

## VITAL TOPICS FORUM

# How Academic Diversity Is Transforming Scientific Knowledge in Biological Anthropology

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In recent years, many biological anthropologists have taken center stage in national debates concerning sexual misconduct, the need for greater integrity and safety in the field and workplace, sex and gender equality in the sciences, and race and racism globally. The primary professional organization of biological anthropology in the United States, the American Association of Physical Anthropologists (AAPA), has also made unprecedented efforts to increase diversity in the discipline. Such developments have been important for increasing the inclusion of underrepresented groups in anthropology (and science more broadly) and are crucial to broadening access and increasing justice within biological anthropology. However, while strides have been made toward improving representation among historically marginalized groups in science, less consideration has been given to the significant intellectual shifts that diversification brings, offering new kinds of questions and theoretical perspectives, new approaches to research design and ethics, and new insights and interpretations of data—leading to the production of new knowledge within biological anthropology and anthropology more generally. Diversity is not just about visibility and representation; it is also about making a new and vital science together.

In this Vital Topics Forum, we draw on the voices and insights of scholars from biological anthropology and beyond to

explore the ways that scientists from diverse backgrounds are producing new, exciting, and essential kinds of knowledge about humans and nonhumans; the connections between bodies, biology, and culture; and the politics and practice of science. This collection of essays grew out of a high-profile symposium at the eighty-sixth annual AAPA meeting in 2017, where researchers came together to consider the growing contributions of historically marginalized scientists and how they are reshaping knowledge within biological anthropology. During this symposium, every seat in the conference room was filled, with attendees crowded onto floors, along walls, and into hallways. The symposium was received with tremendous support and enthusiasm because it created a space to explore connections between academic representation, research ethics, methodological practices, and knowledge production, and it has been called a turning point for the field.

This Vital Topics Forum builds on discussions that emerged from that symposium and considers the implications and future directions for biological anthropology. Contributors come from diverse sex, gender, class, racial, ethnic, and religious backgrounds, and they represent a wide array of professional experience and expertise, ranging from graduate students through full professors as well as research areas spanning primatology, paleoanthropology, genetics, human biology, and bioarchaeology. In these essays, we highlight the advantages of doing situated scientific research, demonstrating how better science can be produced through the inclusion of scientists and perspectives that have historically been marginalized in biological anthropology. Together, these essays show how our collective efforts to change *who we are* entails expanding and reconstituting *what we know*.

# Situating Science: Doing Biological Anthropology as a View from Somewhere

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Philosopher Thomas Nagel (1986) famously referred to objectivity as “the view from nowhere,” where detachment from the world one seeks to understand is taken as the foundation of reliable knowledge. This notion of generating knowledge from a detached, objective, and apolitical position has long been considered fundamental to the scientific method, and claims of unfettered objectivity often underlie assertions that science is superior to other forms of knowledge production. However, scholars in feminist, queer, and Indigenous science and technology studies (fqiSTS) have long questioned the particular frameworks of objectivity upon which science stakes its privileged access to knowledge. Notably, Sandra Harding (1986) has argued that claims of neutrality, where scientists deny or minimize the ways that their values shape their work, constitute “weak objectivity.” Working from a position of weak objectivity means ignoring the sociohistorical contexts through which scientific knowledge is produced, and it represents a failure to recognize that scientific truth claims are always contingent. Given the political contexts and consequences of these claims for historically oppressed peoples, who have so often been both the substance and brunt of scientific advancement, we regard scientific claims to political neutrality as “moves to innocence” (Mawhinney 1998).

How, then, can we move from innocence to responsibility in biological anthropology? Harding’s formulations of “strong objectivity” and “standpoint theory,” as well as Donna Haraway’s (1988) notion of “situated knowledge” and Kim TallBear’s (2014) articulation of “standing with and speaking as faith,” suggest a set of related paths forward. These fqiSTS scholars variously argue that acknowledging our locations and attachments constitutes the beginning of more responsible and reliable knowledge production. Importantly, recognizing and working from our own subjectivities does not mean adopting a position of extreme relativism, in which we can never really know anything about the material world. Instead, it is to become more conscious and more explicit about the factors and relations that shape how we know

what we know (Barad 2008). Given the long-standing interventions by fqiSTS scholars and others, we consider the decades-long debates about whether science provides a “view from nowhere” to be over: it doesn’t. Science is always of culture—it is always a view from somebody’s somewhere, whether or not that is made explicit. While mainstream science has busied itself for centuries on a pilgrimage to “nowhere,” we ask: How can we center situated perspectives and embodied knowledges as a way to get “somewhere” in biological anthropology?

Biological anthropology has been instrumental in producing scientific knowledge about humans and nonhumans, but historically, that knowledge has been framed by classist, patriarchal, heterosexist, white supremacist, and settler colonial agendas. These politics were embodied in many of the founding fathers of our field and live on in some of their intellectual descendants, resulting in the exclusion and marginalization of other bodies and voices in our field. Because of this history, we have inherited a flawed, intentionally circumscribed, and incomplete scientific corpus on human and nonhuman variation, which has had ramifications across scientific, social, legal, and political spheres. For example, genetic studies of Indigenous peoples in North America have long been shaped by settler colonial fixations on biological purity. Notions of purity do not align well with the criteria of lineal descent commonly used to define membership in tribes and First Nations, and they do not account for the social, political, and legal contexts that further shape tribal belonging (TallBear 2013). The emphasis on purity over tribal belonging produces a biased, incomplete picture of genetic diversity in Indigenous communities. These practices also work against the survival and sovereignty of Indigenous peoples, lending an appearance of scientific legitimacy to the flawed notion that genetic “mixedness” is making Indigenous peoples disappear. Further, because settler society broadly lacks a meaningful understanding of how tribal belonging works, genomics has often enabled the misappropriation of Indigeneity through genetic ancestry testing (Kolopenuk 2014; Leroux 2018; TallBear 2013).

Biological anthropology has fraught histories with people of color as well. Many of the founding fathers of our field—Johann Blumenbach, Samuel Morton, Aleš Hrdlička, Earnest Hooton, and others—dedicated much of their careers to cataloging what they saw as innate racial difference and to searching for biological inferiorities in the bodies of Indigenous, African diasporic, Latinx, and other marginalized

peoples to explain racial disparities in body composition, health outcomes, and behavior. Notably, while much of the science emerging from white, male, and elite researchers and institutions has long sought to locate blame for these disparities in the bodies of others, African American and Latinx researchers in our field have more commonly called attention to the ways that colonialism, race and racism, and structural inequalities have negatively impacted communities of color (de la Cova 2011; Montoya 2011; Nelson 2009; Rankin-Hill and Blakey 1994). Their research often shifts our focus from innate biological differences to the lived conditions of racial harm in which bodies emerge.

Assumptions of binary sex and gender have also profoundly structured studies of human and nonhuman genetic, morphological, and behavioral variation in biological anthropology. While science is only beginning to appreciate how variation across sex, gender, and sexuality are not well described by a simple male/female binary (Ainsworth 2015), this “discovery” is a basic fact of life for many people within LGBTQ2IA+ communities. The preconception of a male/female binary in science has always been at odds with the bodies and lives of many Indigenous, queer, nonbinary, intersex, trans, and gender-nonconforming people, among others.

These brief examples demonstrate how the lack of marginalized voices has deeply skewed the production of knowledge in biological anthropology. Had biological anthropology historically placed greater value on the embodied knowledges of Indigenous, black, Latinx, queer, and other people, and had we answered recurrent calls to train more scientists from marginalized communities (Antón, Malhi, and Fuentes 2018; Blakey 1989; Cobb 1942; LaRoche and Blakey 1997), we might have arrived at a less harmful and far more knowledgeable place. Instead, while students from underrepresented backgrounds often have higher rates of involvement as undergraduate researchers, they leave science in greater proportions than their white, cis, straight, male peers (Antón, Malhi, and Fuentes 2018; Hughes 2018). The reasons for this are still debated, but this much is clear: it is tough to survive in a field that commonly disregards, disrespects, or subjugates one’s existence, and there are consequences that come with silencing these voices in science.

All too often, the knowledge and insights of marginalized scholars are dismissed in the name of scientific objectivity, with many scientists resisting what they regard as the inappropriate politicization of science. This perspective is predicated on the assumption that science is otherwise neutral and apolitical—that the lab coat can and should erase the person wearing it. But while some scientists cling to that empty lab coat as the only way to achieve the “view from nowhere,” what they end up defending and demanding conformity to is the view of the world from their own social locations. Their science is already a view from somewhere, and that somewhere is already deeply political—whether they recognize it or not. If you don’t believe that biological anthropology has always been political, listen to what In-

digenous, black, female, queer, poor, or other historically marginalized people have long said about how our field affects the historical, social, and legal spheres that shape their lived realities. Any honest account of our history shows that it has affected—and continues to affect—their lives, often in harmful ways.

For the sake of greater justice, for the sake of less myopic science, and for the sake of creating a less harmful future, we need to make more room for other voices in biological anthropology. We must do this in a way that moves beyond the empty neoliberal diversity initiatives of the academy that aim to fill its halls with other bodies without making room for other knowledges. Diversifying biological anthropology will never be enough if it comes without the possibility of radical ethical and epistemological reinventions. However, moves to diversify our field and the knowledge we produce must also proceed without commodifying historically marginalized scholars, without the presumption that every historically marginalized scholar needs or wants to do this work, and without looking to them to “save” biological anthropology as we know it. The work of science justice isn’t just if it comes with conditions and without consent. As we move onward, we must recognize that this work requires collective and intersectional action; the labors of making this field better fall to all of us who have inherited it, not just historically marginalized people. True science justice opens the door to other possibilities, to the emergence of new knowledges and new risks, and it does so with full knowledge that the way onward will not be perfect and that we will not come through this unchanged. What is at stake here is the very identity and purpose of biological anthropology. Biological anthropology has always been a view from somewhere. It is time for views from somewhere else.

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## Identities, Experiences, and Beliefs: On Challenging Normativities in Biological Anthropology

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If our goal is to produce better knowledge about humans and nonhumans, as well as the connections among bodies, biology, and culture, then biological anthropology needs to engage diversity more critically, intimately, and courageously. Such an assertion does not stem from academic political correctness or a left-wing pessimism about the Enlightenment (as recently claimed by psychologist Stephen Pinker and philosopher Jonathan Haidt). Rather, recognition of our need for the inclusion of diverse selves, experiences, and ways of knowing stems from research and lived experiences regarding the negative impacts of the absence of diversity (Antón, Malhi, and Fuentes 2018). Diversity and inclusivity make our science better.

I am a scholar, twenty-five years post-PhD, who grew up in and across multiple Lantinx worlds of the United States, who has spent a majority of his career as both an administrator and researcher pushing for inclusivity, and who has witnessed substantial racism, sexism, and bullying in the academy. It is in that context that I offer a few brief examples of deleterious normativities in biological anthropology to illustrate where and why inclusivity and diversity need to be augmented and engaged. These center on biases in our understandings of the past and of evolutionary processes, leading to flawed reconstructions of human evolutionary history

and promoting misconceptions about human and nonhuman primate behavior and societies.

First, the dominance of heteronormativity and assumptions about the basal nature of the nuclear family in approaches to human evolution is a problem. Whether making arguments for male and female behavior based on assumptions about heterosexual reproductive competition (Muller and Wrangham 2009), arguing for the naturalness of the monogamous nuclear family unit (Chapais 2008; Lovejoy 2009), or interpreting past social structures through the lens of contemporary gender patterns, the basal assumptions in many human evolutionary studies ignore nonheteronormative patterns and possibilities. This is despite abundant published evidence for a core role of nonreproductive sociosexual behavior and diversity in sexuality in humans and across many other primate species (Meredith 2015). It also persists despite a lack of clear material evidence of contemporary gender roles in preterminal Pleistocene times (Fuentes 2017a) and abundant physiological, behavioral, and historical evidence divorcing contemporary nuclear family structure (and marriage) from primate pair bonding. Furthermore, these presumptions about early humans do not take into account ethnographic work showing the diversity in sexuality and family structure in contemporary human populations (e.g., Denetdale 2017; Tallbear 2014). Obviously, sexual reproduction is critical. However, abundant data refute simplistic overlays of heteronormative assumptions onto human evolution. Part of this problem merges from the lack of non-"traditional heterosexual" voices in the

development of evolutionary theory and analyses. The majority of senior researchers publishing books and prominent articles on human evolution are white, straight, and male. Key voices need to be more diverse if we want the best quality science.

A second deleterious normativity is perceptions of neoliberal capitalism as a “natural” system. Cost/benefit models and analyses are the primary context for discussion of evolutionary systems and behavioral ecology, and there is an assumption that market processes are the appropriate model for biological processes. This creates a false equivalency between “free market” philosophy and evolution through natural selection and is contrary to what we know from the actual study of ecological and developmental systems and symbiosis across organic evolution (Weiss and Buchanan 2009). Such biases lead researchers to reject or ignore other possible relationships, processes, and patterns, especially those that give equal or greater weight to cooperative rather than competitive interfaces, and to other process of evolution in addition to natural selection. Here, increased diversity in class, race, gender, and rural/urban background, as well as different nationalities in researchers and research teams, would enable more diverse lenses/perspectives facilitating engagement with specifically cooperative or noneconomic models for evolution/behavioral ecology. Such diversity of perspectives can foster connections to developmental systems approaches and symbiosis as relevant to human/primate evolution (Roughgarden et al. 2017) and moves past exclusive reliance on standard evolutionary models through engaging with the extended evolutionary synthesis (EES) (Fuentes 2017b; Zedder 2018).

A third toxic normativity is the underrepresentation of people of color in biological anthropology, which produces a context of global whiteness in labs, fieldwork, and theory, restricting the effectiveness and scope of our research (Antón, Malhi, and Fuentes 2018). This manifests in erroneous assumptions about flat landscapes of discrimination and access in the academy (e.g., that “merit” is the primary force in play in performance and promotion), in more frequent confirmation bias, and in continued connection to the racist history and practice in the infrastructure and dogma of our field (e.g., Marks 2017, and the retention of “physical” in the main biological anthropology association’s name). This can affect the way the fossil record is read in the context of movement and “colonizing” processes (replacement, conflict, and settler tropes; see Athreya 2018), in seeing morphological diversity as atypical or problematic instead of as default in *Homo* (Scerri et al. 2018), in seeing “species” and morpho distinctions as the primary features of relevance in interpopulation interfaces, and so on. Such views can lead to the continued reading of the genome with racial bias (as “naturally” divided into three to five broad geographic units) and to evolutionary models that are built within historically influenced (and racialized) ideological frameworks presenting restricted landscapes of interpretation and inquiry (Torres Colon 2018). To challenge this, we need to

increase diversity across the entire range of practitioners in the discipline, bringing more lived experiences, ideas, perspectives, and possibilities for innovative outcomes (Antón, Malhi, and Fuentes 2018).

It is bad science to not recognize the shortcomings imposed by these erroneous normativities and even worse science not to challenge and change them. Biological anthropologists must act to increase representation of diverse groups, and develop and incorporate more inclusive processes and perspectives into our research. Departments need to make such actions a priority; funding agencies need to provide money for such endeavors; and individuals, especially those in positions of power (e.g., tenured, full professors), need to be vocal and active in promoting and facilitating the dismantling of these structures of violence in our discipline.

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## Hypervisible and Human

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It is hard to ignore the hypervisibility of your Blackness. It is more pronounced with each advancing step in the academy (Thomas and Hollenshead 2001). As you become more able to perform the practices of these most elite spaces, you are also more likely to stand out. In this way, the experience of becoming an expert is juxtaposed against the reality of having one's peers continually reiterate that you are in fact quite different. The fascinating thing about Blackness is that it is never hidden. As so aptly noted by Du Bois more than one hundred years ago, we are aware of both ourselves and the ways that we are being perceived by others (Du Bois and Marable 2015).

This hypervisibility of Blackness is a cornerstone of physical anthropology, and it continues to shape both the topical foci of our studies and who gets to conduct them. While some early scholars had begun arguing for more complicated race concepts, the mid-twentieth century heralded an enduring disciplinary shift from a focus on race to a focus on adaptation (Washburn 1951). Although this change may have represented a positive step for the field, the current lack of scholarly diversity within our discipline begs the question: Did this turn toward adaptation and away from a reification of race concepts come too early or too late? Today, we neither properly interrogate or engage with the current social manifestations of "race science" nor do we tackle the continuing legacy of our origins. The roots of the discipline are everywhere, from the name of our national organization (the American Association of Physical Anthropology, although "physical anthropology" does not properly encompass the extent of work being done in the field) to the names of our prizes (the Aleš Hrdlička prize comes to mind). Our origin story casts a dark pall over the discipline and compro-

mises our ability to recruit and retain students of color who both enjoy and thrive in undergraduate coursework (Antón, Malhi, and Fuentes 2018).

However, attributing the current lack of diversity to the long shadow of our racist forefathers does a disservice to the experiences of scholars of color who are currently working in the field. It is well documented that exclusionary practices, beginning in graduate school and continuing in the professoriate, isolate scholars of color and compromise their ability to advance professionally (Gutiérrez y Muhs et al. 2012; Matthew 2016). Although these (sometimes) subtle exclusionary practices begin long before graduate school, it is during this training period that rising scholars of color are pushed out of the discipline. Advisors say that they want graduate students who are creative, yet systematic in their thinking about research projects. However, what is demanded is a written and physical demonstration of rigor, intelligence, and enthusiasm performed in disciplinarily specific and culturally coded language. What counts as an appropriate research topic has been dictated and passed down between generations of scholars who were mostly older white men. These narrow perspectives have impoverished the field both theoretically and empirically. Research by Black scholars is often decried as "me-search." We are willing to trust white scholars about the cultural practices, beliefs, and dreams of communities of color over scholars of color whose lives were built in these spaces. We call this objectivity. Within anthropology, Blackness remains othered under the microscope, while whiteness (particularly "American" whiteness) remains uninterrogated.

The idealization of an objective and apolitical science built on rational thought and deliberation has a face, and that face is white and male (Anderson 2015). This is particularly true in a discipline that from the outset was intimately involved in the creation of race mythology. Theory in early physical anthropology was used as a rationalization for slavery and eugenics. These same ideas populate policy pieces

that seek to justify decreased access to resources and racially discriminatory legislation impacting everything from housing to health care.

I study parental investment and child thriving in post-colonial and diasporic spaces. My grandmother left Jamaica and arrived without papers to Canada before moving to the United States. She met and married a Black American WWI veteran and worked as a domestic to provide for her five children. Her survival is both exceptional and represents an entirely typical human experience of migration and childrearing. My research emerges from this familial history (Collins 1986). I want to understand what people have to do to survive these challenges and what differentiates survival from thriving. As a Black woman in the academy, I am also acutely aware of the distance between myths of meritocracy and lived experiences of racialized and gendered discrimination. Thus, I also explore hierarchical power structures, experiences of trainees, and sexual harassment and assault in field research. These are areas of study in which I choose to invest my intellectual energy and my time away from my family.

In addition to these formal areas of study, I am also apparently becoming an expert in issues around diversity and inclusion. This is not by choice. This is the labor that faculty of color across the country are assigned when they arrive on campus—almost always one of a few. This is work our white colleagues rarely have to do, and this is work that is never properly compensated in money or credit toward tenure and promotion. Many of us do this work out of a sense of community and responsibility. Some of us do this work because the power structures in university settings do not allow us to say no, despite all the encouragement from senior faculty, administrators, and higher education blogs to do so. This is the downstream effect of the hypervisibility of Blackness. This underappreciated labor makes the gatekeeping experienced in our actual areas of expertise feel ever more restrictive. The policing of Black minds and the demands for labor around identity make for a treacherous climb toward seniority and career stability.

Trends within anthropology mirror those of the broader academy. At each step in the academic ladder, the crowd of scholars from underrepresented communities thins. Why do we lose people? The intellectual hegemony of elite white cultural practices, a lack of tolerance for difference, and demands that we perform our identities make academia unhealthy and often unbearable. Yet, I am not a first-generation university student—or even a first-generation anthropologist. But, and still, I was a Black girl raised both in and on the margins of poverty for much of my childhood. Turns out there is little space in anthropology for those of us who know so much about all ways that one can be human.

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## "Until the Brains Ran Out": White Privilege, Physical Anthropology, and Coopted Narratives

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This was the first skull of a fullblood Yaqui that could be collected. There was no such specimen in any institution, and none as good might be found for a long time to come. So, decided to take what remained of the head with us . . . Thus, for three days

until the brains ran out, when the whole skull was filled as well as surrounded with [fresh] hot sand, which subdued the smell considerably; but it was still necessary to carry the specimen under the wagon.

—Aleš Hrdlička<sup>1</sup>

The quote above, by Aleš Hrdlička, founder of the *American Journal of Physical Anthropology*, captures what many marginalized people think of "biological anthropology" or, worse yet,

“physical anthropology.” I was recently reminded of this in an email regarding a new project: “What you may not understand about New Mexico is there are many outsiders that have come in throughout the years (anthropologists, historians, architects, art historians, writers, poets and new-agers. Pretty much in that order.) and try to take ownership of our local and regional history and culture.”

My work on violence is as much about correcting the positionality and white privilege of our sordid past as it is about understanding the poetics of violence of specific populations. Methodologically, I am a trained bioarchaeologist who specializes in trauma-pattern recognition, specifically sharp-force trauma (cutmarks and butchery marks). My work is grounded in a biocultural framework that infuses trauma analysis with violence theory to understand the poetics of violence in the archaeological past and the ethnographic present. It transcends space and time to consider the unique cultural circumstances that create and maintain systemic and episodic violence while recognizing the ethical dilemmas bound to privileging particular narratives. The history of physical anthropology is replete with the exploitation of Indigenous and marginalized peoples by white men like Hrdlička. Their collection practices and publications had performative powers to normalize the cultural and structural violence of governments (establishing laws and policy) all over the world and is one reason minority scholars are needed.

The inclusion of underrepresented groups in biological anthropology and within the American Association of Physical Anthropologists has shifted epistemological frameworks and pedagogical approaches, yet the level of engagement and expectations placed on minority scholars come with hidden burdens and unrealistic expectations. The unrecognized and unrewarded labor performed by minority faculty is not valued by our academic institutions. It is often referred to as “invisible” because it does not impact decisions regarding reappointment, tenure, or promotions. In addition, we are often burdened with being the social conscience of our institutions—that is, as long as we don’t speak too loudly or forcefully. Yet we take on these burdens because we realize that, for better or worse, we are in a position to challenge the stereotypes and hegemonic narratives of the social identities, gender, ethnicity, or any combination thereof that we represent. Minority faculty and researchers have another obligation: to be role models, mentors, and guides for students as they navigate the labyrinth of higher education. The problem is there aren’t that many of us. Limiting the number of mentors for minority students simultaneously limits their chance of success, and the cycle repeats.

A *Chronical of Higher Education* article (Myers 2016) titled “Where Are the Minority Professors?” examined the demographics of 400,000 professors at 1,500 colleges and universities. For professors of all ranks at high-research-profile institutions, the article found that 73 percent are white, 13 percent are Asian, 3 percent are black, 4 percent are Hispanic, and 0.35 percent are American Indian. Looking at tenured full professors, the article found that

82 percent are white, 10 percent are Asian, 2 percent are black, 3 percent are Hispanic, and 0.2 percent are American Indian. This is important because the positionality of minority scholars has the potential to offer unique and vibrant ways of asking questions and driving new research in biological anthropology.

To me, a Mexican-American man, violence is not an abstraction or simply an expression written on the bodies of those with whom I work. It is a lived experience with physical and emotional realities that I carry with me every day. Certainly, the structural violence built into the tenure system is something all minority faculty know all too well. The numbers speak for themselves. In 2012, I wrote about my life before the academy: “My relationship with violence has always been complicated. I was six years old when my father first put me in a boxing ring, and to this day my preferred method of stress reduction is the heavy bag that hangs in my basement.” My hands have boxer’s fractures (a break in the neck of the metacarpal). In addition to my personal experiences, I carry the weight of the sights and smells of the recently dead with whom I work in a “lockbox” that sits perched on a precipice in my mind’s eye. I open it in moments of reflection for teaching or research and just as quickly close it, putting the worst part of the world out of sight so I can function around those who have little to no idea what I have experienced. This reality informs my questions and drives my research to have a meaningful impact on the world.

Without a doubt, my work has been influenced by my complicated relationship with violence. My grandmother sought safety and refuge for her sons in the United States. In 1951, just south of Río Bravo, Tamaulipas, México, her husband was the victim of a revenge murder. He died in front of his six-year-old son of machete wounds on his way to a doctor’s home. I was honored with his name. That violent family history frames my questions (including asking about the intrinsic culture systems that normalize and maintain violence) while creating a level of community trust. This history provides me with a unique skill set that informs my research and teaching.

I am drawn to projects in which I can facilitate reciprocal relationships with the stakeholders involved and affect change through my scholarship and advocacy, as well as political engagement through policy and the courts. Examples of this include being part of the international repatriation of Yaqui remains from the American Museum of Natural History in New York to the Yaqui tribe in México. Also included is the analysis of the circumstances of the disappeared and murdered patients at Montes de Oca, Argentina’s national mental asylum; the cartel violence in Ciudad Juárez; and the autoethnography of the death of my grandfather and the political violence along *La Frontera* (the border). I recently began a project excavating Belén New Mexico’s first Catholic church, Nuestra Señora de Belén (Our Lady of Belen). The Genízaros (freed captives/slaves from various tribes) along with the Spanish, Mestizos (mixed Spanish and Indian), and



Indian slaves became the residents of the mission pueblo of Nuestra Señora de Belén. The fundamental goal of this work is the recovery of the history of Belén's colonial church and plaza complex and the community that utilized it. This work will also result in a peaceful and protected final resting place for those buried first at the now destroyed Catholic church. Finally, I am an expert witness in federal court and testify on behalf of Mexican nationals seeking asylum and citizenship in the United States.

Biological anthropologists no longer travel in wagons with decomposing heads, but we still have the power to swoop in and take data to our institutions with the sole purpose of benefitting from the publications produced. My positionality has afforded me opportunities to work with communities about violence in the present and the past. It has given me the opportunity to testify in federal court as an expert witness to do what I can to keep people from being deported back to violence-ridden lives in violence-ridden countries. In short, I credit my family history—my

history—with teaching me long before I was an academic that the communities with which I partner are not there to serve me; I am there to serve them. I am not sure I could say that and truly believe it if I didn't have the background I do, if I didn't bring with me to the academy a tattered and disruptive family history.

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1. J. Andrew Darling, personal notes on Aleš Hrdlička Papers, National Anthropological Archives, Smithsonian Institution. Email message to author, 2007.

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## "But You're Not a *Real* Minority": The Marginalization of Asian Voices in Paleoanthropology

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If, as Misia Landau (1984) posits, human evolutionary models are essentially narratives, who gets to write that narrative? In whose voice is it told? Whose voices are elevated and whose are diminished? This prerogative decides the gatekeepers of our field, those who get to determine what is "true" science.

One bias I've observed throughout my career in paleoanthropology is that scientific research conducted by scholars from Asia is often ignored, questioned, dismissed, and not integrated into mainstream discussions of human evolution. I began noticing this as a graduate student. Knowledge produced by prehistorians from Eastern Eurasia required vetting by or collaboration with white scholars before being accepted. Even the regions themselves were marginalized in discussions of our evolutionary history. It was as if everything meaningful that happened to make us human took place west of Asia. As an Indian American woman, this bias has informed every aspect of my career over the last twenty-five years, from the words I felt safe to speak as a graduate student to my current research, teaching, and mentoring at a large public university.

Share the experience of entering academia through my eyes for a moment:

*You find yourself in a room of people whom you have been taught are authorities. They possess the traits you have been taught to associate with the commanding of knowledge. They are male, deep-voiced, and of European extraction. They lecture on the realities of human evolution, dismissing the data from China, Indonesia, and India as not trustworthy. They sit at the heads of seminar tables and mock the scientific narratives that Asian scholars have developed, calling them ethnocentric. They assume that European burials, art, and stone tools are universal evidence for intelligence and humanness. But in your world, it's not a foregone conclusion that burials or tools indicate complex thinking because in India, so many cultures do NOT bury their dead, and so many daily activities do NOT involve tools that these authorities call "complex." You wonder why Darwin is deified for daring to declare that humans are a part of nature—don't most worldviews recognize the continuum between humans and other life forms? And most of all, when leaders of your field put down colleagues from Asia, you think about the many times that your parents have been talked to in a condescending tone because of their short, dark-skinned, soft-spoken presence, even though they are both brilliant scientists. Their brilliance looks different here in their adopted homeland, so it is often not recognized. But because of them, when you visit with colleagues in China, India, or Indonesia, you connect immediately with their voices, the ideas they share, their scientific method, their body of knowledge. You relax, feel safe to speak, and feel heard. But here, you keep silent. The authorities take up the space. They may yield space to you, but only if you make them comfortable. You may look different, but you are not permitted to remind them that you THINK differently.*

This is what it looks like to silence a voice. The tacit rule of engagement for Asians in America is that we are permitted

to *look* different, but we are not permitted to *be* different. The offensive phrase “model minority” is used to pit us against other minorities and backhandedly compliment us for validating the myth of meritocracy on which the American mainstream rests its ideology of privilege (Lee 2015; Suzuki 1977). I am supposed to adhere to a specific social contract: do not remind people that I am not white, that I was not raised with a Western worldview, that I do not view Asia as remote, exotic, or stagnant. But it is not the Other to me. It is Self.

In the study of human evolution, scientists from Asia often have their voices, perspectives, and ideas silenced through the criticism that they are ethnocentric or nationalistic, rendering their scientific contributions suspect. In a recent *Nature* piece on the evidence for a recent African origin of Chinese versus long-standing evolutionary continuity in East Asia, a US scientist (anonymously) criticized support for continuity this way: “The Chinese—they do not accept the idea that *H. sapiens* evolved in Africa . . . They want everything to come from China” (Qiu 2016). In other words, Asian scientists are seen as incapable of rationally interpreting the evidence. Yet rarely have I seen my US colleagues critically examine their own ethnocentric biases. The metanarrative in paleoanthropology is that Westerners are objective, while Asians are blinded by their nationalism.

As a result, models of human evolution have been constructed, and continue to be discussed, in an echo chamber. Eurocentric biases and Euronormative assumptions aren’t recognized because the gatekeepers of paleoanthropology nearly universally share them. But the seeming near universality of observations and assumptions upon which we rest our evolutionary models actually reflects the lack of diversity in paleoanthropology and the clear power structure that privileges Western knowledge. It is not simply the result of the positivist strength of our scientific method. The *facts* of human evolution are largely undisputed: everyone agrees when a fossil is a fossil. The disagreement emerges when we *interpret* the fossils, and these interpretations are always culturally embedded. If we dismiss the narratives that develop out of other value systems and scientific processes, we’re dismissing entire groups of voices and perpetuating a Euronormative science.

Having been raised by Hindu parents who were subjects of British colonial rule in India, I see the Out of Africa model as essentially a retelling of the European Biblical origin story that was invoked to justify colonialism. It tells of a single evolutionary event that produced a pure (modern) human population, which then dominated the globe because of its uniquely superior technology, intellect, and manifest abilities to dominate all environments. The Modern Human Origins research program seeks to identify this event (which occurs along a single linear trajectory) in all regions of the Old World. This model is premised on Western notions of linearity (versus cyclicity) and on constructed binaries (archaic versus modern; primitive versus complex; species

versus population, extinction versus survival) that are viewed as objectively universal, definable, and identifiable in the fossil record—even though scholars from non-Judeo-Christian traditions have an entirely different set of starting assumptions and observations (e.g., Kaifu et al 2008; Korisettar 2007; Wu 2004).

The long-standing practice of privileging Western science is deeply consequential for scholars of Asian extraction who dare to break the social contract that expects them to conform to Western norms. Throughout my career, when my grants, publications, or conference presentations failed to echo the perceived wisdom that the Asian fossil record was largely irrelevant to understanding *Homo sapiens* origins, I was criticized as biased. The legitimate scholarly questions that I raised were dismissed; the information I could have contributed to the dialogue was silenced. For the first twenty years of my career, I consciously copied something I had heard David Bowie say about transitioning out of his Ziggy Stardust days to being a rocker: “First, get their attention, then change your image.” I laid low, worked on unsexy questions about the frontal bone, and embedded my results in a sound understanding of four-field theory. I tried to earn my bona fides as a scholar so that someday I could present my true thoughts.

It has only been in the past few years, having published “real” science, that I have felt safe in forums such as these to reveal that I think differently than those with more power, to explore critical issues in biological anthropology, and to frame my scientific interpretations with reference to European biases and marginalized perspectives. From my perspective as a bicultural woman, the gatekeeping and lack of diversity in paleoanthropology has negatively contributed to its intellectual health. Rather than move toward a meaningful understanding of the evolutionary history of our species, we have been recycling the same two culturally embedded narratives (Out of Africa and Multiregional Evolution) as scientific hypotheses *for three decades*. The very presence of an “either/or” set of hypotheses is itself an artifact of Western binaries that pit winners against losers.

This intellectual stagnation can only be corrected through a true opening of the field—and opening of minds—that embraces completely alternative worldviews. My wish is for fellow paleoanthropologists who currently sit at the table (as editors, reviewers, and tenured faculty) to understand that *being* inclusive and *valuing* diversity are action verbs. They require a fundamental change in the decisions we make and the values upon which we base those decisions. They require respecting other voices and other approaches to constructing knowledge, interpreting data, and formulating models. Western paleoanthropologists *can* let go of controlling the narrative and make space for the voices of others (see Athreya 2018). Centers and edges need not exist in science. By yielding space, we can share in the construction of knowledge and improve our understanding of our species.

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## A Parrot among John Crows: Diversity as Risk and Reward

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As a child of immigrants from Trinidad, I grew up in two worlds. At home, I was immersed in Trinidadian values that emphasized education and hard work. Outside of the home, I learned how to navigate a complex US racialized environment that does not always value the perspectives of women, much less the perspectives of black women. Vacillating between these worlds stoked my desire to inquire about how people construct their ideas about the world. In addition, moving between these spaces helped me learn how to manage my insecurities about being in places or among people that are different from me. The skills that I learned inside and outside of my home paved the way for me to become a professional anthropologist.

Working as a genetic anthropologist, I still move between two worlds. In my lab, and in academia in general, my research productivity is prioritized. In my fieldsites, my desire and ability to establish community-engaged research projects is what I value most. The expectations associated with academic life can sometimes conflict with the desire of doing community-engaged research. However, in learning to navigate my professional and personal obligations regarding my research, I learned that appreciating the diversity of backgrounds and life experiences of those around me helps to build resilience to discrimination and to make meaningful inquiries about the world. It is this appreciation for diversity that has shaped, and continues to shape, my approach to anthropology. Learning how to recognize the value in diversity

is a continuous process, one that is molded by my experiences in both academic settings and—most influentially—in my fieldwork experiences.

In summer 2011, I initiated a project in Accompong Town, Jamaica, to address the biogeographic origins of the resident Maroon community. I was interested in learning if and how genetic data could elucidate this community's oral history about their Afro-Indigenous origins and more broadly provide some insights on how African-descended peoples forged new lives and identities for themselves in the Americas. During these few months in Jamaica, I roamed the village with my collaborator, local research assistant, and my student in search of participants for my study. For every individual that eventually provided consent to participate, there were multitudes of others who declined to be part of the study. Consequently, in between enrolling new participants, I had a lot of time to consider some of the factors that shape how and why people choose not to give consent. Much of what I thought about is discussed in Ruha Benjamin's 2016 article, in which she concludes that refusals can lead to "a way to construct more reciprocal relationships between institutions and individuals" (18). One particular encounter stayed with me over the years and has ultimately shaped how I have come to understand how diversity, brought about by different life experiences and perspectives, has the potential to be transformative.

On this day, my research team and I came across a man, whom I will call Evans. Evans was just past middle age and was sitting in front of his home with his rubber-booted feet propped up, taking a rest from his morning work in the field. After introducing myself and my purpose, Evans declined to participate in the study, warning me with an aphorism: "In a

crowd of John Crows, the parrot gets shot.”<sup>1</sup> As he patiently explained, through his life experiences he had learned not to trust so easily and consequently was unwilling to provide a sample of his DNA for my project. Though I may never know the nature of his affinity to me that led him to explain his refusal at length, in making his statement, he was warning me that I too should not trust easily. As I understood it, his warning to me was that, as a black woman, I was working in arenas that have not historically been equitable to all people. Evans recognized that my participation in scientific research could potentially put me—and by extension, my study participants—in situations where, due to existing inequalities based on sex and race, I could be harmed. Though disappointed to not get a sample, I moved on with the project, though Evans’s words continued to resonate as I pursued my work.

As I reflect on what that encounter meant that day and what it means overall to my work as an anthropologist, I am more committed to thinking about positionality within genetic research. Here, I use the term positionality to refer to the sum of life experiences, inclusive of one’s social spaces, that mold a person’s perspective and manner of interacting in the world. Accordingly, positionality is neither a synonym for relativity nor in opposition to objectivity. Rather, positionality is the acknowledgment that one’s perspective shapes how one understands and interacts with the world and that one’s perspective is only one of many that has the potential to help make sense of the world. Standard training within genetic anthropology does not generally focus on or even consider how one’s positionality influences the types of questions that are asked or who ends up in the sampled population, or how positionality might affect interpretations of genetic data. As a direct result of my encounter with Evans, though, I began to consider exactly these types of questions more seriously as part of my research design. I have had to learn how to ask questions appropriately to get at the answers I need to address my research question. For example, during study enrollment, I ask about a participant’s birthplace as well as how a participant identifies in relation to the study population. The first question helps to ensure that I have sampled from the intended population. The second question is reflective of how a participant chooses to interact with me and is simultaneously illustrative of current ideas about community identity that might be useful in understanding sociodemographic factors that shape genetic variation within that community. In addition, the second question serves to give voice to the study community regarding who they say they are.

As for my encounter with Evans, ultimately, I believe that he was correct that who I am (or who I am not) in some instances makes me a target for negative attention within my discipline, in academia, and in the world in general. Such negative attention includes being or feeling like I am an intruder in a given situation or that I otherwise should be a spokesperson for my sex, gender, or race

when relevant issues are the topic of conversation in classrooms, faculty meetings, conferences, or other venues. This realization about potential risks due to who I am is reminiscent of Leith Mullings’s “Sojourner Syndrome” framework (Mullings 2005; cf. Collins 2002). In constructing this framework, Mullings argues that understanding the impacts of sexism and racism on health outcomes are best approached by considering the intersections of race, class, and gender. Drawing from this framework, I grapple with how the intersections of my race, class, and gender influence my science. Accordingly, I must also recognize the irony that my marginalizing factors, whether it be my race, gender, socioeconomic status, marital status, and the like, simultaneously allow me to work with people that otherwise would be overlooked within academic research. The risk of being the parrot targeted for its difference is real and is an everyday reality faced by any individual who falls outside of conventional categories within academia. I argue, however, that being the parrot among John Crows, while potentially putting me at risk of further marginalization, allows for my contributions to anthropology to expand in novel ways. Through my experiences in the field, I learned that diversity in positionality incubates new perspectives and approaches to addressing my research questions. Reflecting on Evans’s refusal and those of other potential study participants has helped me to more fully understand the sometimes-conflicting obligations of my work in academia and my desire to ensure that my research meaningfully engages the communities with which I work. I can more fully appreciate how the same reasons that I may be targeted as different are, in effect, the same reasons that make my practice of anthropology better.

If anthropologists are committed to understanding the scope of human experience, it is critical that anthropological questions are addressed utilizing diverse perspectives. Furthermore, it is crucial that the perspectives of underrepresented people are given equitable regard even if those perspectives are uncomfortable and have no apparent solutions through established anthropological paradigms on dealing with such diversity. As illustrated in the anecdote, Evans’s critique of my participation in science and my realization of the factors that allowed me to encounter Evans in the first place have all influenced how I approach anthropological genetic research. Evans’s decline to participate in my study increased my understanding and sensitivity to how other people, including potential participants, engage in the world differently from me. Through his explanation of why he would not provide a genetic sample, I could more easily conceive of how I could be viewed within the community as aligned with professions and practices that are not considered suitable for black women. Rather than discourage my research, this type of perspective strengthens my resolve to ensure that the perspectives of underrepresented communities are a consistent and strong element in my work. As illustrated in my experiences, both the encounters that end

with a sample and those that end in denial help me to more fully understand the people I work with and make my studies that much more holistic. Diversity in positionality, life experience, and thought all potentially make researchers into targets. However, these types of diversity also contribute to new and innovative ways to think about human experience and, ultimately, what it means to practice anthropology.

#### NOTE

1. A John Crow is a turkey vulture, *Cathartes aura* (see Cassidy and LePage 2002).

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## How Subjectivity Strengthens Research: Developing an Integrative Approach to Investigating Human Diet in the Pacific Northwest Coast

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Last summer, I (ACB) flew directly from Alaska, where I had been salmon fishing with my grandfather, to visit the Metlakatla First Nation in British Columbia with whom I am collaborating for my dissertation research. When I interviewed Metlakatla elders that week, we talked about diet and the way subsistence has both changed and stayed the same as Metlakatla endures across the harbor from the growing port town of Prince Rupert. We discussed fishing, smoking, and canning. I asked about the methods used in their community, wondering how they might differ from how my grandfather and I had done the same work the week before. When I was invited to have lunch with community members who worked at the community center, I smiled at the similarities between the plate of salmon and rice I ate there and the same meal we had eaten as a family on the boat. Community members discussed preparing salmon to send to family and friends who live outside of the community, just like my grandfather does for me and my family. All of these parallels reinforced to me the way the act of research is intertwined with ourselves. Salmon has been a tether to my identity as an Alaska Native. As I have moved farther and farther from my family for school, salmon caught, smoked, and canned by my grandfather has been a tangible link to them and home. Now, it seems only natural that my research in biological anthropology has come to reflect these ties. But learning to embrace the intersections between the aspects of my re-

search that are perceived as personal, political, or scientific has been a crucial part of my intellectual development as a biological anthropologist.

When I started my doctoral program, I was hesitant to join RSM's ongoing research collaboration with the Coast Tsimshian of Metlakatla. I am Tsimshian and have ancestors from "Old" Metlakatla, as I grew up calling it; conducting research in this community did not fit the models of "scientific" research I had previously been exposed to in biological anthropology. As Potawatomi botanist Kimmerer (2013, 19) describes, "science pretends to be purely rational, completely neutral, a system of knowledge-making in which the observation is independent of the observer." In the pursuit of objectivity, scientists are trained to write themselves out of their methods sections, so to speak, by ignoring how their own perspectives have contributed to the way they frame and approach their research (Harding 2015; Wilson 2008). This is especially true of scholars whose background and perspectives reflect those of the dominant majority. Reflexivity has been discussed in other subfields of anthropology (Jacobs-Huey 2002), predominantly by scholars with marginalized social identities (Kanuha 2000), but has been largely overlooked in biological anthropology (Goodman and Leatherman 1998) and other quantitative fields.

Within this intellectual environment, I was concerned that I could not generate the type of "objective" data valued by Western science if I worked in a community where I have a personal connection. I knew I would feel more personal responsibility if I conducted research in this community, if I transformed Ancestors into research subjects in a field that has historically harmed and exploited Indigenous people.

How could I do value-neutral science in these circumstances? In reality, each of us has unique values and interests that motivate our desire to do science. Over the course of our careers, exposure to new theoretical ideas, scholars, and methodologies shape how we do our research. The way we translate these experiences into practice has a direct and personal influence on our science, from the questions we ask to the ethics that guide us, the methods we employ, and the motivations that ultimately drive us. There is no objective science; every research project is subjective in unique and interesting ways that reflect our own intellectual journeys and values.

As I began exploring how molecular anthropology research *could* be done, I realized that I could shape my research questions and methods not just around certain established theoretical schools and notions of intellectual merit but also around my own values and personal experiences. I embraced the ideal that “good” research did not have to be detached and from a distance (Harding 2009; Ranco 2006; TallBear 2014). Instead, by centering my research around the ethics and values to which I felt responsible, I could produce innovative methodologies and new knowledge. I began to see how a personal connection to Metlakatla could strengthen, rather than hold back, my research.

Building off the existing collaboration with the Metlakatla First Nation (Cui et al. 2013; Lindo et al. 2016; Lindo et al. 2017), we developed a project focused on reconstructing the diet of the ancestral Coast Tsimshian community. We are investigating how changes in diet, both in the distant past and those experienced more recently by many Indigenous communities as part of ongoing colonization in North America, may be reflected in the composition or function of the human oral microbiome. We include oral history and community knowledge, as well as osteological, stable-isotope, and genomic analyses, to answer our research questions. While this integrative methodology reflects our diverse skill sets from training in archaeology, bioarchaeology, and genomics, it also acknowledges community-held forms of knowledge as legitimate sources of data that should be assessed equally alongside lab-derived forms of knowledge.

In choosing to do molecular anthropology research with an Indigenous community, it is crucial that my science address the imbalance in how Indigenous and Western ways of knowing are acknowledged in biological anthropology research by engaging with the knowledge about the natural and social world held by Indigenous communities (Kimmerer 2013). This is a way for me to confront the past exploitive nature of research on Indigenous communities (Deloria 2004; Moreton-Robinson 2015; Smith 1999) and to provide one model for a new way forward. For example, my research demonstrates how knowledge gained from interviews with community elders can teach us about past and current food resources and food culture. We are also sharing with community members the results of database matches from genomic libraries constructed from the dental

calculus of Ancestors to assess if species identified in the analysis were possibly consumed in the past. The insights from community members are critical to developing inferences of ancestral Coast Tsimshian diet because community members can provide clarification on how different flora and fauna may have been used by Ancestors as food or tools, or which specific species within a genus identified through bioinformatic analyses of genomic sequence data were likely foods consumed by Ancestors. This integrative methodology provides an opportunity to examine how different forms of data can tell different, or similar, stories rather than focusing on validating Indigenous knowledge using Western scientific methods. In doing so, it reflects my values as a biological anthropologist with Indigenous ancestry.

Now, researching diet with the Metlakatla community feels like coming full circle. Getting some of the education to do this work may have taken me far from home, but the project has brought me back to traditional Coast Tsimshian territory, where I have the opportunity to engage with the community to learn about and contribute to our knowledge of these Ancestors. I am orienting my research to reflect my own ethics and values. In doing so, we have developed a new integrative methodology for community-based studies of diet that engages with Indigenous knowledge to explore how different forms of knowledge can contribute to more nuanced narratives.

Innovation in biological anthropology research can take many forms, from new research questions to novel approaches to research design and new interpretations of data. This is why programs like SING (Malhi and Bader 2015) and IDEAS (Malhi et al., this issue) are so important: they encourage scholars from historically underrepresented backgrounds to use their experiences and values to shape research in ways that can be unorthodox but deeply influential for how science is done. Diversifying the community of researchers in biological anthropology is crucial to expanding the quality, depth, and purpose of knowledge in our field, and beyond.

## NOTES

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## Increasing Diversity in Evolutionary Anthropological Sciences—the IDEAS Program

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Biological anthropologists work in a variety of cultural contexts globally, yet the makeup of practitioners in this field is surprisingly nondiverse (Antón, Malhi, and Fuentes 2018). The disparity in representation of minority scholars in biological anthropology likely stems from a combination of multiple factors, including a history of racism and unethical practices by scientific leaders in the field. For example, in the early 1900s, shortly after the mass murder of more than one hundred Yaqui people, Aleš Hrdlička, the founder of the American Association of Physical Anthropologists (AAPA, the largest association of biological anthropologists), trav-

eled to Sonora, Mexico, to collect the bodies of twelve of these Yaqui individuals to bring back to the American Museum of Natural History for study and display (Darling et al. 2015). This example, along with other actions of past AAPA-affiliated practices, has likely resulted in a lasting objectionable reputation for the field among minority community members. Research practices by biological anthropologists on minority populations today continue to be criticized on ethical grounds (Bardill et al. 2018; Claw et al. 2017; Marks 2002). These practices, along with institutional structures of universities and the AAPA, continue to diminish interest in the field among minority community members, even with the AAPA's recent adoption of an ethics committee and a comprehensive code of ethics. In addition, there exist representational and foundational problems, including the absence of biological anthropologists and their research at historically black colleges and universities (HBCUs), and other minority-serving academic institutions in the United States (Antón, Malhi, and Fuentes 2018). Students without access to, representation in, or

knowledge of a field are unlikely to choose it as a career path.

A result of reduced diversity in the biological anthropology research community is that minority views, life experiences, and insights are marginalized or ignored. Such marginalization reduces the impact, quality, and scope of the research done in this field. The unique perspectives and experiences of researchers in a diverse scientific community constitute a knowledge base that can readily be used to help navigate issues and solve problems in a variety of contexts and promote creativity in basic and applied research. Currently, such opportunities are very limited in biological anthropology. To help increase the ethnic diversity of researchers in the field of biological anthropology and achieve the benefits of a diverse scientific community, the AAPA Committee on Diversity (COD) was created in 2006 and incorporated into AAPA bylaws as a standing committee in 2011. The COD supports a number of programs targeted at enhancing minority participation in biological anthropology, including the COD Undergraduate Research Symposium and the Increasing Diversity in Evolutionary Anthropological Sciences (IDEAS) program. The IDEAS program, funded by the National Science Foundation, works to induce culture change in biological anthropology and to promote the training and inclusion of ethnically diverse scholars. The IDEAS program accomplishes this goal by creating mentoring groups of minority professors, post-doctoral scholars, and graduate and undergraduate students with similar scientific interests. The main mentoring focus is a day-long workshop held the day before the annual AAPA conference that includes scientific presentations, group discussions on diversity issues and related experiences in academia, discussions of ongoing research, and professionalization. The workshop also includes networking activities throughout the AAPA meeting week to enable participants to meet researchers and begin to build research and support networks. Beyond the academic training component, the IDEAS program fosters networks for biological anthropology minority students and scholars to explore interests and voice concerns in a socially supportive space. The inaugural workshop was held in 2016, and as of 2018 the program has forty-six participant alumni. In addition, to highlight minority scholars and their research in the field, the IDEAS program has partnered with the BOAS network to produce publicly accessible videos. The initial set of videos, filmed in 2016, featured minority scientists discussing their research and path to biological anthropology. The videos filmed in 2017 feature AAPA IDEAS student alumni and their experiences at the AAPA national meetings and thoughts about the field of biological anthropology.

The impacts of the IDEAS program and views of minority scholars have already begun to spread beyond the IDEAS workshop and videos. In 2017, a symposium entitled “Beyond Visibility: How Academic Diversity Is Transforming Scientific Knowledge” included several IDEAS faculty and alumni discussing how diverse scientific communities en-

rich scientific projects and create better science. In 2018, COD sponsored a follow-up panel discussion entitled “Reflections on the 2017 Symposium and Future Directions for Biological Anthropology” to continue the dialogue started at the 2017 symposium. Also in 2018, the invited symposium “IDEAS Alumni Symposium: Creating and Supporting Diverse Communities within the AAPA” highlighted the research of IDEAS faculty and alumni and their research in biological anthropology. The COD is doing other work as well, including working to include consideration of diversity and recognition of our ancestors in the normal practices of the AAPA. This year, the COD and IDEAS faculty have been crucial in the naming of the AAPA W. Montague Cobb Professional Development Grants, funding opportunities for early career scholars, and in garnering additional AAPA funding for student travel awards and the inclusion of diversity criteria into their decision protocols.

The IDEAS program and related efforts have been pressing for broadening the culture of the AAPA and biological anthropology, but permanent infrastructural change requires constant tending and steady funding. A majority of the AAPA membership have embraced this process to date. As the IDEAS program continues to grow, we work to have IDEAS alumni gatherings to address specific needs of diverse communities in academia and biological anthropology. In addition, the IDEAS program plans to interface and partner with other programs to promote different axes of diversity, including LGBTQIAA. We must encourage and support a concerted and sustained effort to create an association and a discipline that acknowledges our difficult past and present limitations while moving consistently toward a more inclusive, just, and scientifically robust future.

## NOTES

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## Social Problems, Structural Issues, and Unsettling Science

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A descendant of displaced and dispossessed Africans, I was born in Tetiohoseró:ken (Buffalo, New York), occupied Tsonontowane'á:ka (Seneca) territory. I grew up in a low-income Black neighborhood in one of the poorest and most racially segregated cities in America. We never had much, but I had my library card. I spent my time reading, learning, experimenting, and asking too many questions. My good grades were not enough to keep me out of trouble. I was a multiply neuro-divergent child, misgendered at birth, in a low-income religious family racialized as Black. To avoid the consequences of rejecting patriarchal norms, I folded inward and was forced to perform colonial femininity. I am not, nor have I ever been, a Black woman. Being misgendered and treated like a Black woman is not akin to what my gender is, nor my sexuality. Identities and culture change; that is why I spoke about my experiences and sociopolitical positions without referring to them. These are issues of power, not identity. Performing race and projected racial nostalgias about identity have nothing to do with the value of my contributions to science. Bragging about progress and making me the face of their diversity initiatives is fine, as long as I don't actually say anything. To put it simply, counting racial identities will not upend a more than five-hundred-year-old settler-colonial system.

As I grew into a scholar, I started asking questions about the co-constructive relationships between historically contingent political processes and the biology of humans, among other organisms. The denial of my self-determination by re-fashioned colonial domination coupled with a lifelong interest in biology have made me distinctly aware of the dangers of the dichotomy of ideal and problematic bodies in human biology. My first master's thesis sought to investigate the ways that racial residential segregation, food swamps, and poverty influenced dental health.

Racism. Inequality. History. Biology of the human condition. My work was all of the things anthropology advertises on their glossy fliers featuring the smiling faces of many racialized peoples. My committee members, however, claimed that the connections I drew between racism, inequality, and health outcomes were baseless and insulting to the field of anthropology. Incoherently, I was then told that my proposal was not up to par because it did not account for the biological differences between Blacks and Whites. Citing

standard scientific critiques of race often used against racists was no defense against the mainline anthropologists advising me. They were not convinced by social constructionism, clines, power relations, isolation by distance, intersectionality, or  $F_{ST}$  values. All that mattered was that I challenged a well-groomed public image of anthropology's embrace of diversity for optics. Unable to complete my work in that anthropology department, I applied to other PhD programs. The following academic year I transferred to a sociology PhD program, studying how geneticists and other scientists conceptualize race.

My work was met with skepticism in the sociology department. My Du Boisian approaches were met with dismissals because some sociologists felt that racial identity takes precedence over all else. My experiences led me to seek intellectual community among evolutionary geneticists. My attempts to get a better understanding of the biological point of view landed me in an Evolutionary Theory class. In class, I learned that to describe a product of history adequately, I had to know the historical conditions and modes of interaction within and among populations of organisms and their environments. This resonated with my understanding of Du Bois's (1898) notion of a social problem as "ever a relation of conditions and actions." Despite the continuing definitional dilemma of race, not much attention was brought to bridging the sociological and historical contexts to the larger social problem of health inequalities. Social science definitions argue that race is based on physical characteristics, not much different from Boasian race concepts that see race as primary and racism as the result of racial conflict. Scholars Michael Omi and Howard Winant (2015) refer to race as *corporeal*, and in particular *phenomic* and *ocular*. Race, then, has everything to do with bodies but nothing to do with biology. Canonical racial formation theory (RFT) fails to demonstrate the social constructions of race. Though the scientific critique of race has succeeded in shifting to self-identified racial identity and ethnicity (SIRE) focused analyses, it remains unclear where their notion of bodies comes from if race is not biological.

While contemporary social constructionist race concepts (SCRCs) are sufficient for exposing essentialist ideologies, they have yet to bridge the gaps in our understandings of how racism becomes embodied. As a result, contemporary scientific critiques of biological race concepts remain deadlocked between antiracist and antiracist perspectives. Antiracists argue that the use of race should be phased out of human genetics, while antiracist racialists contend that while not hierarchically ranked,

racism reflects conflicts between these distinct groups.

A central feature of both perspectives is what they agree upon. Both antiracialists and antiracist racialists perspectives refer to what human genetic variation looked like five hundred to six hundred years ago to make statements about what human genetic variation is like now. The mid-fifteenth century functions as a set of pinpoints of biogeographical originality (TallBear 2013). Describing what human genetic variation was like five hundred to six hundred years ago as the anthropological genetic present is what evolutionary biologist Charles C. Roseman (2014) refers to as the genetic now. When speaking of five hundred to six hundred years ago in the present tense, ancient races are assumed to have at least been very real, leaving us with blurred boundaries of the races to negotiate. Referring to what human genetic variation was like in the past is not a reflection of current distributions of human genetic variation in geographical and sociopolitical space. Contemporary SCRCs rely on racialized distinctions that inform interpretations of clustered distributions of genotypic and phenotypic diversity instead of understanding what we know about human genetic variation today in an evolutionary, and thus historical, perspective to understand what processes and dynamics made the present the way it is. References to pinpoints of biogeographical originality are the central tenets of racial thinking, not the theory of evolution (change in allele frequencies over time).

Mainstream SCRCs focus on the changing meanings of the marks of race, while appeals to isolation by distance claim that phenotypic and genetic differences are a function of geographic distance and/or cultural isolation. Contemporary scientific critiques of race allow people to *talk about race and genetics without talking about racism and evolutionary theory*. As a result, race is conceptualized as an issue of attitude and identity, colonialism is treated as an epoch at best, and racism is seen as the result of conflict among racial groups. The phenotypic and genetic variation we see in contemporary populations is not a function of geographic distance but rather a culmination of events, conditions, and actions given all previous states. This means that speaking of patterns of isolation by distance undermines the processes that caused the patterns. Such contingent dynamics are ignored by typological race models and would ultimately be erased

by an equilibrium in isolation by distance models. Power, inequality, identity, economy, law, and any kind of complex demography is excluded. Racism contains the explanatory power of race not racial identity. Thus, politics of recognition are antithetical to doing scientific work that *unsettles* in the study of the effects of political processes of marking and categorizing individuals through racist distinctions.

I am precariously interdisciplinary because the material and social conditions of life demand it. As a result, the social problems at hand are what drive my questions instead of disciplinary guidelines. My concern is with the social problems at hand and the defense of human and nonhuman life. I am interested in improving our present circumstances and accounting for how the present has come to be. The defense of disciplinary boundaries, theorists, and ideals is a practice in which I have no interest. In my pursuit of the study of social problems, I was met with hesitancy from both anthropology and sociology. It's as if disciplines are structured in such a way that we cannot ask the right questions about race. As organizations derived from colonial efforts, disciplinary boundaries resist unsettling claims that place their cherished histories and the fragile self-images of their practitioners at the risk of having their origin stories brought into the full light of day. As noted by scholars Eve Tuck and K. Wayne Yang (2012, 7), "settler colonialism and its decolonization implicates and unsettles everyone." The work of pursuing futures that do not function off the denial of self-determination and autonomy of others requires that we actively make the world over. I invite everyone to join me: "Let us form groups of two or five hundred and let each group deal with a colonist" (Fanon 2004, 43).

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# Academic Descent with Intentional Modifications: A Reflection on Mentoring as Developmental Environment

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I am Earnest Hooton's great-great-granddaughter.

Not by blood but by intellectual filaments that link him to my own graduate school advisor. To be linked to such a name is not a source of pride, as a quick visit to his Wikipedia entry will make clear. I knew little about Hooton when I started graduate school, but I did take note of the begets that led from him to me in an uninterrupted male lineage. My link to Hooton was thrown into relief in 2005, when I received an award named after him for an outstanding student poster the first time I ever presented at an AAPA meeting. It was my tenth AAPA but my first presentation.

I found out I had been accepted to graduate school at my first AAPA in 1996. After that, I went to meetings unquestioningly, paid with credit cards, and observed others around me—especially the men in my program—thrive in their projects and present their work at conferences. (How did they know to write an abstract? Not *how* to write an abstract but to write one at all and submit it? I was mystified.) For years, I didn't have financial support to attend these meetings, wasn't encouraged to turn a class paper into a conference paper, wasn't invited to work on a project with my advisor, wasn't connected. I charged at least \$10,000 to attend meetings I never presented at, a ghost in plain sight.

The ghost lived on campus too. Once the independent phase of my education began, I unraveled. My only tether to campus was being an anatomy instructor in another program. I loved the work, but it cost me, in the most literal of ways. I needed loans to pay for the credit hours I needed to be able to teach; the program did not offer tuition waivers for anthropology students even though we made up the majority of their workforce. The years and the debt piled up (six years, six figures) with nobody seeming to notice or care that I was going nowhere. I came to campus only to teach anatomy, which kept me safely away from the anthropology department, a place that triggered what I came to realize were my first work-related panic attacks, a living fossil I still carry in my pocket. A fossil with teeth still sharp enough to bite as recently as my visit to my alma mater this fall.

I should have been more proactive, more responsible, more committed. I should have asked for more help. I

should have wanted it more! I have certainly made this case to myself over and over again to this day. But now entering the stage of my career where I am on the other side of the mentoring equation, I ask you: Who ghosted whom? My male advisor was engaged with his male students in a way that was never extended to me. I was not invited to go for a run, a round of golf, a round of beers: dude stuff that fostered camaraderie, spitballing, workshoping, shit-shooting, or, in other words, mentoring. Mine is not an isolated or even particularly egregious or interesting case, but it is part of a systemic problem of gendered differences in mentoring. For example, female engineering students of male advisors publish fewer papers with their advisors than do male students of male advisors (Pezzoni et al. 2016). Were some of those papers born in spaces of male coupling, over those beers, during that run, shooting that shit?

The inflection point that led directly to my earning the award named after my eugenic forebear occurred the summer when I TAed for a field primatology course. Long story short, field primatology does not play to my strengths. But what I also found out during the few weeks of that course was that what I had experienced as mentorship for the better part of a decade had not played to my strengths either. My colleagues, seeing my stagnation, became ad hoc mentors and helped me develop a concrete plan to develop a project of my own design. I found the courage to reach out to the woman writing most of the marmoset papers on which I wrote endless notes. Reader: she reached right back, without hesitation, and invited me into her lab the very next summer and then full-time for two years to conduct my dissertation work on the marmoset placenta in variable prenatal environments. She shared her resources and data, she praised and challenged me. She PAID me. In other words, she saw me, and she made the space for me to succeed. She made it possible for me to win a goddamn AAPA award the first time I tried.

My experience in a stunted developmental environment led me indirectly to study the variable impacts of the prenatal environment on nonhuman primate reproductive health and function across a lifespan (Rutherford et al. 2014). Later, my interest in the consequences of developmental environments drew me to the study of the impacts of an unsafe academic work environment on health and function for women across their academic careers (Clancy et al. 2014; Nelson et al. 2018). Through that work, I came to interrogate explicitly

how my positionality of race, affluence, and conventional education shapes my access to certain academic spaces and the way I produce and present knowledge (Acevedo et al. 2015; Freire 1996). That interrogation has birthed an intentionally intersectional approach to my primary scholarship in recognition that “multiple burdens” create distinct identity experiences and sequelae (Crenshaw 1989). The cross-pollination of my gender discrimination work with my study of reproductive health disparities has demanded moving past glib discussions of “difference” to clearly call out the sources of inequities (Braveman 2014). I study monkeys and the ways their pregnancy outcomes differ. But because of the evolution of my academic identity, I am also considering women, their lived experience/evidence, and the way multi-generational racism shapes differences in their pregnancy outcomes (e.g., McLemore et al. 2018). I am far from where I started. I still have a long way to go. But the ghostly space I occupied for so long has been instrumental in programming the road I’m on now.

I recently removed Hooton’s name from my CV, but he serves as a reminder that phylogeny and legacy are intertwined processes and locations of power and opportunity (hooks 1994). I have long acknowledged that this legacy and its effects directly contributed to my development as a mentor, albeit initially from a reactionary stance (i.e., what NOT to do) and only more recently as a deliberate and anticipatory philosophy. I have come to see how the filaments of this legacy have shaped my intellectual identity and the questions that matter to me as a particular scholar engaged in her world. The first dissertation that has come from my lab is on a topic I hadn’t even dreamed of back when I started more than twenty years ago: placental epigenetics. Epigenetics is inherently a mechanism by which developmental environments shape the future, and the PhD student who produced this work was a first-generation college student of color, bringing to the lab her own developmental trajectory. Thus, my own intellectual progeny are impacted by the confluence of their identities and my mentoring experiences, not only in the quality of mentoring I provide but in the very topics of interest we pursue as a team and the situations of justice and identity in the science we do together. In our lab, we recognize that our multiple identities shape who we

are and what knowledge we produce. I am now actively modifying the environment to generate new developmental trajectories in order to reject the conclusion that any of us is unworthy of our place, our power, our legacy.

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## Early Life Adversity and the Value of Diversity

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I was seven when I missed a day of school to sit outside a federal courtroom in San Jose, California. Despite the best attempts of his attorney, my dad was sent away. Shortly thereafter, my mom, whose minimally educated Mexican parents had never thought to encourage her to go to college, went back to get her associates degree in paralegal studies. This served the dual purpose of giving her the skills to help with my dad's case while also allowing our family to have some income. The feeling I had in those early years—of financial insecurity, uncertainty, fear, and shame—is something that I long tried to ignore. However, I have gradually come to appreciate the ways that my background has unexpectedly shaped the nature of my scientific contributions.

Perhaps fittingly for someone who grew up with such a strong female role model, I study what in evolutionary biology is called maternal effects. This research evaluates how maternal environmental experience can shape offspring biology and behavior. This may be an evolved capacity; by receiving signals of a high-stress environment, for example, offspring may adjust their development in ways that are beneficial for survival. Such adjustments rarely come without costs, however, and trade-offs often occur. For example, Michael Sherriff's work found that Canadian hares that were pregnant during years with greater predator density gave birth to offspring with higher stress reactivity and more predator-avoidant behaviors (Sheriff, Krebs, and Boonstra 2010). The trade-off comes from the fact that maintaining a highly vigilant state is energetically costly for offspring, and ultimately, long-term health is traded off in favor of immediate survival.

It makes sense for offspring to adjust their immediate biology and behavior in response to predation stress, even if these changes come with health costs in later life. However, what I have realized in working with pregnant humans, instead of hares, is that modifying biology in response to the types of stressors commonly experienced in contemporary environments is not necessarily adaptive. For example, the actual survival benefit of modifying your biology in response to living in substandard housing, fearing domestic or police violence, or being unsure whether you will be able to pay your bills is less clear for humans, while the long-term health impacts can be substantial.

In my own work in New Zealand, I have found that women who experience greater material deprivation and who report ethnic discrimination have higher stress hormones in pregnancy and give birth to infants with elevated stress reactivity (Thayer and Kuzawa 2014, 2015). In addition, in work with Native American adults, my colleagues and I have found that individual and parental experience of government-run boarding schools was associated with a greater number of adverse physical health conditions in adulthood (Running Bear et al. 2018, 2019). In all of these instances, individual survival as such is not necessarily enhanced in response to prenatal and early-life stress, but stress physiology and adult health are nevertheless adversely affected. In other words, our evolved biology, in response to contemporary stressors, may have maladaptive consequences for health.

As anyone who has grown up poor and made it out, so to speak, can personally attest, the types and chronicity of stressors experienced is not equally experienced by all people. In other words, another major difference between stress experience among humans and hares is that, for the majority of contemporary environments, human stress exposure mirrors socially constructed patterns of ethnicity and class. This implies that this research is not only important from an evolutionary perspective but also from a public health perspective. Through the intergenerational and life-course pathways described above, chronic and unpredictable stressors, which are often experienced by the most socially disadvantaged within society, can contribute to the development of poor health and the emergence of health disparities. While the understanding that disadvantage negatively impacts health is visceral for myself and others who have directly experienced it, one of my professional goals is to find ways to study this association scientifically in order to demonstrate its importance to others. My personal background, when applied to the science of maternal effects, has therefore meant that I address this topic in a way that integrates evolutionary biology, anthropology, and public health.

While my background provides valuable perspective for my research, I have also learned to be aware of personal blind spots. When I present my research on the intergenerational effects of maternal stress, for example, a question that often comes up is how the well-being of fathers might also impact offspring. My own bias of being interested in maternal investment has led me to focus specifically on mothers, which in retrospect ignores the potentially important contributions of fathers. If I want to investigate the impact of paternal well-being on offspring development, however, I

would prefer to do so in collaboration with colleagues who, through personal or professional experience, have more insight into factors that might be important in shaping paternal well-being. Together, as a result of our combined backgrounds and expertise, our research questions and approach would be much more robust than a similar effort undertaken on my own. While this simple example alludes to different experiences associated with gender, a similar idea applies when considering how variation in ethnicity, socioeconomic background, or other aspects of identity shape our approach to answering research questions. The point here is that just as we should work to consider the ways in which our backgrounds benefit our science, we must also be aware of spaces where our backgrounds limit our perspective on certain topics and therefore seek the insight of others accordingly.

In sum, while many people focus on increasing diversity in science from the issue of equity, I think it is more than that. As alluded to in the example above, the added value of diversity in science is that including researchers of different backgrounds leads to both new questions being asked and different perspectives on how best to answer existing ones.

## Research in a Non-Research Position

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My husband and I got our PhDs at the same time. Knowing that we would encounter the classic “two-body problem,” we nevertheless optimistically entered the job market. Some of that optimism was warranted; my husband landed a tenure-track position at a prestigious university. I also got a position, but it was a temporary teaching position at another university. Partway through my time there, both my husband and his mother were diagnosed with cancer. Unsure of what I was about to take on as a caretaker, and worried that my job performance would suffer, I left the position early and moved to be with my husband. Once I relocated, I worked as a part-time adjunct for four years while my husband fully recovered and our family grew. Eventually, I got a permanent, full-time position as a lecturer and academic advisor. The job is teaching focused with no research expectations. While I consider the situation ideal—I am intellectually engaged, I work with a large number of underrepresented students, I have a balanced family life—abandoning the pursuit of a traditional tenure-track job did mean hard decisions when it came to research.

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I began my PhD program with the hopes of engaging with and producing science, as I imagine most do. What I have found is that engagement is easy. My courses involve discussing the latest scientific news. I have ample opportunities to attend lectures. My college provides funding to travel to conferences, which are increasingly providing space for nontraditional faculty through teaching-focused workshops and symposiums. I acknowledge that some of these are privileges not afforded to all non-tenure-track (NTT) faculty. I did not get resources for conferences until recently, and I benefit from my husband’s position and my geography.

Still, I believe most of the struggle occurs in the production of science because most NTT jobs severely limit research ability. With a heavy teaching load, no research space, and no funding, it can be incredibly difficult, if not impossible, to produce original research. I faced two options: either quit research altogether or be much more strategic about it. I have tried to do the latter, largely through collaborations. I may not have my own lab to carry out experiments, but I do have the ability to help with analyses, grants, and manuscripts. This has allowed me to publish throughout the last five years and connected me to ongoing research. It has also instilled in me a great appreciation for the cooperative nature of science.

It does have its drawbacks, though, the main one being that I am giving up control. Rather than running my own research agenda, I am helping others with theirs. This is something that I had to come to terms with. In interviewing for my current job, I was told up front that research could not be a priority and was asked if I would be okay with that. My answer was the truth: that I do research because I love the engagement. If taking this position meant that I would just be engaged in a different way, I would be happy with that. Research is still something I do, but my priorities *have* shifted. In some ways, this is good because I now have the luxury of doing it solely because I want to, not because I need to land a job or get tenure.

My experience with academia is but one of an ever-growing collection of similar stories, not all with hopeful endings (Santos 2016). The fact is that up to 70 percent of the academic labor force is NTT (Curtis 2014), with a large number of those positions being part-time adjuncts. What's more, women and underrepresented racial minorities are more likely to hold NTT positions (Finkelstein, Conkey, and Schuster 2016; Santos 2016), making me far from unique, a realization that I find both reassuring (I am not alone) and discouraging (it should not be this way). The contrast with women is especially strong, and it has been suggested that they may more actively "choose" these careers, as they offer more flexibility, more opportunities to focus on teaching, less pressure, and a chance to avoid biases against caregiving that women disproportionately face (Drago et al. 2006; Waltman et al. 2012). Indeed, my own story carries many of these hallmarks. But "choice" in this context is complex, and even if not, the end result is the same: a two-tiered system where underrepresented groups disproportionately occupy the lower tier and struggle to be heard.

Of course, mine is not the only possible outcome. For some, engagement may not be enough, and driving one's own research agenda may be a high priority. In those cases, people can find ways to accomplish their goals—but it may mean being creative with how they approach research. For example, questions might be limited to those involving

public data, small-scale experiments, or low-budget travel. While this can be a negative, considering the increasing difficulty of obtaining grants for all faculty, it is also an essential skill.

Thus, given the constraints that most people in our field face, it may be time to rethink our idea of who belongs at the table. For starters, given that teaching responsibilities are increasingly shifted onto NTT faculty, we need to acknowledge their importance in training the next generation of scientists. However, we also need to consider their potential role in research. High-budget projects that produce large datasets are absolutely necessary to advance our field. But we must not conflate the research with the researcher, and those who manage to produce knowledge despite limited means should be valued too. Rather than be sidelined, NTT faculty should be actively sought out for collaborations. Ignoring 70 percent of academics can only harm science.

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# The Outliers Are In: Queer Perspectives on Investigating Variation in Biological Anthropology

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As children, it was obvious that we were quite unlike most people in the heteronormative social groups typical of where we grew up. SLM spent childhood playing football with the neighborhood boys and getting grounded for grass stains on the dresses she was forced to wear to church. In contrast, CAS actually liked wearing dresses and high heels, and favored playing My Little Pony with the neighborhood girls. Even more obvious was that our differences from these societal binary gender norms were held in poor esteem by those around us. SLM spent Christmases disappointed with the gifts she received but hadn't asked for (purses, makeup, and "girly" clothing) and lamented the gifts she repeatedly asked for but never received (a weight set, a compound bow, a baseball glove). CAS's family more or less supported his gender-atypical interests but showed palpable enthusiasm for more typical ones; meanwhile, away from home, he was called a "faggot," spat upon, and beaten up by other boys for his gender-atypical behavior and mannerisms.

The uniform narrative around us was that men and women were categorically and fundamentally different creatures. Boys and girls did and liked different things. Boys are like *this* and girls are like *that*. The messaging was everywhere, both implicit and explicit. Yet, there we were: two decisive counterpoints in *fortissimo*. Clearly, our existence demonstrated that not *all* boys were like this and not *all* girls were like that.

Being rarities in our communities made us wonder about how people come to be the way they are: both ourselves and those to whom we stood in contrast. We both recognized that although other ways of being male and female were more common, they also were not inevitable. We used our internal senses of difference to fuel a deep curiosity about the evolutionary biology that underlies not just rare behavioral outcomes but also—and perhaps more critically—more common ones, and why they should be common in the first place.

CAS internalized his own sense of difference and wondered how rarities like him were produced—how and why some people deviate from the "norm." The answers he was

able to glean—from bullies, the religious communities he interacted with, school gossip, and the media—suggested either an essential, internal origin of that difference or some causal, formative experience. Common wisdom claimed that some boys simply *were* queer because of the devil, were mistakenly male-embodied girls, or were "diseased" from birth; alternatively, boys *became* queer because of domineering mothers or absent or weak fathers, or because they played with girls' toys or were molested as children. Was he born this way (it certainly didn't feel like he chose it), or did something happen to him (he certainly couldn't remember anything notable)? Could both be factors, and how?

SLM had a different take. If common outcomes were not inevitable, as her very existence showed, then why on *earth* were they so common? To her mind, the underlying processes that generate them must be just as active as those that produce uncommon ones. Because common outcomes occur so much more often, they seemed the bigger mystery. How were they so regularly reproduced, and why? She noticed that many girls didn't seem to require pressure to be "girly"—they acted thusly of their own accord. Additionally, while she was highly resistant to acute pressure to conform to societal expectations, she observed that some people willingly reshaped themselves to win approval from parents and peers. People apparently varied both in their natural inclinations to *be* like most other people and in their sensitivities to external pressure to *conform*.

As queer children, we grappled with difference and similarity early on, and our inner voices debated nature, nurture, and the interplay between them before we knew about the debates contemporaneously raging in both biology (e.g., Fausto-Sterling 2003; Fausto-Sterling et al. 2012; Fox Keller 2010; Lewontin, Rose, and Kamin 1984; Paul 1998) and human gender and sexuality research (e.g., Butler 1988; DeLamater and Hyde 1998; Lewis and Weintraub 1979). As adult developmental biologists, we know that our queer childhood approaches to understanding difference and similarity are valid and necessary parts of scientific inquiry that can, at times, be lacking in the approaches of peers who experienced life closer to the center of statistical distributions. In much of the work we see, outliers are considered aberrant and unimportant to general biological phenomena. This perspective discards the potential importance of outliers to revealing typical developmental processes and underestimates the need to explain them. Even more critically, we know that common outcomes are too often considered the



passive, default condition instead of one of many potential, actively produced outcomes.

Keeping this in mind, we explicitly test evolutionary explanations for behaviors and other phenotypes that may seem inevitable (or at least predictable). Meredith's work has interrogated evolutionary explanations for female-typical interest in infants among juvenile primates, a trait commonly taken as a "just-so" aspect of female behavior (Meredith 2015). Schmitt's interest in parsing innate and developmental aspects of traits has translated into novel perspectives on primate biology, including behavioral development (Schmitt and Di Fiore 2014), the evolution of dental morphology (Hlusko et al. 2016), and the interplay between genomic and developmental/ecological conditions on body mass and growth (Schmitt et al. 2018; Turner et al. 2018). Together, we see unusual and common outcomes as different parts of a statistical distribution, all of which *equally* beg explanation, as in newer feminist conceptions of sexual differentiation and development (Ah-King and Nylin 2010; McCarthy and Arnold 2011). We also understand viscerally that what biological anthropology, as a discipline, often considers to be "abnormal" may not actually be so; we don't automatically deem outliers suboptimal, and we don't interpret them as needing *special* explanation—simply explanation.

Paradigmatic shifts in scientific perspectives on the evolutionary biology of women occurred as a result of increased representation of women in biology, who brought to the field new perspectives, questions, and hypotheses (e.g., Fedigan 2001; Gowaty 2003; Hrdy 1997; Schmitz and Höppner 2014; Zuk 2002). Following in these footsteps, our reframing of difference that incorporates queer perspectives holds enormous potential for discovery and paradigm shifts both in how we conduct research within biological anthropology and in how we develop a pedagogy that invites scholars from all backgrounds to pursue an understanding of human nature through a more nuanced and equitable practice of biological inquiry.

For these reasons, we argue that our queerness benefits our work and the ways in which we produce science. The unique perspectives we bring to understanding nature—forged in our struggles to understand and accept ourselves in the face of normative societal pressures—give us a deeply personal perspective on developmental and phenotypic variation that has the potential to alter our field for the better.

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## Beyond Dimorphism: Sexual Polymorphism and Research Bias in Biological Anthropology

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Sex is often used as the quintessential example of a binary, categorical variable in both the sciences and statistics. This truism is simple: living things are either male or female, categories so universally accepted by human societies today that they are practically inviolable. However, like many axioms, the concept of binary sex belies a much more complex and messy reality: single-celled organisms and parthenogenic animals such as reptiles and insects can reproduce asexually (Maslin 1971; Suomalainen 1962), some fungi exhibit thousands of mating types (Kothe 1996), and various hermaphroditic plants and animals possess two full sets of functional sex organs either at the same time or at different times during their life cycles (Bawa 1980; Ghiselin 1965). In Western science and society, though, humans are seldom acknowledged as exhibiting sex traits outside of the binary (Karkazis 2008)—even when nonbinary and/or fluid frameworks of gender identity, roles, and performance, as well as sexual orientation, are culturally allowed (Davis 2015). Nevertheless, such people exist: they are intersex.

Intersex people are those who are born with a combination of physical traits—considered traditionally male, traditionally female, and/or atypical for either—all in the same body (Davis 2015; Karkazis 2008). These traits include primary sex characteristics such as external genital morphology, internal sex organ morphology, genital and sex organ physiology, chromosomal makeup, genotypes for particular genes, hormone types produced, and hormone production levels. They also include secondary sex characteristics that develop during puberty, such as waist-to-hip ratio, pelvic morphology, body-hair density and distribution, chest or breast morphology, and nipple morphology

(Karkazis 2008). Thus, intersex is defined by biology; it is not a sexual orientation or a gender identity in and of itself.

It is important to note that intersex is not a “third sex” category, where all intersex people exhibit the same biological makeup. There exists substantial variation among intersex people as to which sex traits, both individually and in combination, are present (Davis 2015; Karkazis 2008). Intersex individuals sharing the same suite of sex traits are referred to as having the same form of intersex or intersex variation; people with different forms of intersex may differ markedly from one another in their morphology and physiology. Based on various criteria used to define separate forms of intersex, at least twenty-five intersex variations have been recognized (Davis 2015). While the frequency of intersex is generally considered to be rare by both societies and biological scientists, estimates suggest that intersex people comprise 1.4 to 2 percent of the global human population (Blackless et al. 2000)—approximately the same frequency of people exhibiting red hair (2 percent) (Davis 2015). In population genetics terms, these traits cannot be considered rare (Hartl and Clark 1997; Jobling, Hurler, and Tyler-Smith 2013), but intersex traits and variations are nearly always regarded as extraordinary outliers.

It is difficult to overstate the influence of knowing my body was different from a young age on my interest in science and decision to pursue a scientific career. I paid close attention whenever genetics, development, or reproduction were mentioned in science classes, thinking that if I could grasp these topics well enough, I could understand why my body was so different from everyone else that I knew. While I did not—and have still not—learned every molecular and developmental event that resulted in me and others like me being intersex, my efforts to understand my biology resulted in a love of science and nature. It is not surprising that I became particularly interested in biological anthropology: what makes humans who we are, through a biological lens, is something I wanted to understand since childhood. Perhaps

even less surprising are my research interests today—sexual dimorphism, ranges of morphological variation, and evolutionary development in humans, nonhuman primates, and mammals broadly.

Being an intersex scientist has informed not only my research interests but also how I conduct my research and approach scientific theory. This is in large part because I have operated for most of my life with the knowledge that assumptions, no matter how ubiquitous or compelling, are not necessarily correct. I entered science and academia knowing that one of the most basic ways that we categorize humans is, at best, simplistic and, at worst, entirely inaccurate. I have sat in classrooms where teachers and professors have asserted that everyone is either male or female while knowing that the biological reality must be more complex than this by the fact of my existence in those same classrooms. I learned early in my scholarly training that scientists, despite our shared goal of understanding natural phenomena in as an objective manner as possible, are ultimately people—and being people, our biases may influence the theories and data interpretations we espouse.

Understanding this has empowered me to investigate research questions with fewer assumptions than have conventionally shaped research on sexual variation: Is possessing a Y chromosome really the sole reason for a particular observed sex difference without other biological factors at play? Can the morphological expression of a given sex indicator be entirely explained by possessing higher or lower testosterone levels? Will karyotyping skeletal or soft-tissue remains provide accurate sex estimates in every case, based solely on the number of X and Y chromosomes present? Recognizing and avoiding simplistic assumptions has better enabled me to identify what scientists think we know but have not formally tested, to exercise caution in interpreting my own results, and to resist writing off what appear to be exceptions and attempt to integrate them into the rule. I have carried these perspectives with me throughout my dissertation research and writing. While the focus of this work is on levels of sexual dimorphism in the human skull, I believe that a variety of human sex traits are more accurately characterized as sexually polymorphic instead of dimorphic. Although anthropologists may acknowledge that gender identity is a social construct that may be complex and nonbinary, many do not consider that assigning an individual a male or female sex label—though based on biological information—is also

a social construct (Karkazis 2008), where the presence, absence, and/or expression of morphological traits may also be complex and fall outside binary definitions.

If the sex binary—a basic, widely held assumption about human biology—doesn't bear scrutiny under critical examination, then what else are we biological anthropologists taking for granted that remains to be rigorously tested? Our field has long been invested in studying sex differences and ranges of variation in humans and fossil hominins, and creating new methods to more accurately estimate sex in bony and fossil remains. What more could we learn by looking beyond sexual dimorphism to consider sexual polymorphism, and why has our field not yet done so? If we, as biological anthropologists, allow ourselves to cherry pick for study only those populations and aspects of variation that conform to our own worldviews, then we must critically examine the extent to which our practices and the bodies of knowledge we produce are truly scientific and biologically meaningful.

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# Bisexual Science

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In “Otherworldly Conversations; Terrain Topics; Local Terms,” Donna Haraway (2008a, 163) asks, “When were love and knowledge not co-constitutive?” Bisexual people, like many other queer and marginalized people, intimately know the realities of Haraway’s words. We learn this simply by existing in the world. We know that science and society have been built largely from the perspectives of Western heteronormativity because we don’t often see our bodies or lives productively reflected in its knowledge structures. We have hundreds of thousands of data points from our own lived experiences that bear out knowledges that have historically gone unrecognized. So we become scientists of our own lives because we have no other choice. When science suggests that sex, gender, and sexuality are just simple binaries with “deviations” from a “norm,” our embodied knowledges speak to us. When scientific and other disciplinary chauvinists regard their own knowledge as superior to that of others, when they claim that a science attuned to the historical, social, and political realities of human life is a weak science, our embodied knowledges speak to us. We know better than this because we’ve seen what can come of making love and knowledge across forbidden boundaries. As bisexual people, we learn to live and move in the indeterminate spaces of a world structured on oppositional binaries. Our lives, loves, and desires play out in liminal spaces that science often disregards. By design, binaries do not leave room for the in-between ones like us, the ones who embrace indeterminacy in learning about the world and who hold multiple capacities for knowing bodies in the same frame (Willey 2016). Science too often gives us binaries. So we look instead for the messy, bent, imperfect, entangled. Queer.

Decades of both feminist and queer scholarship have shown us that the male/female divide underlies the binary thinking that pervades the Western academy, including the arbitrary divisions between culture/nature, mind/body, subject/object, self/other, human/nonhuman, science/fiction, and, by extension, the disciplinary divides that have all but disconnected the natural sciences from the humanities (Hekman and Alaimo 2008). As bisexual scholars, we question and work across these boundaries in ways that unravel the knowledges built at their edges. With

this in mind, we ask: What potential does bisexual theory have for reimagining science? This is not simply a desire for more queer and bisexual representation in science or a plea for legitimacy as queer scientists—though we deserve those things too. This is also not an idealistic suggestion that bisexual theory is a fix-all for the failings of science or that it lacks its own risks. Rather, while remaining open to the possible consequences, we seek to understand how our embodied knowledges as bisexual and queer people enable all of us, not just queer people, to think and work differently in science.

Bisexuality as a way of being and thinking has sometimes received criticism for the perception that it reinforces conventional sex binaries and leaves finite scientific categories in place. We have often been told that we should reframe our interventions not as bisexual but as pansexual, omnisexual, or multisexual as more ethical ways to get beyond binaries. These impulses to erase or ethically rehabilitate bisexuality have been relentless. But akin to Haraway’s critique of ethical veganism (Haraway 2008b), we resist the false premise that exempts certain forms of queerness, and not others, from the risks of violence. Further, despite what such demands for our reidentification assume, these terms are not equivalent. They are not simply interchangeable. They do not connote the same forms of desire. They do not do the same work, and we cannot simply desire differently or reidentify ourselves in order to resolve some critics’ cognitive dissonances around bisexuality, as if desire is just a decision we can make. In our view, the contention that sex and gender binaries are social constructs does not make their consequences any less real. We know that sex and gender are not binaries, yet we also know that we are moving through a world that has been ripped in two. Bisexual desire moves us across that wound and between the estranged. Bisexuality works from the acknowledgment that the world has been binarized through various social, political, and historical processes, and then moves to disrupt these structures. While we acknowledge the importance of pansexuality, omnisexuality, and multisexuality in their attempts to move past the harms of sex and gender binaries, bisexuality knows we still need to intervene in their world-ripping effects, wherever we find them. We therefore emphasize that moving beyond binaries will entail multiple, shifting, and even contradictory forms of queer love and knowledge.

Given this, we see a bisexual theory of science as providing another set of conceptual tools for producing knowledge across and beyond binaries. In place of finite categories for describing human variation: a wider multiplicity across sex,

gender, and sexuality. In place of disciplinary chauvinism: a porous interdisciplinarity that lets in multiple simultaneous capacities for knowing the body. A bisexual approach to knowledge production therefore reformulates not only what scientists can think about human variation but also how we think it, generating new possibilities and risks by unsettling binaries and reaching across conventional disciplinary boundaries. For example, our work has combined queer and feminist theory with ancient DNA and bioarchaeology to challenge archaeological tendencies to overrepresent men and Western masculinities in acts of ritual performance among the postclassic Maya (Archer and Smith 2017). Similarly, we have merged queer and feminist materialisms with paleoepigenomics to trace the impacts of sociopolitical transformation among the ancient Wari of Peru (Smith et al. 2017).

Many areas of scholarship have converged on the need to simultaneously engage multiple ways of knowing the body and have provided valuable insights for rethinking the connections between nature and culture, and desire and knowledge (Hekman and Alaimo 2008; Kafer 2013; Lorde 1984; McKittrick 2014; Mortimer-Sandilands and Erickson 2010; TallBear 2014). However, these insights have rarely been brought to bear on the lab itself as ways to transform how we make scientific knowledge. In our view, the disciplinary roadblocks between the lab and the humanities are due in part to the lack of bisexual and other voices in these debates. A bisexual theory that emphasizes loving both and holding both in relation, while also acknowledging the history of power and violence in shaping these relations, allows us to take on the lab as a site of transformation. This goes beyond what others might label as “translational research.” A bisexual theory of science and scientific praxis goes beyond translation. It holds things in the same frame.

Drawing on bisexuality as a working theory to produce knowledge stems specifically from our own lives as scholars and academics. As both biological anthropologists and sociocultural theorists, we find ourselves pulling on decades of lived experience as bisexual people to navigate the worlds of the study of nature and the study of culture. Our physical and intellectual movements through the divided spaces of where science is supposed to happen and where sociocultural theory is supposed to happen require a kind of queer flex, a learned skill that bisexual, queer, nonbinary, and gender-nonconforming people, and others use on a daily basis to move through heteronormative space. In the same ways that our bisexual identities are policed, stigmatized, delegitimized, and erased for not being straight or gay enough in society, holding multiple identities as academics has proven, unsurprisingly, to mirror these forms of policing. Just as we have both been told that we will one day have to choose heterosexuality or queerness, we have also been told that we will have to choose science or social theory, as the two

sets of interests seemingly cannot coexist within one scholarly scope. We both have experiences of being erased or antagonized as academics with expertise in both areas. Shifting forms of biphobia therefore permeate our personal and professional lives.

The ways in which our academic lives echo our experiences as bisexual people is not lost on us, especially when we understand the term academic *discipline* in a broader sense: not just as referring to fields of study but also as referring to the forms of academic policing and castigation that are aimed at controlling what we can think and with whom we can think. We therefore suggest that to include queer people in the sciences must also make space for new kinds of interdisciplinary work.

Queer intuitions about what counts as evidence and about the very project of knowledge production are key as we reimagine science and as we continue to chart and reconfigure the political consequences of its truth claims. The science we envision is one that works from a desire for an elsewhere—where we must intervene in and disrupt the boundaries of knowledge production to make room for something different.

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# Comments on How Academic Diversity Is Transforming Scientific Knowledge in Biological Anthropology

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I wasn't always particularly proud to be a biological anthropologist. But these essays return a sense of pride. Most of these papers are derived from "Beyond Visibility: How Academic Diversity Is Transforming Scientific Knowledge Diversity," a path-clearing symposium at the 2017 American Association of Physical Anthropologists (AAPA) meetings. Those meeting papers and these published essays hint at the wide array of ways that social and intellectual diversity intersect and enrich the practice and projects of biological anthropology.

The symposium reception among fellow biological anthropologists was enthusiastic. The room was overflowing and the audience was completely engaged. The symposium started a bold new direction and a movement that I hope will be embraced and nurtured by all of anthropology. Welcome, cultural anthropologists, archaeologists, and linguistic anthropologist, to a new biological anthropology.

These essays brilliantly highlight a growing appreciation for the importance of diversity as a matter of social justice, yes, of course. Also, and more so, these papers and the forum show in unique, original, and synergetic ways how diversity supports and improves our science.

How appropriate is that for a group whose intellectual focus is evolution and variation? Diversity has come home. That is worthy of celebration. That is a great thing.

To put into perspective how far we have come, let's take a moment to reflect on where the subdiscipline of biological anthropology has been. As Nelson, Perez, Athreya, and other contributors note, physical/biological anthropology has had a long and deep support for scientific racism, sexism, and eugenics. Biological anthropology has long been on the center stage of scientific racism. Even before the professional organizations of the AAA and AAPA came into being, physical/biological anthropology was supporting existing structures of power: races, classes, and sex differentials were naturalized and comfortably put in their boxes. Variation was reified as fixed, discrete, and hierarchical.

Biological anthropology came into being about a century ago, and the disciplinary fathers, Earnest Hooton and Aleš Hrdlička, continued the goals of understanding "normal man" and deviations from that norm. As Rutherford points

out, they trained almost all of our intellectual grandparents. They were obsessed with measuring skulls and whatever else we could get our hands on in the service of separating and hierarchically arranging races, genders, and religions, and more to protect heteronormativity and to defend class and color lines. (A tip of the hat to W. Montague Cobb and a few others who worked decades ago within the discipline, chafed against the system, and provided a path for all of us.)

Processual, evolutionary, and ecological anthropology arrived in the late 1950s and 1960s, and spread through the intellectual land. The new physical anthropology of those decades focused on evolutionary and ecological theory and variation as evolutionary adaptation. A concern for eco-evolutionary processes and hypothesis testing slowly began to replace efforts to define types and normality. But it was still a science controlled by wealthy white men. As the son of a refrigeration mechanic, I felt uninvited. I can hardly imagine how it felt to be a member of a more marked group. In retrospect, this new physical anthropology suffered greatly due to the class, gender, and ethnic homogeneity of those who controlled the science. For example, there was little concern for how poverty, inequality, and racism became biological. All environmental conditions, no matter if they were due to unequal relations of power or institutional racism, were seen as requiring adaptation rather than resistance or systems change. How could these scientists not be limited by their social position in their vision of what their science could and ought to be?

If the discipline had been more diverse, I don't think it would have so blithely collected Native American remains and then stood in opposition for a century to the repatriation of Native Americans ancestors, as the discipline did, necessitating the passage of the Native American Graves Protection and Repatriation Act (NAGPRA) in 1990. In general, biological anthropology was more concerned with numbers on spreadsheets than bodies, persons, and cultures. Ironically, the science of variation was at least disinterested in its own diversity and at worst was opposed to it.

I am a life member of AAPA. From early graduate school through the 1990s, I came religiously every spring to the AAPA meetings. But about two decades ago, I looked around the rooms and hallways of the annual meetings, this time in Raleigh, NC, and pretty much everyone was Anglo. I could count on one hand the number of African American physical anthropologists at that time, by my estimation way

less than 1 percent of the AAPA membership. The same was true for Asian American and Latinx physical anthropologists. Invisible. I had a hard time associating with my association.

But change is afoot. What is so exciting is not just the increased diversity and efforts to be inclusive, but, as this set of commentaries so clearly articulates, that the science is changing too. As the organizers write, and the papers show, this diversification is putting forward a multitude of new ways of knowing: new perspectives, new questions, innovative answers, new scientific methods, and bringing to the front burners an appreciation for ethics and social processes.

The main insight that collectively emerges from these diverse essays is that there is a synergetic or even dialectical relationship among scientific critiques, diversity of lived experience, and our scientific craft. Today, biological anthropologists, such as anthropological geneticists Benn Torres, and Bader and Malhi, are working intensively with their research subjects and their ancestors. As we become more inclusive, a light shines brightly on the limits of our sci-

ence, points to new insights, and changes that science for the better, in turn opening it up to be even more inclusive and socially just, and that then makes for a safer space and furthers diversity.

These essays are eclectic and at the same time they are remarkably seamless. They suggest new and complex ways to approach our research projects, such as the conceptualization of sexes, genders and sexual orientations, the long-term and intergenerational sequelae of developmental processes, our studies and the stories we tell about the past, the biocultural formation and consequences of race/ethnic identities, and the ways our research may be enriched by collaborations with our research subjects. These papers point to a new biology, one in which location matters, one that does not sit still for an outside researcher. There is something new in the air.

Congratulations to the organizers and the contributors for their efforts to bring to readers of *American Anthropologist* a most vital Vital Topics Forum. Congratulations as well for all the hard work that has led them to where they are today. You have made me proud.

## Feminist, Queer, and Indigenous Thinking as an Antidote to Masculinist Objectivity and Binary Thinking in Biological Anthropology

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The essays in this forum represent an important moment for biological anthropology and for the broader conversation about how the natural sciences can work against colonialism, sexism, racism, heteronormativity, cisgenderism, and ableism. The diverse authors in this forum are positioned to ask important questions and bring innovative ethical frameworks to bear on those questions. These are approaches that most of their disciplinary forebears could not begin to conceive of due to their privileged standpoints. Too many biological anthropologists and other disciplinarians have been gender-, race-, class-, and otherwise normative subjects whose life experiences preclude their fields observing from diverse perspectives. A wider variety of eyes and kinds of seeing are necessary to both widen and deepen the scope of questions that get asked in this field and the methodologies used to answer them. How does alterity—one's otherness within a discipline—shape one's methods and research?

Following is a partial accounting of important interconnected insights in this collection of essays. Due to word

count considerations, I will not be able to specifically cite all the essays, but I have been moved and edified by each one. I will return to these essays many times as I assign them to both graduate and undergraduate students in my Indigenous Studies courses. I will also assign them to participants in our summer Indigenous genome training program, the Summer internship for Indigenous peoples in Genomics (SING).

### **MAKING OBJECTIVITY STRONGER AND ENLARGING THE INTERPRETIVE FIELD**

Being differently situated is advantageous for producing different insights but has its risks. When one fails to exemplify a white Western often straight and masculinist gaze that is ironically seen to embody "objectivity," or if one researches too close to home, one gets accused of bias. Ironically, the assumed objective standard is implicitly the aforementioned normative gaze. Given the problematic nature of "objectivity," as that term is used by many scientific thinkers, I discourage my students from using the terms "objective" and "subjective." I encourage them to think more deeply about what they really mean. If bias is ever present, should we name it that, especially if we advocate that a greater variety of standpoints be inserted into scientific observing? We

might think instead of the partiality of one's view and argue for the robust intellectual project of diverse partial standpoints. After feminist epistemologists of science, I school my students on a different idea of "strong" or "feminist" objectivity that insists on situated knowledges and multiplicity.

In this forum, Sheela Athreya and Jada Benn Torres specifically critique the fact that white (usually male) scientists want Europe and Europeans to be more important than they are. Their essays and the entire forum demonstrate how starting from different life experiences and centering other geographies and historical trajectories produce different sets of (not biases, but) vantage points, thus enlarging the interpretive field beyond whiteness—the assumed cultural center.

### WHO/WHAT COUNTS AS NATURE? AND RETURNING THE GAZE

Integral to centering the Euro/American standpoint is how biological anthropology and the disciplines generally continue to categorize some humans and nonhumans as more part of "nature" rather than the assumed Euro/American norm, and within that, male, able-bodied, straight people. The settler-colonial nature/culture binary assumes that some types of humans are knowing inquirers and others are more naturally—due to their supposed deviance—bodies that should be inquired upon. This entire forum challenges that hierarchy, which is at the heart of colonial resource extraction and literal exploration of others' lands. The same hierarchy has driven disciplinary exploration and extraction of the biologicals, histories, and narratives of Indigenous, queer, and other less-powerful persons.

A perhaps unintended outcome of this forum is that marginalized subjects or "minority" researchers are gazing back upon the dominant subjects of their field. Following Vine Deloria, Jr., the most well-known twentieth-century Native American scholar, and feminist anthropologist Laura Nader, the essays in this forum are in effect shining a light on those in power. Both Deloria and Nader advocated studying power instead of the poor and powerless. These scholars perhaps unintentionally do that while they also do insider, collaborative research with less-powerful subjects. By being explicit about the grounds and bodies from which their gazes have been crafted, this generation of scholars puts the power center of their field under the metaphorical microscope. They produce vital new knowledge while also doing research that creates social change.

### KNOWLEDGE PRODUCTION IN SUPPORT OF INDIGENOUS GOVERNANCE

Alyssa Bader and Ripan Malhi's work is an example of this kind of collaborative research for social change. They show how genomic questions, data, and methods—rather than undermining Indigenous community priorities—can support Indigenous knowledge-production priorities and self-governance. This includes building research capacity within communities. Going beyond collaboration to train commu-

nity members to do genome research involves transferring resources, both intellectual and material, back to Indigenous and other communities from whom much has been extracted historically by nation-states and their industries and research institutions.

### BISEXUAL SCIENCE AND QUEER PERSPECTIVES

Rick Smith and Samantha Archer take up the theoretical offerings of another (although not mutually exclusive) community in their essay, "Bisexual Science." They write of how as bisexual people they have learned "to live and move in the indeterminate spaces of a world structured on oppositional binaries." In addition to the male/female binary that pervades thinking in the Western academy, culture/nature, subject/object, human/nonhuman, and other related binaries have nearly severed the natural sciences from the humanities. Theorizing through their embodied bisexuality that disrupts such binaries has steered Smith and Archer toward research that refuses the natural science and humanities divide. These scholars move between the "divided spaces of where science is supposed to happen and where sociocultural theory is supposed to happen." They call this "queer flex, a learned skill that bisexual, queer, nonbinary, gender-nonconforming people, and others use on a daily basis to move through heteronormative space."

This insight will, I predict, have tremendous traction in the coming years as queer theory infiltrates the natural sciences and the thinking of a younger generation of scientists. It is an insight that I, as a bisexual thinker (although I don't often personally identify with that label) will also hold in my theoretical tool kit. Smith and Archer make a powerful argument that "to include queer people in the sciences must also make space for new kinds of interdisciplinary work." This fundamentally challenges what I have found to be a suffocating straightness and binarism in the natural science fields. This heteronormativity—along with its typical mononormativity—is one of the oppressions that drove me from my faculty position in UC Berkeley's College of Natural Resources. But that is a bad relationship story for another time.

The touching, delightful essay by Stephanie Meredith and Christopher Schmitt provides an accessible and lively presentation on biosocial or biocultural approaches to understanding sex and gender that were learned and embodied in childhood. Their essay provides brilliant examples of what feminist and Indigenous, queer and crip intellectuals both inside and outside the academy have been wanting, advocating for, and working toward—situated knowledges and a more diverse and rigorous accounting of standpoints in the knowledge that we produce. In the work of these scholars, we can imagine another world in which "biased" straight, white, male standpoints do not get to stand in for the objective gaze from nowhere, producing knowledge that loops back to support a gender-binary, hierarchical, and exclusionary world in which not only same- or multiple-sex desire but



also a child's supposedly gender-bending love for My Little Pony is stigmatized.

Shay-Akil McLean mounts an important race theory argument by asserting a dynamic and co-constitutive *biosocial* understanding of race. Biosociality is still not all that common within social science analyses of race. McLean recounts difficult experiences as a graduate student in anthropology and sociology where what pervades are what I call hard social constructions of race. Social constructionist analyses are overwhelmingly allergic to paying attention to vibrant other than humans—that is, both planetary environments and the environments within our bodies populated by vast numbers of bacteria, for example—that in part constitute our human bodies, sometimes tweaking our molecular structure. Engaging both social and biological fields and taking a more explicitly biosocial or biocultural approach to studying human variation is, in my mind, the most exciting scholarship around race (and gender, and sexual orientation, and non/monogamy, etc.). McLean insists on this approach and has had a difficult professional path for that principled multidisciplinary insistence. This principled approach is also on display across the essays in this forum.

#### FINAL THOUGHTS—AGAINST THE PROGRESSIVE

There is much to write in response to these essays, which represent a watershed moment for the field of biological anthropology, but I am well past my word count. This Vital Topics Forum will be assigned in the classrooms of critical and courageous scientists for years to come. It will also be assigned across social science and humanities disciplines by scholars who care about feminist, queer, and antiracist theory. The scientists writing in this forum also support—sometimes explicitly and sometimes implicitly—Indigenous theorizing and challenges to settler-colonial ideas of inevitable progress and ethical linearity. Such linear narratives (always coupled with the hierarchical binaries that so many of these authors attend to) ground liberal academic thinking.

For example, I often hear that we should not judge people of the past by today's standards, that scientific ethical standards change. What an ahistorical thing to say. Knowing what I know about my ancestors, Dakota people in the nineteenth century weren't comfortable with anthropological grave robbing. I doubt black people were happy with the violence and experiments conducted on their and their relatives' bodies. I doubt any other marginalized people have been happy with the hierarchical gaze that enables ongoing exploitation of our ancestors' and relatives' bodies in the name of research and civilizational progress. While some people may have "evolved" in their capacity to see a greater variety of persons as persons, others already understood that we and our ancestors are persons worthy of full consideration.

Related to challenging notions of progress, the narrative of progressive time is inherently problematized. I propose that we consider instead a spatial narrative of change—one in which we attend to all of our obligations upon a web or plane of relations. If we choose good relating in the places we occupy together (collaboration, nonhierarchy, nonbinarism, biosocial agency, and anti-humancentricity) instead of a temporal narrative of progress, we must reject the idea that the same disempowered souls must always sacrifice for the long-term "good of all." That linear narrative, of course, conflates the universal (hu)man with settler-colonial culture and its assumed whiteness, masculinity, and straightness.

The fulfillment of the standard narrative of humanistic, scientific progress seems no more likely to me than does the second coming of Christ to most scientists. Rather, let us turn our eyes toward a new redemptive narrative. We must practice in every possible moment small acts of visionary resistance and deep ontological revision. That is what is happening in the work of the diverse scientists who write in this forum, who insist on more robust forms of knowledge in order to help constitute a better world for us all to live in.