

Historical Anatomical Collections of Human Remains: Exploring Their Reinterpretation as Representations of Racial Violence

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We synthesize how the tools of molecular anthropology, integrated with analyses of skeletal material, can provide direct insights into the context-specific experiences of racial structural violence in the past. Our work—which is emblematic of how biological anthropologists are increasingly interested in exploring the embodied effects of structural and race-based violence—reveals how anthropology can illuminate past lived experiences that are otherwise invisible or inscrutable. This kind of integrative research is exposing the legacies of structural violence in producing anatomical collections and the embodied effects of structural violence evident within individuals in those collections.

Keywords: racial structural violence; anatomical collections; dental calculus

Within the subfields of biological anthropology, including social bioarchaeology, researchers are increasingly focused on evaluating structural violence, including racial structural violence. Structural violence can be defined as harm perpetuated against individuals or groups through the normalization of inequalities embedded within political-economic systems (Farmer et al. 2006). This research represents a critical part of recent redefinitions of the field of biological anthropology.

Prior to the 1950s, biological anthropologists, then known as physical anthropologists, were devoted to racial typology and played a critical role in inventing race through the establishment of racist classifications of human diversity in the natural and social sciences (Blakey 2020; Zuckerman and Armelagos

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2011). In the nineteenth to mid-twentieth centuries, mainstream physical anthropology methods, such as craniometry, and theory, such as Social Darwinism, were used to scientifically validate ideas of racial hierarchy and functioned to defend slavery, restrict immigration from non-Nordic populations, and justify Jim Crow segregation (Blakey 2020). But in response to a number of larger mid-twentieth-century processes, such as the decline of colonialism, biological anthropology has progressively reoriented itself to focus on understanding the interplay of social behavior, human biology, human evolution, and biosocial variation (e.g., nutrition, child growth, societal health, and adaptation to environments), through social and evolutionary theoretical frameworks (Blakey 2020; Zuckerman and Armelagos 2011).

Contemporary biological anthropology's focus on racial structural violence is a suitable application of its theoretical and methodological toolkit and is ethically important, inasmuch as it addresses the past sins of research in the field that perpetuated racism. Many researchers now interpret human biological data with so-called embodiment theory, which holds that bodies physiologically incorporate their social, environmental, and biological conditions (Krieger 2005). Applied to biological data (e.g., skeletal, genetic), this theory enables recognition of the physiological consequences of differential lived experiences and health inequalities, such as from structural violence (Nystrom 2014). Methodologically, various techniques, from established bioarchaeological analysis of skeletal markers of trauma, disease, and chronic and/or episodic physiological stress (e.g., de la Cova 2011); to more novel approaches, such as molecular analyses of calcified dental plaque (dental calculus) (Austin et al. n.d.), are used to identify these physiological impacts. For instance, de la Cova's (2012) investigation into patterns of skeletal trauma within early-twentieth-century European and African American females revealed that many injuries reflect racialized and gendered experiences of structural violence, such as high levels of interpersonal and accidental injury (e.g., hip fractures) in females who were institutionalized (e.g., state mental hospitals).

Here, we synthesize recent social bioarchaeological work and highlight our own research, which integrates new tools from molecular anthropology with established bioarchaeological methods, to expose legacies of structural violence involved in producing historical anatomical collections of human remains and identifying the embodiment of structural violence within individuals in these collections. We show that this work can provide direct insights into context-specific experiences of past racial structural violence, revealing how social processes

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interrelate with life experiences for some of society's most marginalized members. These embodied experiences are typically obfuscated or invisible in other, indirect types of evidence, including historical documentation. Because discussing all relevant research is beyond this piece's scope, we focus on nineteenth- to early-twentieth-century U.S. anatomical collections (e.g., Robert J. Terry Collection¹ [hereafter, Terry], Hamann-Todd Collection),² which primarily represent the remains of persons subjected to anatomical dissection (Hunt and Albanese 2004). We do so for two reasons: First, biological anthropologists are reconceptualizing nineteenth- to early-twentieth-century dissection as a form of postmortem structural violence, rendering these anatomical collections the products of structural violence. Second, individuals in these collections, who were disproportionately members of marginalized communities, evidence the embodied effects of racial and socioeconomic status (SES)-based structural violence.

The Role of Structural Violence in Creating Anatomical Collections and the Lived Experiences of Individuals within Them

Anatomical collections are central to many aspects of research in biological anthropology. They have been vital to methods development, such as age and stature estimation (Komar and Grivas 2008) and identifying disease conditions (Zuckerman 2018). These collections' research value stems largely from how well documented they are; various features (e.g., age, health status) of included individuals were typically recorded before death and are made available to researchers (Hunt and Albanese 2004). This associated documentation for anatomical individuals allows for proof-of-concept, hypothesis-driven research, wherein skeletal patterns (e.g., trauma, specific diseases, morphology) can be corroborated with collection documentation (e.g., SES, cause of death, sex). This level of documentation also means that anatomical collections are regularly—and often uncritically—thought to be representative of once-living populations and used as references for less well-documented skeletal assemblages, such as those from archaeological sites (Komar and Grivas 2008). Further, research on these collections frequently focuses on portions of the skeletons (e.g., crania) or their pathologies, ignoring that the collections are constituted of entire individuals, which is **both** dehumanizing and undermines holistic and systematic analyses.

Effectively, anatomical collections are often implicitly conceptualized as neutral bodies of evidence and individuals within them as scientific specimens lacking human identities (de la Cova 2020; Watkins 2018; Zuckerman 2018). But some researchers have been interrogating this neutrality and dehumanization (de la Cova 2020; Watkins 2018; Zuckerman 2018). They reveal that, alongside these collections' benefits for scholarship, dark truths concurrently exist. As we detail below through our insights from the Terry collection, anatomical collections were produced by and contain the embodiments of structural violence.

Anatomical collections as products of structural violence

Historians have long documented that the history of dissection is entangled with poverty and race (Richardson 1987; Sappol 2002). Dissection became more common in medical education in the eighteenth and nineteenth centuries, creating a growing demand for cadavers. This demand could not be easily met, as dissection violated contemporary Christian mortuary norms and expectations for the afterlife; Christian doctrine dictated that only complete bodies could participate in the Resurrection. Therefore, dissection was viewed as punitive (Richardson 1987), and tied to capital punishment, rendering it a government-sanctioned form of bodily desecration (Hildebrandt 2008). In addition to criminals, bodies of the poor and marginalized were sourced from cemeteries by “resurrection men,” with public outcry occurring only when white, higher-SES communities were impacted (Richardson 1987; Sappol 2002).

Recently, social bioarchaeologists have proposed that dissection emerged as a form of structural violence between the mid-nineteenth and late twentieth centuries (de la Cova 2020; Nystrom 2014). During this period, anatomy laws legalized dissection of unclaimed bodies, especially of those who died in state-funded social-relief institutions (e.g., almshouses, state mental hospitals), which primarily included marginalized (e.g., African Americans, Native Americans, European immigrants) and poor communities (Sappol 2002). This practice coincided with industrialization, which greatly increased rates of poverty. Because poverty was conceptualized as an individual-level responsibility, institutional social-relief systems (e.g., almshouses) were intentionally designed to be punitive, with features such as arduous workloads, family separation, and extremely hazardous living conditions. These attributes functioned to discourage the use of social-relief infrastructure, especially over the long term, by poor communities (Richardson 1987; Sappol 2002). Therefore, nonconsensual dissection functioned as a postmortem continuation of the intentional punitiveness of institutional systems. Specifically, it made institutionalized individuals vulnerable to this type of postmortem violence as they were not politically or economically able to resist it (Nystrom 2014). Importantly, part of the harm embedded within anatomy laws derived from widespread cultural understandings that dead bodies possess continued social significance and that their postmortem treatment harmed their personal and community's identities. In this way, nonconsensual dissection became an embodiment of social inequality (Blakely and Harrington 1997); it functioned as a legalized punishment for poverty and marginalization aimed at deceased individuals and their living communities, and as a form of social control meant to deter poverty. Because these dissected bodies were channeled into historical anatomical collections—and because curators of these collections actively supported anatomy laws—historical anatomical collections are products of structural violence against marginalized communities (de la Cova 2020; Nystrom 2014).

Embodied effects of structural violence within anatomical collections

Social bioarchaeologists are also reconstructing the physiological traces of embodied racial and SES-based structural violence from individuals in these

collections. For example, the Terry collection, which was assembled between 1898 and 1967, comprises over seventeen hundred individuals who were born between 1828 and 1943 and died between 1910 and 1967 in St. Louis and broader Missouri. Individuals who were incorporated into the Terry before the mid-twentieth century died within social relief institutions (e.g., public hospitals, state mental hospitals), after which they experienced nonconsensual dissection (de la Cova 2011, 2012). Most individuals in the Terry are African American, and many were low SES to poor and recent migrants from the Deep South during the Great Migration (de la Cova 2011; Hunt and Albanese 2004). Notably, the Terry is one of the most extensively utilized historical anatomical collections in the world, especially for methods development (Hunt and Albanese 2004), following the aforementioned assumptions of representativeness and neutrality. However, many individuals in the Terry collection reveal that their ~~anatomy~~, morphology, and health were drastically shaped by the biological, cultural, and environmental conditions they experienced over their life course, which in turn were shaped by structural violence. African Americans in the Terry, for example, exhibit higher rates of infectious disease (e.g., tuberculosis), malnutrition, skeletal evidence of trauma (e.g., interpersonal violence), and skeletal and dental markers of cumulative physiological stress than do European Americans (de la Cova 2011, 2012, 2019; Gengo 2014). These patterns represent the embodiment of the harmful biological, social, and environmental conditions (e.g., crowded living conditions, poor sanitation, high rates of institutionalization) produced by structural violence, as well as of interpersonal discrimination, ~~nineteenth-century~~ enslavement, and the racial terror of Jim Crow segregation in the late-nineteenth to mid-twentieth centuries, including ~~both~~ the Deep South and Missouri (e.g., 1917 East St. Louis Race Massacre) (de la Cova 2019; Gremba 2020). Importantly, reconstructing and identifying the embodied lived experiences of racial and SES-based structural violence that anatomical individuals bear witness to, as well as acknowledging the structural violence entailed in their dissection and inclusion in anatomical collections, enables the recognition of their long-neglected but distinct, individual social identities.

New molecular anthropology tools can reveal embodied structural violence

The genomics era has ushered in new waves of methods (e.g., ancient DNA [aDNA]) for understanding the human past. While these have been accompanied by updated guidance on ethical aDNA research from the American Society of Human Genetics (Wagner et al. 2020), substantial debate surrounds their applications, especially to historical anatomical collections. This debate includes questions about whether these methods perpetuate the structural violence that ~~included~~ individuals and their communities experienced during life and postmortem, as well as that which is still endured by many of their descendants; why certain individuals are subject to destructive sampling for molecular analyses, especially as so many human remains come from marginalized communities in the United States and elsewhere; and how interpretations of human genomic data could negatively impact community stakeholders (see Lewis-Kraus 2019;

Tsosie et al. 2020). These questions emphasize the critical importance of researchers reflecting on the diverse impacts for present-day communities of new molecular methods and information sources for reconstructing human experiences in the past.

Dental calculus—hardened dental plaque—represents one such new source of molecular information. Analyses of calculus have generated tremendous information about past biology and behavior. This is because microbial and pathogen DNA, proteins, metabolites, and to a lesser extent dietary and human host debris can be preserved within calculus (e.g., Warinner, Speller, and Collins 2015). These molecules can be used to reconstruct pathogen genomes and oral microbiomes and often reveal otherwise inscrutable information about past individuals, including their diet, ancestry, and familial relationships (e.g., Ziesemer et al. 2019). Consequently, dental calculus can illuminate various aspects of the biological, social, and environmental conditions experienced by individuals and their communities in the past, including how these conditions were shaped by structural violence.

In our research, we conducted genetic analysis on dental calculus from individuals in the Terry to gain insight into their historically specific lived experiences (Austin et al. n.d.). Contextualized with information from documentary evidence (i.e., death certificate data, relevant historical records), and integrated with evidence of skeletal and dental markers of stress, disease, and trauma that they experienced over their life course, their dental calculus granted direct insights into their end-of-life, perimortem experiences. This provided an unprecedentedly holistic understanding of their life course—because skeletal remains rarely reveal cause of death, making it difficult to distinguish perimortem from antemortem experiences with empirical certainty—and how structural violence shaped it. For example, genomic analysis of dental calculus from one 23-year-old African American male (St.L Individual) in the Terry revealed coinfection of *Klebsiella pneumoniae* and *Acinetobacter* sp., which likely caused his death; critically, pneumonia, which does not leave distinctive, identifiable skeletal evidence, was recorded in his death certificate. Further, St.L Individual's skeleton demonstrates that his short life was filled with hardship: probable tuberculosis infection, a major jaw fracture, indicators of heavy manual labor, and several oral infections (e.g., cavities, abscesses). Like many in the Terry, he died in a segregated and notoriously ill-equipped St. Louis public hospital. Following nonconsensual dissection, the severe degradation of DNA recovered from his calculus confirms that his body was then treated with harsh chemicals to skeletonize it for inclusion in the Terry (Austin et al. n.d.). Overall, St.L Individual's experiences during life, at end of life, and in death embody the processes of structural violence involved in the production of historical anatomical collections and the endurance of structural violence by marginalized communities in the past.

The very personal nature of the health and genetic information that can be recovered from dental calculus, as St.L Individual reveals, means that it is critical for biological anthropologists utilizing new molecular methods to consider how this information might negatively impact descendants and community stakeholders. This is so as to not further contribute to the persistent harm committed

against marginalized communities (e.g., descendants of those within anatomical collections). In some cases, findings may have unexpected impacts; genomic analysis of dental calculus remains in the nascent stages of developing theoretical and practical expectations. In our research, for instance, we will not analyze human genomic DNA to protect the privacy of past individuals and their descendants. Researchers must recognize their potential role in perpetuating the structural violence inherent in anatomical collections.

Conclusion

The role of structural violence in producing historical anatomical collections is an important ethical issue, especially because of the central role that these collections have played within biological anthropology's development. As part of the field's increasing attention to structural violence, researchers must explicitly grapple with our role in the violence that produced these collections (de la Cova 2019, 2020; Nystrom 2014). Further, there is a pressing need to develop new approaches and pipelines for ethical research employing anatomical collections, especially for molecular research (e.g., genomic), where technological and data generation are advancing rapidly (see Ben Torres 2013). Approaches should decolonize research, no longer relying on imposed knowledge. Further, rather than producing research that is disconnected from the individuals under study and their living descendants, they should instead generate research that is engaged with and driven by community stakeholders (Tsosie et al. 2020; Watkins 2019). Importantly, the recent creation and extensive documentation for historical anatomical collections in the United States means that their descendant communities are likely extant and identifiable. Last, institutions holding anatomical collections have a responsibility to engage with and deconstruct the legacies of structural violence that were fundamental to producing these collections, recognize the embodied effects of structural violence that individuals in these collections reveal, and acknowledge their long-neglected social identities. Institutions can look to the New York African Burial Ground (NYABG) Project, a historical bioarchaeological research project that centers on analysis of the remains of enslaved Africans excavated from a Manhattan cemetery, for precedent in creating projects driven by the agendas of descendant communities, led by scholars who are People of Color (PoC) (e.g., of African descent), and deeply attentive to the continuities between structural violence endured by past communities and their present-day descendants (Watkins 2019).

More broadly, actionable research needs to address issues pertaining to historical anatomical collections and other assemblages of human remains from historically disproportionately marginalized communities (e.g., African Americans, Asian Americans; see, e.g., Harrod, Thompson, and Martin 2012). Significant legislative efforts, such as the National Museum of the American Indian Act (1989) and Native American Graves Protection and Repatriation Act (NAGPRA 1990), have transformed research on remains from Native American communities,

but more work is needed in Congress. At the time of writing, there are bipartisan bills in both the U.S. House of Representatives (H.R. 1179) and Senate (S. 2827) that would establish the U.S. African American Burial Ground Network within the National Park Service. Among other mandates, this network would identify and preserve African American cemeteries in consultation with stakeholders and create curricula for public education and heritage tourism initiatives. This legislation is among the many steps needed to address the legacies of structural violence endured by historically marginalized communities in the United States, both in life and in death.

Notes

1. Curated at the Smithsonian's National Museum of Natural History.
2. Curated at the Cleveland Museum of Natural History.

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AQ: 1: this is an unpublished work

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