How do we reconstruct diet in the past, when large sections of the diet might be invisible in the archaeological record? What new evidence and insights can we obtain from "rediscovering" familiar nonhuman primate species? How can we integrate socially and politically contextualized interpretations of health, the bioarchaeology of care, and structural violence in the past? How can we integrate faunal evidence from paleoenvironments to reconstruct seasonality, and its impact on fossil hominins? How does a discovery of a new hominin species lead to a rediscovery of the lumper/splitter debate? How does a pelvis lead us to rediscover sex and gender?

Contributions in this Volume

The papers presented in the two sessions form the core of this volume, organized into two parts. Part I ("The Strange and the Familiar: New Landscapes and Theoretical Approaches") groups papers that critically evaluate some of our theoretical and methodological approaches, women in human evolution, the role of Central Asia in modern human origins models, the (mis)education of the public by noncritical dissemination of evolutionary studies, the concepts of insects as (not) the food of choice, and the reification of body counts.

In Chapter 1, Khorasani and Lee evaluate the incorporation (or lack of incorporation) of feminist perspectives in biological anthropology. Beginning with the presumption of a natural sexual division of labor by Darwin, they trace over time the pendulum of gender bias in scientific hypotheses about human origins. In a survey of public domain images of prehistoric humans, they document gender bias in the presentation of male and female tasks that reflect mid-twentieth-century western ideas about gender roles.

In Chapter 2, Glantz examines how the Central Asian Paleolithic record is characterized as secondary to Europe, Africa, or the Middle East. Glantz argues that the Out of Africa model of modern human origins acts as a transhistorical metanarrative that marginalizes the evidence from many regions. The evidence from Central Asian sites indicates highly locally variable micro-niches whose utilization depended upon population pressure, niche productivity, climatic and geographic constraints, and decisions by individual actors. She argues that treating Central Asia as a marginal periphery mischaracterizes its value as a refugia. Neighboring regions would also influence hominin groups, and modeling the interactions between these would help us better understand the interrelationships between Neandertals, Denisovans, and anatomically modern humans.

In Chapter 3, Kissel evaluates how scholars, public intellectuals, and popular authors currently frame narratives about human origins within the context of evolution. Public misunderstandings about the nature of genetic ancestry tests, for example, illustrate how the human ancestry narrative is highly personal and political. He critically assesses so-called anthropological hypotheses in the popular media about the nature of ancestry, violence, and progress. Kissel urges biological anthropologists to prioritize activities that connect students and the public to new narratives that infuse anthropological data with just and accurate representations of human nature.

In Chapter 4, Lesnik explores why westerners do not generally eat insects, which are a predictable and valuable source of food in many parts of the world. She expands on her research on the strong link between latitude and insect consumption by incorporating western cultural effects such as colonialism. The centuries-old western bias of insect consumption as bestial, primitive, and unsavory underlies more recent anthropological interpretations of insects as fallback foods, which nutritionally they are not. Her study of global data regarding insect consumption indicates that the strongest predictor of insect consumption is latitude – tropical areas have an abundance of species, increased numbers of insects, and increased consumption. European colonial intrusions into these areas brought colonizers in contact with insect-consuming indigenous populations, reinforcing the western bias against insect eating. Decolonizing this bias, Lesnik says, will increase inclusivity for indigenous peoples.

In Chapter 5, Nelson argues that the scientific racism infused throughout our discipline's origins biased the field toward more quantitative research. She traces this bias through biological anthropology's continued emphasis on measuring bodies. Nelson advocates for a mixed-method approach, a more balanced approach to human biological research that integrates quantitative research with, rather than at the expense of, ethnography and long-term qualitative research that provide both vital contextual information and a postcolonial research participation of the study subjects.

Part II of this volume ("[Re]Discovery of Evidence: New Thinking About Data, Methods, and Fields") groups chapters that explore the new ways to think about concepts of disability, frailty, and health, nonmetric data, bias toward complete

specimens, and reconstruction of *Australopithecus anamensis* paleoenvironments. In Chapter 6, Stodder and Byrnes discuss ways paleopathology and bioarchaeology are reintegrating. In the past, as bioarchaeology has trended away from studies of individuals toward population studies, descriptions of pathological lesions indicative of chronic conditions were not included in many studies. Stodder and Byrnes track the increasing popularity of several approaches that link paleopathology to biocultural adaptations applied in bioarchaeology: the evolving stress model, which looks at the effects of cultural stress factors like structural violence on the skeleton; the life course approach, which links individual frailty to population health measures; and osteobiography, which studies an individual's remains in great detail to tell a phenomenological story. Finally, they call for more focused research on disability and care as cultural factors influencing health and stress in past populations.

In Chapter 7, DeWitte revisits the familiar bioarchaeological approach of viewing skeletal stress markers as evidence of frailty and poor health. She engages in a deeper, more fine-grained analysis of skeletal lesion patterning to uncover the relationship between higher socioeconomic status and stress as presented by healed lesions. This test of the Osteological Paradox reflects the increased survivability of higher-status individuals despite this group's higher proportion of lesions overall.

In Chapter 8, Willermet, Daniels, Edgar, and McKean explore a new statistical technique to analyze ordinal nonmetric data. Dental morphological trait data are recorded as degrees of expression of a particular genetic trait. Generally, these categorical data are dichotomized to create a frequency of presence, which is then used in biological distance statistical techniques. However, dichotomization causes loss of important measures of trait expression diversity. They propose a new technique, rank estimator of grade differences (RED), that does not require dichotomizing. They perform two tests on simulated and orthodontic data to test the RED method against mean measure of divergence (MMD) and pseudo-Mahananobis D^2 (pD^2). The RED technique performs as well or better; they discuss the advantages and limits of this new technique and encourage its addition to our statistical toolkits.

Van Arsdale examines the paleoanthropological application of the concept of analytical "rigor" in Chapter 9. If a "rigorous" test means restricting our analysis to larger and more complete samples, this could bias our study samples. Van Arsdale categorized 102 hominin fossils by degree of presentation and counted the frequency with which each was mentioned in published journals over a 28-year period, documenting a significant bias in the reliance on well-preserved fossils. This is a troubling result, as these fossils are not evenly distributed across time and space. He considers what effect this can have on our understanding about the past.

Beasley and Schoeninger, in Chapter 10, examine the link between climate, the environment, and hominin adaptations. Climate evidence is often not sufficiently localized to provide the evidence needed to link specific environmental reconstructions to the period when hominins shifted toward bipedalism. *Australopithecus anamensis* habitat and diet has been reconstructed using $\delta^{13}C$ to be a mixed mosaic habitat, but less certain is whether they utilized a particular niche within that habitat (dense woodland, open savanna, or fringe ecotone). Studies on chimpanzees, who

also live in a mixed mosaic habitat, indicate $\delta^{13}C$ ratios are inaccurate predictors of niche utilizations when individuals are living in low-rainfall regions. Beasley and Schoeninger use $\delta^{13}C$ ratios from chimpanzees to compare their relationship to rainfall data. Results highlight the importance of relying on multiple types of data to reconstruct paleoenvironments and illuminates the paleoenvironments likely to be utilized by *Australopithecus anamensis*.

The contributions in this volume interweave different areas of growth in the field. Through this process of self-reflection, we point to where we see the future of biological anthropology is heading. This future, we believe, includes robust public advocacy for social justice.

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