

## Chapter 2

# An Ethos for Bioarchaeologists

There is no doubt that working with ancient and historic human remains is fraught with legal, ethical, and moral implications. For the young scholar the issues raised by restrictive legislation and outcry from indigenous people who say it is wrong to study human remains may seem daunting. However, instead of seeing these alternative perspectives as roadblocks and challenges, many bioarchaeologists are embracing the issues being raised by transforming how bioarchaeology is taught and how research is conducted. Instead of framing the issues as what must be done as responsible scientists, bioarchaeologists have the potential to rewrite their agendas and to frame a more encompassing worldview on ways of working with archaeological resources. Wood and Powell (1993) present an essential piece of scholarship powerfully relevant for bioarchaeology. In their presentation, they provide a compelling set of reasons for shifting the ethos of how archaeology is practiced. Bioarchaeology can also be transformed by changing the underlying ethos regarding how research is done. Ethos implies a fundamental set of beliefs that shape daily practice. This chapter suggests that a basic tenant for research involving human remains must embrace an engagement at every level with the larger context within which the human remains and artifacts are connected. This includes descendant populations, local communities, county, state and national legislation, government and local statutes, and repositories and museums that house related materials.

Bioarchaeologists working in this complex and intermeshed context increasingly need to convey and demonstrate the importance of their research. They must be able to convey why they should be permitted access to human remains and other artifacts for their research. Their research cannot be seen as esoteric because the individuals under study are part of a larger sociopolitical context that extends far beyond the bones. The modern political and legal arena within which bioarchaeology must also operate and comply continues to permeate the study of the human remains. As mentioned in Chap. 1, laws such as the Native American Graves Protection and Repatriation Act (NAGPRA) passed in 1990 and more recent amendments to it, as well as the National Museum of the American Indian Act

(NMAIA) passed in 1989, continue to exert limitations and challenges to research focused on human remains.

To appreciate and understand where modern bioarchaeology is today, it is essential to provide an overview of the historical trends in the study of human remains. First is a discussion of the ethos of the early physical anthropologists that pioneered the scientific analysis of ancient human remains using a variety of approaches. Because human remains were analyzed largely without context prior to the 1980s and without the permission or collaboration of descendant tribal groups prior to the 1990s, there were many missed opportunities to make the case that working with human remains was of broad relevance to the modern world. The historical focus on descriptive morphology and typology dominated analyses and thus precluded integrative studies that could have linked the past to the present (and the dead to the living) in valuable ways.

Second, it is important to trace the impact that NAGPRA legislation had on the field of bioarchaeology. There were a number of different responses from the bioarchaeological community in the 1990s, but few of these involved self-critique or reflexive assessment of their research on a grand scale. And, the ethos of bioarchaeology was very slow to shift from the traditional worldview that scientists should have access to all human remains for study to the more contemporary notion that descendant groups have the right to say when and if scientific studies should be conducted on their ancestors. In the 1990s, some bioarchaeologists shifted into neutral research areas such as forensic anthropology (see a discussion of this field in Chap. 3), and the discipline did not undergo any major transition or change its ethos at that time. Yet simply problematizing the position of physical anthropologists and bioarchaeologists vis-à-vis NAGPRA and NAGPRA-like legislation would have made clear the need for change.

Recent scholarship by many bioarchaeologists is now showing a fundamental shift in ethos. The emerging protocols for conducting bioarchaeological research have been enriched and codified by a new generation working closely with tribal representatives and legislative bodies. Regardless of county, state, and national laws, before beginning any project involving human remains, bioarchaeologists must consider the following: (1) What are the full implications of conducting the research? (2) How might the research impact the descendant and local communities? (3) Are there potentially negative ways that the information being collected and disseminated might be utilized by people outside the field of anthropology? The last consideration is the one that is often hardest for researchers to judge but is arguably the most critical to consider. For any scientist who generates data, it is difficult to assess and track how the data will be utilized in the future. Even cultural anthropologists struggle with this issue. Chacon and Mendoza (2012) present compelling case studies on the ways that cultural anthropologists grapple with the many ethical ramifications of publishing (and not publishing) sensitive ethnographic data on indigenous groups. Case studies in this chapter help illuminate the complexities of working with human remains both in the USA and in international settings.

## 2.1 Historical Trends and Missed Opportunities for Integration and Engagement in the USA

Bioarchaeology straddles both the natural and social sciences and as such generates a great deal of both quantitative and qualitative data about the past. Most bioarchaeologists believe fervently that understanding the past is as important as conducting cancer research or research on global warming. Many would agree with the historian and moralist of his time, Lord Acton, when he stated “If the past has been an obstacle and a burden, knowledge of the past is the safest and surest emancipation” (Weaver 1960:22). Yet bioarchaeologists have been very bad at explaining exactly how their studies from the past can have a beneficial impact on solving today’s problems. In the critical examination of physical anthropology (and bioarchaeology as one of its sub-disciplinary foci), many scholars have suggested that it was due to a failure to frame research by posing questions that connect the past to the present (Walker 2000; Martin 1998; Alfonso and Powell 2007; Larsen and Walker 2005; Walsh-Haney and Lieberman 2005; Kakaliouras 2008; Turner and Andrushko 2011).

In every science there are studies which are purely descriptive and that do not seek to make broader conclusions. This is certainly true for bioarchaeology and its twin subdiscipline, paleopathology (discussed in Chaps. 6 and 7). It was once very easy for archaeologists and physical anthropologists to excavate ancient skeletons or cemeteries, measure the bones, and then examine the bone surfaces for age at death, sex, and pathology. Early publications abound with studies that simply document all the measurements and any finding of pathology. While there is value to some of these purely case study-based publications, they are limited. Sometimes other researchers can take several case studies and begin to parse out patterns across a temporal or spatial dimension, but this is usually difficult to do. Rarely do descriptive studies utilize a set of standard methods for collection and reporting of data.

Thus, descriptive studies can add to a general growing body of observations and to the understanding of how pathology is expressed on human bone tissue, but these are very difficult to connect to broader themes relating to the human condition. Descriptive studies based on quantitative measures may be building blocks that can be used to construct larger notions about human fragility and resilience, but often they are simply too particularistic and narrowly focused to use in this way.

NAGPRA played an indirect role in forcing bioarchaeologists to become more engaged with larger questions and with linking their research to contemporary problems. In the 1990s, it became increasingly necessary that bioarchaeologists wishing to have access to human remains for study would need to articulate in clear and nontechnical language why it was so important for them to study indigenous skeletons. In doing so, it became clear that any answer that implied that it was the right of all scientists to have access to human remains was insufficient. In an attempt to rectify and repair relationships between bioarchaeologists and indigenous communities, research programs that were responsive to the concerns raised by living descendants became models for the new post-NAGPRA bioarchaeology. These approaches laid the foundation for what is now the norm in bioarchaeology.

Bioarchaeologists have worked hard in recent years to remediate that disconnect between their work and the public perception of their work by making the questions they ask and the answers they seek more relevant and applicable to the modern world. Collaborations between indigenous groups and bioarchaeologists are the way of the future, as it is at the heart of the new “best practices” for the field. For example, in the USA, researchers in recent decades have been increasingly consulting and working in conjunction with Native American groups (Harrod 2011; Dongoske 1996; Stapp and Longnecker 2008; Miller 1995). We argue that this collaboration is not simply the consequence of NAGPRA, as bioarchaeologists working in countries that do not have these laws are following these same best practices (Turner and Andrushko 2011; Pérez 2010). Cultural anthropologists and archaeologists also have found that collaboration can be extremely productive (Chacon and Dye 2007).

Not every Native American in the USA or indigenous person in another country will be convinced that human ancestral bones should end up on the cold, hard tables in bioarchaeology laboratories undergoing scientific examination. Popular literature and media are full of examples of this sentiment, perhaps best expressed by Leslie Marmon Silko, “The interpretation of our reality through patterns not our own serves only to make us ever more unknown, ever less free, ever more solitary” (1987:93). Bioarchaeologists need to be prepared to empathize and respond to those who do not see the value of measuring and analyzing bones. As discussed in Chap. 1, bioarchaeologists are anthropologists. Being trained in anthropology helps with this issue because clearly there are many ideological differences about what the dead means to the living. It is imperative that practicing bioarchaeologists be well versed in these highly varied ideologies regarding death and the afterlife (this is discussed in great depth in Chap. 5).

### ***2.1.1 The History of Physical Anthropology***

Physical anthropology was born out of the principle of morphological comparison developed by Linnaeus, and divergence from a common ancestor proposed by Darwin and Wallace. The result of this origin is that throughout history, researchers have focused on the qualities that distinguish different groups (usually referred to as “types”) as a means of creating categories or typologies. While much of this work was primarily focused on identifying humans and their relationship to fossil hominids, some researchers applied these principles to living humans. The result of trying to classify modern humans into types and distinct groups was the origin of the concept of “race” (Brace 2005). The term “race” is used to describe distinct groups of people who differ based on perceived physical characteristics. The belief in this approach is bolstered by the assumption that “pure” types existed at one time, and although there has been interbreeding, measurement of physical features can capture what those original types were.

This concept is problematic because in the past there was a tendency to associate different “races” with different abilities such as intelligence, capabilities, political

leanings, and personality. For example, the association of “race” with certain social and political movements in the USA contributed to the justification for a number of atrocities that include slavery and subjugation, segregation, and forced sterilization (i.e., eugenics). These were enacted upon Africans exported to the USA, Native Americans, and various other immigrant groups.

Within the field of physical anthropology, “race” has been a concept that has divided researchers (Stocking 1982). Some have argued that physical variations among human populations are so slight and meaningless that separation into well-defined, exclusive groups is unachievable (Brace et al. 1993; Brace 1964, 2005; Armelagos and Salzman 1976; Van Gerven et al. 1973; Goodman 1994). Others have argued that the observable differences between groups are meaningful and do define discrete “races” (Birkby 1966; Gill 1998; Ousley et al. 2009; Sauer 1992, 1993). The scholarly research on both sides of this debate attempts to deal with the underlying causes and significance of variation seen at the phenotypic (anatomical) level.

Traditionally, researchers favoring a typological approach to human variation have separated populations into groups primarily using external characteristics referred to as “classical traits” that included things like skin color, hair type, nose form, and body structure. Other researchers have demonstrated that these kinds of physical traits are the result of environmental adaptations, and thus they simply are a reflection of regional variation in phenotypes. More current methods using genetics and DNA have been utilized in these debates to demonstrate the importance of individual variation over the utility of typing traits. Regardless of whether anatomical or genetic traits are used, there is overwhelming evidence to suggest that the differences among the so-called races are more reflective of regional adaptation and phenotypic similarities (Brace 2005). Human variation is fluid *between* populations and it is complex *within* populations.

Early researchers who laid the groundwork for the foundation of physical anthropology tended to view human variation among populations hierarchically. They were influenced by the now outdated notion that evolution was progressive. The problem is that the differences they noted among human populations were due to regional specialization similar to what Darwin found in his evaluation of variation among finches. Even though the differences were recognized to be adaptations to climatic conditions, some physical anthropologists used the variation as evidence of the existence of different human species (Nott and Gliddon 1854). Not only were these so-called races viewed as separate species, but these researchers argued that each could be ranked by its affinity to God in a hierarchical system known as the Great Chain of Being (Lovejoy 1936; Hoeveler 2007).

Constructing humans as separate species is problematic on many levels. These alleged different human species violate the means of distinguishing different species as defined in biological terms. In biology, different species are any two organisms that cannot breed and produce viable offspring. With regard to human populations, it is obvious that any member of any human group can successfully mate with any other person of the opposite sex and have a child that can do the same. Furthermore, the species designation is implausible because, aside from being scientifically unsound, it is logically false. Even before an awareness of

what genetic information reveals about “race,” the physical differences or “classical traits” that were used to separate humans into distinct populations were so slight that even the most distant people resembled one another in more ways than they differed.

With the formal development of physical anthropology in America, science became a tool that played a significant role in the “race” ideology as it institutionalized the concept and promoted its use as a means for directing social and political policies such as restrictions on marriage, segregation, eugenics, and eventually the holocaust in Europe. It is critical to understand this legacy because in many ways it influenced how human remains were retrieved and analyzed by physical anthropologists. This in turn directly led to increasing outcry by Native Americans that because of their “race” their ancestors’ bones were being treated differently than European American’s ancestors’ bones. It was common prior to 1990 to excavate and retrieve historic and precontact Native American human remains, even though it was (and still is) illegal to disturb human burials. In Nebraska, for example, in an analysis of the effect of NAGPRA on anthropology, the author states that by law it is illegal for any set of human remains to be disturbed (Brown 1995–1996), and yet a federal law had to be passed to protect Native American burials. In 1979, a trial was held (*Sequoyah v. TVA*, 620F.2d 1159) where the Cherokee tribe was attempting to prevent the Tennessee Valley Authority from the removal and analysis of indigenous burials. The importance of this case is that the graves of Native Americans were curated and studied, while the burials of individuals of both Euro-American and African-American descent were immediately reinterred (Ferris 2003:161). The fight led by Native Americans for NAGPRA legislation is a direct result of this typological and ultimately racist approach to human remains.

### 2.1.1.1 The Role of Measurement in “Scientific Racism”

The reason for the intimate link between physical anthropology and “race” (and bones and types) is that the focus of early research in the USA was to maintain the focus on explaining variations in phenotype (physical appearances). In the field of physical anthropology, this concept was made more quantifiable with the implementation of measurements and statistics through the technique called anthropometry. Anthropometry is the study of the physical structure of the human body in an attempt to differentiate populations. In his book, Bass (2005) identifies four categories of anthropometry, which include somatometry, cephalometry, osteometry, and craniometry. The two techniques generally associated with anthropometry in the traditional sense of being the study of living humans are somatometry, which is defined as the “measurement of the body of the living and of cadavers,” and cephalometry, “measurement of the head and face” (Bass 2005:62). Physical anthropologists, for the most part, are no longer actively employing the techniques of somatometry and cephalometry. In contrast, craniometry and osteometry still form the basis of quantitative research in the study of human remains, so it is important to discuss some of the problems historically associated with the application of these techniques.

The first of these methods, craniometry, or the use of measurement to determine the size and shape of the skull and facial bones, was developed in 1775 by Johann Friedrich Blumenbach. Craniometry is and has always been a controversial method of analysis. According to Armelagos et al. (1982:308), as far back as 1896 Rudolf Virchow was "... extremely critical of the use of crania for assessing biological affinity." Yet its use persists even today.

Perhaps one of the most prolific practitioners of craniometrics was the physician Samuel George Morton who El-Najjar and McWilliams (1978) acknowledge as the founder of physical anthropology in the United States. Morton was known for his extensive research that compared the cranial capacity or average size of the brain of a multitude of different populations around the world. Using these data and other research he conducted, Morton created a hierarchy of human groups in the mid-1800s. Other researchers built on this research and continued to perpetuate a hierarchy of "races" often based on supposedly differing levels of intelligence.

Like Linnaeus and other scientists of the time, it is no surprise that the top of this hierarchy was the lightest-skinned populations located in Europe, especially England, while the lowest of the populations were the dark-skinned people of Africa. The problem with Morton's study and others like it is that there is no evidence that these minute variations in cranial capacity have any consistency among supposed racial populations or correlation with intelligence. This lack of a correlation was first exposed by Gould (1981) although there have been arguments that Gould's reanalysis of Morton's work was flawed (Lewis et al. 2011). Despite the criticisms of Gould, other research has supported his original assertion that there is no correlation between cranial or brain size and intelligence (Jackson 2010; Gravlee et al. 2003a, b; Boas 1912; Carey 2007).

The second method used by physical anthropologists to differentiate populations is osteometrics, which is generally defined as the measurement of bones, but some researchers use the term to refer to measures of the postcranial features of the body only (Bass 2005:62). This technique has been less controversial than craniometrics because intelligence has not been correlated with body size, and "... the racial assessment of postcranial remains never captured the interest of physical anthropologists to the degree that cranial studies had..." (Armelagos et al. 1982:318).

The purpose of exploring the history of skeletal analysis is not to discredit the field of physical anthropology but to acknowledge that some of the ways bioarchaeologists today approach the analysis of human remains are largely based on the same methods used by others in research that led to the production of racist pronouncements backed up with scientific data. This is not unique to physical anthropology, as it has been shown that nearly all scientists at times are influenced by ideological and political agendas. However, there has been much progress in scientists acknowledging their biases and reflecting on the meaning of their research.

The misuse of scientific data can lead to very negative outcomes. The extreme examples of this include the use of scientific racism whereby political motivations to maintain slavery and to justify the displacement of Native or indigenous peoples were upheld by anthropological and medical research (Johanson 1971; Brooks 1955; Horsman 1975). To understand how these policies could come to pass, this

brief review of the historical development of the term “race” in the field of physical anthropology forms a backdrop to the subsequent discussion of formulating a new ethos for bioarchaeology in the modern moment. Without this historical contextualization of the field, it may seem less urgent or relevant to promote an ethos of integration, engagement, and ethical consideration around the analysis of human remains.

### ***2.1.2 Developing a Biocultural Approach and the Origin of Modern Physical Anthropology***

Throughout the history of physical anthropology, there were researchers arguing against racial classification and promoting more nuanced methods of understanding human variation (Washburn 1951; Boas 1912; Cobb 1939; Montagu 1942). Over the last several decades, the field has actively begun to move away from asking questions about superficial physical differences between groups precisely because that approach fails to answer any broad theoretical or practical questions. Instead, there has been a push for framing questions about the ways that human variation is a product of biological, cultural, ecological, and geographical variation and how these variations change among populations.

The motivation behind this shift in emphasis was to salvage a valuable comparative tool of science. The revitalization of anthropometrics is a good example of this. In anthropology, it is used in a wide number of studies relating to growth and development and the problems of undernutrition and disease (Bogin and Keep 1999; Vaughan et al. 1997; Komlos 1989, 1995).

Outside of anthropology there exists a field known as ergonomics, which is defined as “. . . the science of work: of the people who do it and the ways it is done, of the tools and equipment they use, the places they work in, and the psychosocial aspects of the working situation . . .” (Pheasant and Haslegrave 2006:4). It is a multidisciplinary field that comprises researchers from engineering, biomechanics, psychology, and, increasingly, anthropology. The goal of ergonomics is to design products, workspace, and occupational activities so that they function as efficiently as possible with the human user, typically in a business (Sagot et al. 2003; Chaiklieng et al. 2010; Hendrick 2003) and military (Gordon 1994; Rogers 2011; Huishu and Damin 2011) setting. With potential to have an impact on the success of a product on the market and a reduction of significant costs related to workplace injury, this field is highly applicable to the modern world. A second and perhaps even more valuable way in which anthropometrics is being utilized by physical anthropologists today is in the study of metabolic disease and nutrition (Vaughan et al. 1997; Komlos 1995; Hsieh and Muto 2005). Thus, even though anthropometry was a method used in typological projects, it does have a role to play in more important areas of research.

Looking more specifically at the analysis of the skeletal remains, there has also been a shift in focus. At its worst, the analyses of skeletal remains were focused on craniometry and pathology; at its best, analyses provided population estimates on a range of mortuary, demographic, and health factors. Combined with a more integrative approach (discussed in Chap. 1), the biocultural model has facilitated using metric measures to address the effects of environment and culture on skeletal growth and development. It is important to note that some of the earliest researchers examining human remains were physicians or anatomists and not anthropologists. In the 1970s there was a major shift in anthropologists being interested in more holistic approaches to understanding human change of time and space (Larsen 1987; Cohen and Armelagos 1984; Buikstra 1977; Gilbert and Mielke 1985; Huss-Ashmore et al. 1982).

Bioarchaeology as a subdiscipline within physical anthropology grew out of this attempt at integration and holism. This approach to the study of human remains was much more inclusive, with a focus on understanding not only the remains but the contextual information in which they were situated (e.g., type of interment, grave goods associated with the burial, and mortuary landscape). The goal of bioarchaeology was not to analyze skeletal remains, but to understand the life histories of individuals. Measurements from human remains are now more likely to be used to examine differences between populations as a function of the interaction between genetics, culture, and the environment. The result of this shift was the development and employment of biocultural models (Goodman and Leatherman 1998; Buikstra 1977; Blakely 1977) and human behavioral ecology (Smith and Winterhalder 1992; Cronk 1991).

The term physical anthropology is interchangeable with biological anthropology, but there is an interesting history to the current shift toward using biological anthropology instead of the former. The term “physical” within anthropology harks back to a reference about the physical body but also as it pertains to the physical laws of nature. The body and morphology were used to understand the divergence from a common ancestor as proposed by Darwin and Wallace. These early studies focused on comparison of extinct and extant populations of humans and our ancestors in an attempt to understand our development. Some of this research took a dangerous turn when morphology and differences became reduced to “types” and typological model. This focus on physical variation between types often failed to offer a means for obtaining answers to questions about what accounts for variability in the first place.

In contrast to the term physical, “biological” is generally accepted to mean the study of life, which includes the organisms and their life histories. When biology is coupled with anthropology, it seems to expand the topics and possibilities of what can be addressed, beyond physical characteristics of the body. Biological anthropology is actually more inclusive in an approach to research that looks at all aspects of life and what it means to be human. More so than physical anthropology, biological anthropology does cover topics that include nutrition, trauma, disease, metabolic disease, hormones, cognition, behavior, and more.

From physical anthropology of the past to biological anthropology of the present, the terms are used interchangeably although new textbooks and almost all bioarchaeologists practicing today would consider themselves biological anthropologists. The shift from physical to biological is both a symbol of the expansion of the questions that researchers are striving to answer and a real marker of more integrative (i.e., biocultural) questions.

Bioarchaeological research using the biocultural approach is crucial for the study of human adaptation and disease in the past (Brickley and Ives 2008; Martin 1994; Merbs and Miller 1985; Powell 2000; Roberts and Manchester 2005; Ortner 2003). This research is crucial for understanding the spread of epidemics and the prevention of future disease outbreaks (Armelagos and Barnes 1999; Barrett et al. 1998; Roberts and Buikstra 2003; Roberts 2010). Additionally, this research is useful in understanding how environmental conditions affect the long-term health of a population over a short period of time. The utilization of modern clinical literature requires relying on medical records that were often discontinuous and incomplete and long-term studies that lasted decades but still did not reveal disease pattern. Bioarchaeological research can link social processes to health conditions, and in this sense it has much wider applicability to solving human problems today.

## 2.2 The Rise of Legislation and Its Effect on Bioarchaeology

To understand the profound impact that emerging legislation and statutes have had on bioarchaeology in the USA, it needs to be discussed within the broader context of Native American sovereignty. Most people, including some of our most influential leaders, are unfamiliar with the concept of tribal sovereignty (Cobb 2005:119). Sovereignty is defined as “. . . The supreme, absolute, and uncontrollable power by which any independent state is governed; . . . the international independence of a state, combined with the right and power of regulating its internal affairs without foreign dictation . . .” (Black 1968:1568; Garner 2009). Clearly, tribes were sovereign nations prior to 1492 and for a few centuries following depending on the exact time of contact. The colonies and ruling powers across the Atlantic recognized individual tribal nations, dealing with them via treaties and other legal documents (Pevar 2012:1–6). When the Founding Fathers drafted a Constitution for the new United States of America, they referenced Indians twice (Pevar 2012:56–59). The Commerce Clause, located in Article II, section 2, clause 2, provides that “Congress shall have the Power . . . to regulate Commerce with foreign Nations, and among the several States, and with the Indian Tribes” (Pevar 2012:57). The Treaty Clause, located in Article II, section 2, clause 2, gives the president and the Senate the power to make treaties. This includes treaties with Indian tribes (Pevar 2012:57).

While recognizing Indian nations within the wording of the Constitution seems to put them on the same footing as foreign nations, the Supreme Court has interpreted this inclusion differently. In 1832, the Supreme Court held in *Worcester v. Georgia* (31 U.S. 515) that these two constitutional provisions give Congress

“all that is required” to have plenary power over Indians and tribes. In the previous decade, the Supreme Court held in *Johnson v. M’Intosh* (21 U.S. 543) (1823), that because of the “discovery” of North America and the “conquest” of its inhabitants, all persons and property within the USA are subject to its laws.

The reference to Indians and tribes within the Constitution, and subsequent Supreme Court interpretations, has severely limited tribal sovereignty within the United States. For example, lacking complete sovereignty means that tribes may not declare war against foreign nations. However, the federal government does recognize tribal self-government. Indian tribes have the inherent right to govern themselves. As noted by a federal appellate court as recently as 2002, “Indian tribes are neither states, nor part of the federal government, nor subdivisions of either. Rather, they are sovereign political entities neither possessed by sovereign authority nor derived from the United States, which they predate. [Indian tribes are] qualified to exercise powers of self-government . . . by reason of their original tribal sovereignty” (Pevar 2012:82).

This original tribal sovereignty has been severely limited by the federal government over the years. The Supreme Court has interpreted federal documents, including the Constitution, as giving Congress plenary power over Indians and tribes. This plenary power has been exercised in numerous pieces of federal legislation to limit or eliminate numerous tribal powers (Pevar 2012:82–83). Express limitations include prohibiting tribes from selling tribal lands without the federal government’s permission.

As mentioned earlier, tribes may also not declare war against foreign countries. The most severe limitation on tribal powers occurs when the federal government either implicitly does not recognize or expressly terminates the government-to-government relationship with a tribe. A terminated tribe is considered not federally acknowledged (Pevar 2012:271–274). Tribes that are not federally acknowledged may continue to exist as tribal entities but without recognition from the US government, they are ineligible for government programs established for Indian tribes, and their tribal members are not considered American Indian for most governmental purposes. Additionally, such tribes are not covered under NAGPRA.

While limits on tribal sovereignty continue to be upheld by the Supreme Court, there are several areas in which tribes may continue to self-govern. Tribes may form their own governments (Pevar 2012:84–85), choose their own leaders (Pevar 2012:87), maintain their own court systems (Pevar 2012:88), and determine tribal membership without interference from the federal government (Pevar 2012:90–93). These are all exceptionally important aspects of tribal sovereignty and tribal self-government. While tribes do not exercise the same level of sovereignty they did prior to the formation of the US government, it is important to note that Congress, with its self-appointed plenary power over Indians and tribes, has not gone so far as to eliminate all aspects of tribal self-government.

This very brief introduction to the postcolonial arrangement of tribal groups within the USA is important in making sense of both the benefits and the challenges that came with the passage of NAGPRA and other legislation. Too often, there is only the briefest explanation of the profound impact of these kinds of laws

on the development of bioarchaeology. If bioarchaeology is truly to be transformed by a shift in the ethos of practicing bioarchaeologists, it must begin with a more full appreciation of the complexities of what it means to do ethical research in these arenas.

Bioarchaeologists need to be familiar with NAGPRA and its vast outreach programs that aim to link tribes with bioarchaeologists and archaeologists. Everything one needs to know about NAGPRA can be found on at <http://www.nps.gov/nagpra/>. However, it is important to acknowledge that NAGPRA (and any legally mandated rules and regulations that will come along in the future) are not perfect and laws will never cover every ancient burial, bone or archaeological site. That is why this text advocates for bioarchaeologists to have an ethos, that is, an everyday practice that is built on scientific responsibility, a moral code that goes beyond laws and regulations, and a commitment to social justice and inclusivity.

### ***2.2.1 Who Owns the Past?***

How tribal sovereignty has most effected bioarchaeology is in the establishment of laws like NAGPRA that grant the right to reclaim and protect their ancestor's skeletal remains. Under NAGPRA, only federally recognized Native American tribes and Native Hawaiian organizations may claim burials and cultural items. Prior to these laws, any one could dig up or remove bodies and artifacts from their place of interment without much fear of consequence. As a result, nonacademic people often looted unmarked graves looking for items of value or souvenirs. Early archaeologists were not exactly looters or grave robbers, but there were many cases of archaeological excavation of burials that took place that were unethical by any standard understanding of the term ethical. These activities ranged from not considering the descent group that identifies the remains as their ancestors and how they feel about these activities, to actively stealing remains from graves (Riding In 1992; Cole 1985; Thomas 2000).

The argument for digging up the graves was that the findings would benefit society. It was explained that excavating human remains and examining them produced a more scientific understanding of the continent's original inhabitants. These reasons and the methods of obtaining the remains of the original inhabitants are now viewed as suspect.

It may be argued that studying skeletal remains is not the same as medical experimentation since bioarchaeological research does not result in the death or physical mutilation of living people. However, according to Echo-Hawk (1988:2) "Regardless of the motive for expropriating Indian graves, the impact of this activity upon the affected Indians is always the same: emotional trauma and spiritual distress." As Ferguson and colleagues state "One thing archaeologists should keep in mind is that the disturbance of human remains is agonizing for Hopi people . . . In presenting results of mortuary studies, archaeologists need to understand that for the Hopis, the heartfelt spiritual concerns about the disruption of graves far outweighs any [of the]

scientific studies . . . what archaeologists find to be interesting results and findings are colored by the desecration of the graves that led to those results” (2001:22).

In shifting the ethos concerning bioarchaeological research, it is incumbent upon bioarchaeologists to use information that they collect in a way that does not trivialize or diminish the lives of the living descendants. Collaboration and consultation with representatives from indigenous groups regarding data derived from the excavation of the burial and the analysis of the remains is one way to adhere to these ethical considerations. If bioarchaeologists fail to follow this simple tenet, and instead push for the rights of scientists over consideration of the impact of the research on living people, the consequences will be a continued fracturing of the discipline. According to Watkins (2003) this approach has resulted in Native Americans often distrusting anthropologists and archaeologists.

This is apparent in the contrasting ethical doctrines of the Vermillion Accord on Human Remains (passed in 1989) and the SAA Code of Ethics (as it was written in 2003). Though both guide anthropologists and archaeologists on how to appropriately conduct research that involves human remains, the difference between the two is the goal they are working toward. The SAA Code of Ethics presumes the past belongs to everyone, while the Vermillion Accord argues for a recognition that the cultural materials of the past are related to the cultures living today so anthropologists must work with the native groups to understand the past.

Watkins (2003) challenges that we need to move beyond arguing over who owns the past because what is of more concern is which group should get to represent the past. Using the myth of the “Mound Builders” as an example he illustrates how science is not objective and as such it is possible that indigenous history can be distorted by the worldview of the people analyzing the material and remains (Watkins 2003:132). This is not to say that science is inherently flawed, but just that “true” objectivity is impossible as “...knowledge is necessarily embodied, partial, and situated and, further, that its construction, claiming, and enacting are activities with moral and political ramifications” (Lang 2011:75). As bioarchaeologists, we work with the dead who cannot provide us with all the details of their daily lives, so any interpretation we make from the data we collect is devoid of a significant portion of the context. While archaeological reconstructions and ethnographic records can provide a large portion of the context, often times the indigenous groups can play a crucial role in fleshing out the scientific interpretation.

### ***2.2.2 The Impact of NAGPRA on Bioarchaeology***

The responses of physical anthropologists working with human remains to NAGPRA were varied and idiosyncratic. Some left the profession altogether, relocated to medical schools, or shifted to working in the private sector for cultural resource management operations. In many states, burials encountered in the course of excavation can still be analyzed in situ, but cannot be fully analyzed in a lab, a practice that needs to be thoughtfully considered (see Chap. 4). Others have simply stopped working

with US collections. There are also physical anthropologists that still lament the loss of academic freedom and are working to reverse or diminish NAGPRA.

However, many bioarchaeologists stayed their course and helped museums and other repositories with skeletal remains comply with specific NAGPRA requirements. In the course of complying with the legal mandates of NAGPRA, many bioarchaeologists discovered hundreds of collections in museums and other repositories that had never been studied. Compliance activities involved a thorough and systematic listing of every burial and human bone being held in state or federal repositories. This generated much work and employment for bioarchaeologists. One of the major activities for compliance involved consultation meetings between museum and tribal representatives. For many bioarchaeologists, these consultations were the first time they had ever talked to, or worked with, Native Americans. Because the experience was often educational and positive, a decade of compliance activities and consultations helped to lay the groundwork for a new ethos in bioarchaeology. This is just one example of how NAGPRA and similar legal mandates have helped to change bioarchaeologists.

Today, bioarchaeology is a subdiscipline that is thriving. Over the last several years, the breadth, depth and amount of bioarchaeological scholarship has increased dramatically. This growth is evident in the development and expansion of university programs with faculty who specialize in bioarchaeology, forensic anthropology and paleopathology, as well as the explosion of researchers trained in these overlapping fields. According to one source, there was a potential increase of 28% in employment for bioarchaeologists between 2008 and 2010 (Huds 2011). The increase in the number of people specializing in bioarchaeology is seen also in the increase in the number of anthropology departments advertising for bioarchaeologists, with 12 positions for hire in 2013 compared with 3 positions in 2012 and 2 in 2010 (AAA website).

Thus, the impact of NAGPRA can now be seen as an important corrective. It has forced researchers to formulate meaningful research questions that can be answered with data derived from the archaeological context. It has also shaped the discipline toward being a more inclusive enterprise and one that engages with real world problems.

### 2.2.2.1 Case Study: American Southwest

Martin (1998) captured the above trends for one region of the USA in the article *Owning the Sins of the Past: Historical Trends in the Study of Southwest Human Remains*. The Southwest was an early field site for many archaeologists and physical anthropologists. The Southwest was essentially a training ground and laboratory to some of anthropology's most prominent scholars beginning in the late 1800s. As early as 1908, Ales Hrdlicka, one of the founding fathers of physical anthropology, conducted studies in the region. Focusing primarily on craniometrics (measurements of the skull), he developed an approach to skeletal analysis that relied on comparative morphology to place individual into typologies.

In the 1920s, Alfred Kidder was excavating a very large ancestral Pueblo site outside of Santa Fe, New Mexico called Pecos Pueblo. The human remains were sent directly to Earnest Hooten at the Peabody Museum at Harvard. In his analysis of over one thousand burials, he provided information on age, sex and disease. However, the major focus of his study was on the determination of morphological types based on metric data from the adult crania. His results were not surprising; at the completion of his extensive analysis, he concluded that the people inhabiting the pueblo were likely Native American. "Of the eight morphological skull types distinguished by me in the Pecos collection, all except the long-headed Basket-makers, pseudo-australoids, and pseudo-negroids show clear evidence of Mongoloid admixture and they are in fact predominately Mongoloid in features" (Hooten 1930:344–363).

This finding was not very new or interesting as the site of Pecos was populated by Native Americans, a fact well documented in numerous historic records. Pecos was a bustling town of over 2,000 people when the Spanish raided it for food throughout the 1500s, before finally establishing a brutal and coercive mission in 1619. For the next 200 years, the people were literally beat into submission and forced to labor for Spanish conquistadors and the missionaries. The people at Pecos stuck it out until 1838 when the last members of the community abandoned their village and joined another historic pueblo.

The focus on morphology and typology dominated studies using human remains for several decades. By the 1980s, there were only a handful of studies conducted on Southwestern remains that focused on other biological indicators, such as pathology. Though many studies still adhered rigidly to descriptive analysis, some did move beyond to conduct biocultural analyses that looked at adaptation, demography and subgroups at risk. However, this trend took place a little too late, and the result is that many of the Native Americans in the Southwest still associate physical anthropology with grave robbing, skull doctoring, and looting.

Instead of working on research that was of some interest to Native Americans prior to the 1980s, bioarchaeologists continued to emphasize their own goals and interests even after the establishment of NAGPRA. Since the 1940s there has been demographic, epidemiological and medical evidence that the contemporary people still living in the Southwest were at risk of early death and that they carried a higher illness burden than white counterparts. As Native Americans were beginning the long fight for improvement of life on the reservations and for social justice, physical anthropologists continued to study skeletal material in their laboratories, oblivious to these facts. Native American life on reservations is fraught with racism, poverty, disease and early death. The ancestors of these people were being studied with little regard for the ancestor-descendant relationship that existed.

Indeed, reports from the medical journals demonstrated that American Indian infant mortality and adult morbidity were alarmingly high and disproportionate to the rates for the general US population. Concerning health effects of environmental pollutants, Native Americans have borne the brunt of doses of radiation due to their proximity to major areas of nuclear testing such as the Nevada Test Site and Los

Alamos. Levels of lead in HUD housing may have caused and continues to cause high levels of lead in native children. Traditional subsistence activities have exposed native people to toxic waste in rivers and oceans. Armed with hard data from bone and teeth that demonstrate “before” and “after” levels of these toxic mineral and trace elements, activists working for better monitoring could use these data to improve lives. This linking of political processes and biological effects demands a broadly historical perspective and a multidimensional approach.

By sidestepping issues of importance to native people, scientific data generated by bioarchaeologists has been slow to be considered of value to Native Americans in the American Southwest. Some of the data have been used in ways that aid in the continued tyranny of native people today. For example, Deloria argues that elite, largely eastern scientists, plied their trade at the expense of Indians. In one example, he writes, “[In the 1930s] the idea that human cranial capacity demonstrated the intelligence of the different races [was] a piously proclaimed scientific truth. Indians were hardly on their reservations before government employees began robbing graves at night to sever skulls from freshly buried bodies for eastern scientists to measure” (1997:6). These kinds of activities, where skulls are used for the “progress of anthropological study” are the ones that Native Americans most associate with bioarchaeology.

During the 1980s and continuing to the present, some bioarchaeologists have been doing what can be considered state-of-the-art research in the American Southwest. For example, Stodder (1990) examined a range of demographic and epidemiological factors in the adaptation of two ancestral Pueblo groups during the protohistoric period (circa 1400s). Her careful analysis of context and the interplay of various biocultural factors demonstrated that adaptation to marginal desert environments by these early farmers presented challenges for some segments of the population. This kind of information is crucial in today’s discussion of droughts and starvation in groups living in marginal environmental conditions undergoing desertification.

Martin (1994) worked on several large archaeological projects such as the Black Mesa Archaeological Project in northern Arizona and the La Plata Highway Project in northern New Mexico. The resulting analyses of the human remains relied on integrating a range of data sets using a biocultural model (discussed in Chaps. 1 and 5). Some of these health problems are related to the challenges of being desert farmers in areas where rainfall was unpredictable and growing seasons were short. Other underlying reasons for poor health, such as chronic middle ear infections in children, are problems Navajo and Hopi children still suffer from today. The desert winds and general environmental conditions are part of what keeps ear infections endemic even today with all of the modern interventions. The persistence of ear infections also points a general inaccessibility to health care for individuals living in the Southwest today.

Many of the larger skeletal collections from the American Southwest have been repatriated. For example, in the summer of 1999 the largest repatriation of human remains in the USA took place. The Pecos Pueblo burials numbering over 2,000 were returned to the Jemez Pueblo in New Mexico by the administrators at Harvard

University. The remains were stored for at Harvard for about 70 years. Included with the human remains were also hundreds of grave offerings. The Jemez Pueblo Indians were extremely gratified to have the return of their ancestors, and they reburied them in a process called “reverse archaeology” at the site of Pecos Pueblo, now a National Park (Archaeology, Volume 52 Number 4, July/August 1999). Recently, Morgan (2010) edited a volume entitled *Pecos Pueblo Revisited, the Social and Biological Dimensions* which represents the current scholarship based on the original archaeological excavations. While this volume does include some specialized studies carried out before the remains were repatriated, they are not fully realized bioarchaeological studies.

### 2.2.2.2 Case Study: Columbia Plateau Region

The Columbia Plateau presents a different history of pre- and post-NAGPRA work by bioarchaeologists. Analysis of the history of archaeological research in the Columbia Plateau reveals that there is now a movement toward opening dialogue and promoting cooperation among researcher studying the human remains. However, this was not always the case. This shift is a direct consequence of NAGPRA legislation.

The Columbia Plateau lacks the long and illustrious history of research that characterizes the American Southwest. However, this area is particularly interesting for a discussion of the impact of NAGPRA on bioarchaeology as it was the focus of one of the most famous NAGPRA cases in the USA. The case involves the dispute over who owns the bones of an adult male of great antiquity whose skeletonized remains were found in 1996. He has come to be known as Kennewick Man or “The Ancient One” (Mason 2000).

This individual was of interest because it was dated to approximately 8,340–9,200 calibrated years ago (Chatters 2000:299), and he was found to have been a victim of violence. There is a projectile point in the right ilium as well as evidence of several other nonlethal traumatic injuries (Chatters 2000, 2002). In addition to the extremely old age of Kennewick Man and the fact that he shows evidence of violence, the initial analysis of the cranial size and shape suggested to some researchers that he was not Native American but of an entirely different “race” altogether.

A dispute followed that has not yet been completely resolved between the Army Corp of Engineers who wanted to repatriate the remains to the tribes in the region and the scientists who wanted to study him. The local tribes (the Confederated Tribes of the Umatilla Reservation, the Consolidated Tribes and Bands of the Yakama Nation, the Nez Perce, and the Colville Confederated Tribes) all claimed that this individual was one of their ancestors. A group of bioarchaeologists contested this claim and argued that it was of historic scientific importance and thus it is imperative that the remains be thoroughly analyzed. The case lasted nearly 6 years before a judge finally decided in favor of the scientists and denied the repatriation of the remains to the tribes. The importance of this case stretches beyond reburial because it was the first case to present a fundamental challenge to the notion

of tribal sovereignty and the right to scientific inquiry. Although the court made a decision, it has been appealed and contested numerous times, and new contestations are forthcoming almost yearly.

Recently, Doug Owsley, a bioarchaeologist from the Smithsonian who was one of the scientists who fought to have the remains studied by scientists and not repatriated, revealed new data that suggested to him that Kennewick Man was not even from the inland region of the Columbia Plateau where he was found. Owsley, in an interview, suggested that isotopic data from the bones revealed that he consumed marine animals and so was a coastal dweller (Mapes 2012). Based on craniometry, Owsley also stated that he did not think that this individual was even related to Native Americans, but rather was of Asian-Polynesian ancestry. Other bioarchaeologists who have analyzed the remains have demonstrated that Kennewick Man contains a mix of features seen in modern groups, including East Asians, American Indians, and Europeans (Powell and Rose 1999). Additionally, based on research by Boas (1912) that has been independently confirmed by Gravlee et al. (2003a, b), craniometrics are fluid generation to generation. Given over ~8,000 years and dramatic shifts in the climate that affected available flora and fauna (Chatters 1998), there is no way to know exactly where to place him in terms of present-day cultures. This example highlights the challenges of NAGPRA because of the gray areas presented by human remains that are over 5,000 years old. Proving ancestral affiliation is almost impossible.

Today, there is very little bioarchaeology conducted in the Columbia Plateau on the USA side. The Canadian portion of the Columbian Plateau is quite active with bioarchaeological research. For example, the Canoe Creek, Soda Creek, and Dog Creek bands of the Northern Shuswap Tribal Council have recently granted bioarchaeologist Malhi et al. (2007) permission to analyze DNA from two burials from the mid-Holocene (circa 5,000 years old) recovered in British Columbia. This project is significant because the mtDNA analyzed from the two burials revealed a new haplogroup, which is a group of haplotypes or combination of alleles that allow researchers to identify genetic populations. The implication of this is that it is possible that early populations possessed more genetic diversity than those found today. This represents an integrative, engaged, and ethical bioarchaeological project that involves collaboration between nonnative bioarchaeologists and Native American representatives. Had relations not been cultivated between the anthropologists and the tribe, this study would not have been completed.

### ***2.2.3 NAGPRA and Bioarchaeology Can Coexist***

A common misconception about NAGPRA is that it impedes the research of physical anthropologists. The truth is that for the most part, the goals of anthropologists and Native Americans are not irreconcilable. Research suggests that NAGPRA may have actually had a positive effect on the analysis of human remains in physical anthropology. “The repatriation movement and most recently NAGPRA have made significant positive contributions to osteology as a research enterprise and to the

bioarchaeology of North America” (Rose et al. 1996:99). Two of the main advances that have been revealed are improvements to the inventory process, as well as the evaluation of unexamined human remains previously held in storage. Prior to the passage of the NAGPRA in 1990, much of the analysis of ancient skeletal material was done without permission of, input by, or accountability to Native Americans. In the past, skeletal remains were often sent to labs for analysis by physical anthropologists. This divorced the interpretation of biology from its historical, cultural, and environmental setting.

NAGPRA was especially beneficial to museums because it required the collections of human remains be inventoried (Ousley et al. 2005). Inventories require funding, which allows for the addition of more staff if only temporally. Overall, the benefit of NAGPRA is that it not only promotes the reevaluation and inventory of human remains in collections but also, if excavations are necessary, because of accidental exposure through construction projects or natural erosion, pressures anthropologists to conduct analysis as rapidly and efficiently as possible. “One bioarchaeology overview shows that 64% of 20,947 excavated skeletons have not been studied at all. These skeletons remain unstudied not because osteologists were not interested in them, but because there was never enough time or funds to study them all” (Rose and Green 2002:215–216).

A final, often overlooked, benefit of NAGPRA is that it has promoted communication between various academic organizations and researchers involved in the field of physical anthropology, as well as promoted the diffusion of information outside of academia. This latter trend is perhaps the greatest development to arise from the establishment of NAGPRA. The implications for future research are vast as bioarchaeologists are increasingly sharing data with other researchers, a development that is expanding the information uncovered about the past.

### ***2.2.4 Beyond Legislation: Bioarchaeology Outside of the USA***

While this critical analysis of the history and future of working with human remains arguably grew out of bioarchaeological research among the indigenous populations in North America, these same considerations should be applied to populations throughout the world. Although laws like NAGPRA do not apply to the study of skeletal remains outside of the United States, other countries are establishing their own laws that protect human remains. As of 2004, several countries had created such laws, such as South Africa with the National Heritage Resources Act (NHRA), Australia with the Aboriginal and Torres Strait Islander Heritage Protection Act of 1984 (ATSIHPA), and New Zealand with the Historic Places Act (HPA) (Seidemann 2004). Additionally other countries have established repatriation movements that lack a formal law protecting burials (e.g., Canada, Denmark, and Scotland) (Curtis 2010; Thorleifsen 2009; Simpson 2009).

Finally, there has been an increase in museums repatriating remains to the descendant culture directly without use of government laws (Ferri 2009; Pérez 2010). The idea behind this movement is that even in countries where there are no formal laws in place

to protect burials, researchers have a responsibility to acknowledge the indigenous populations the remains represent and when possible involve the descendants in the research (Singleton and Orser 2003; Martin 1998:171). The message one should get from the establishment of these laws and the increasing cooperation between anthropologists and indigenous groups is that the ethical treatment of the bones as individuals is one of the foremost concerns of any research involving human remains. The importance of cooperation was of great concern for the research in the southern portion of the Columbia Plateau (Harrod 2011). Evidenced by the fact that even though laws like NAGPRA did not apply because no actual remains were handled or disturbed, and the data being analyzed was from Native American remains that are or are in the process of being repatriated, the tribal bodies were contacted and permission to conduct the study was attained. Although it may seem unnecessary, this cooperation led to communication that in the end greatly enhanced the research.

#### **2.2.4.1 Case Study: Yaqui People**

From 2007 to 2009, Ventura Pérez was part of team that helped facilitate an international repatriation between the American Museum of Natural History (AMNH) and the Yaqui people. Everyone involved was pleased with the eventual outcome of returning these warriors to their homeland and families. On the day the tribe was to take custody of their brethren, a tribal elder told Pérez “this was meant to happen now.” Her words, as they are for most tribal elders, were profound (Fig. 2.1). Everyone involved needed to be at a point where they could offer a meaningful contribution because solutions would ultimately lie beyond the scope of NAGPRA.

It is often said that history becomes meaningful when seen through the lens of personal experience. This is the story of Los Guerreros (the warrior) Yaqui and their social interaction with the decedent Yaqui community and the global impact of this repatriation. There was a delicate and complex dance that took place between sorrow and joy with this repatriation. For the Yaqui people this repatriation had a profound impact on the community and reopened old wounds and traumatic memories. The social reality of the Yaqui people was affected by the lives, deaths, and prolonged burial and grieving process for Los Guerreros. Their repatriation and the stories stirred memories of violence that had a profound impact on generations of people who had not directly experienced the violence but whose mothers, fathers and grandparents had. The repatriation of the remains was not only emotionally powerful for the descendants but for the bioarchaeologist who through his interactions with the Yaqui learned more about these men, women and children that analysis of the bones alone could ever reveal.

To understand the poetics of revolt, particularly those in native communities which, in the face of economic, political and social pressures brought to bear by European societies, have sought to retain their own identities and social structures, it is imperative to recognize how dominate cultures impose and define minority cultures through the legitimized acts of structural violence. This is illustrated by examining the June 8, 1902, massacre of 124 Yaqui men, women and children

**Fig. 2.1** Dr. Ventura Pérez showing how he analyzed their ancestor's human remains to Yaqui school children from the pueblo of Vicam, Sonora, Mexico



by Mexican troops; the subsequent collection of human remains and material culture by Ales Hrdlička and their transport to the AMNH in New York; and the successful efforts of the Yaqui to have their brethren repatriated to the Yaqui Zona Indígena while exploring the social impact of that process on the Yaqui descendant community the larger global community.

The USA papers of the time reported this as just another minor battle in the ongoing Yaqui war, and it may have simply remained a footnote in history had it not been for the actions of an American Physical Anthropologist who was traveling in Mexico at the time. Ales Hrdlička was in Mexico conducting research for the AMNH, which had been financed as part of the Hyde expedition. Three weeks after the Yaqui massacre, Hrdlička was taken to site with blessing of General Torres. While at the site Hrdlička collected skeletal remains from 12 individuals and items of material culture from the bodies of others (Fig. 2.2).

In 2007, Pérez was conducting research at the AMNH in New York and it was brought to his attention that the Yaqui remains that had been brought there by



**Fig. 2.2** Los Guerreros Yaqui (Yaqui warriors) on the day of their reburial in Vicam, Sonora, Mexico

Hrdlička. After doing a complete analysis of the human remains, Pérez and his colleagues brought this information to the Pascua Yaqui tribe, and this started the repatriation process.

Pérez has come to believe that this repatriation would not have happened as quickly as it did, if at all, had Yaqui pursued it under NAGPRA. Pérez firmly believes that the Pascua Yaqui, being a federally recognized tribe, had the right to claim the remains and material culture of their ancestors from AMNH under NAGPRA. However, it was made clear to the tribe very early on that this was not going to happen. The argument was simple: The Pascua Yaqui is a United States federally recognized tribe and NAGPRA is a USA law. The human remains and material culture were collected in Mexico; a USA tribe cannot use a USA law to facilitate their repatriation. This, of course, makes no sense given that the Yaqui, like most tribes along the US-Mexico border, have always occupied and traveled both sides of this imposed international border. The remains were clearly the ancestors of the Pascua Yaqui. They were in a USA museum, and yet it was argued that they were not subject to NAGPRA. Instead, AMNH insisted that the remains be returned to the Instituto Nacional de Antropología e Historia (INAH, National Institute of Anthropology and History). INAH was established in 1939 as a federal bureau of the Mexican government to protect and advocate the research, preservation, and promotion of the precontact, archaeological, anthropological, historical, and paleontological heritage of Mexico.



**Fig. 2.3** Dr. Ventura Pérez with Yaqui girls the day their ancestors were returned to Vicam Pueblo, Sonora Mexico, October, 2009

It is not our intention to debate the wisdom of this decision but rather to consider the implications of the statement. Consider for a moment AMNH and INAH's positions. What kind of Pandora's Box would have been opened had the Pascua Yaqui successfully repatriated this collection under NAGPRA? How many archaeological collections exist in this country that were collected in Mexico but are culturally affiliated to federally recognized tribes here in the USA? It is important to emphasize one of the principle reasons this repatriation was allowed to go forward. The collection was not considered archaeological material by AMNH or INAH but rather it was seen as a historic massacre site and thus a human rights issue. AMNH agreed that it would return the human remains and material culture to the Yaqui if INAH would permit it. AMNH returned the material to INAH and then INAH returned the material to the Yaqui. This is an incredibly important point to recognize. AMNH did not give material collected in Mexico to a culturally affiliated US federally recognized tribe, and INAH did not return archaeological material to a Mexican tribe (Fig. 2.3).

This begs the question—can and should NAGPRA apply if similar situations arise? Right now, there is no clear answer to this question. However, it is an important one to consider.

## 2.3 Indigenous Archaeology

Indigenous archaeology is a term used to describe archaeology that is carried out and supervised by, or done in conjunction with, indigenous groups of that particular area or who are the descendants of the groups under archaeological study. This represents an important step in empowering indigenous scholars and others to be part of shaping the way research is conducted. Indigenous groups are taking control of

their own cultural heritage and sometimes even utilizing the scientific knowledge archaeology can provide. Rather than compromising scientific inquiry, collaboration with other knowledge traditions has challenged scholarly epistemologies and has led to “. . . substantial contributions to the intellectual growth of our discipline” (Colwell-Chanthaphonh 2010).

Setting up indigenous archaeology as an academic subdiscipline within archaeology is an important thing to do. It is similar to the civil rights movement which prompted the creation of fields of study such as African-American studies, women’s studies, ethnic studies, and Native American studies. It is important to open up a space in academia where there can be a reorganization of resources and a way to shine a light on a previously unknown field of study.

Beyond the benefits to researchers, projects that fall under the goals of indigenous archaeology have been aimed at addressing the ongoing estrangement between specific indigenous groups and their cultural heritage. This is a result of a history of oppression that is often not acknowledged by academic entities. Prior to the development of indigenous archaeology, groups lacked a voice in the argument for where the material and human remains associated with their ancestors should be handled, curated, stored and analyzed (Lippert 2006:431).

A recent special theme issue in *American Indian Quarterly* called *Decolonizing Archaeology* presents numerous research projects conducted on groups from all around the world who are actively engaging in taking control of their own heritage. It is titled *Decolonizing Archaeology* because they feel that contemporary archaeology is just another form of colonialism in that it is the study of the “other” from a Western perspective with little to no input from the people that are the subject of analysis (Atalay 2006). “If colonialism has meant Indigenous peoples living within a framework of non-Indigenous control, the decolonization of archaeology has to involve archaeologists working within a framework of Indigenous control, a framework in which research process, outcomes, and benefits are genuinely negotiated between researcher and community”(Smith and Jackson 2006:341). This quote captures the broader intellectual themes opened up by situating archaeology as part of the problem and suggesting ways that it might transform itself so that it is part of the solution.

Following an indigenous archaeology paradigm does not require one to be indigenous or to be conducting archaeology related to indigenous history. The intent is for theory and practice to intersect with indigenous values while being attentive and responsible to indigenous communities in order to redress real inequality while enriching the archaeological record (Atalay 2006). The goals then of indigenous archaeology are actually the same goals that this text is advocating for with a discussion that guides shifting the ethos of bioarchaeology. For example, when consulting or collaborating with indigenous and tribal representatives, the rules of engagement include the understanding that everyone at the table will be allowed to express their point of view freely (see Mador et al. 1995: 481).

Central to the mission and ethical views of the Society for American Archaeology is the conservation and protection of the archaeological record. The primary value in archaeological resources is derived from the information archaeologists are able

to discern through excavation (Lynott and Wylie 1995). Archaeologists are positioned as “[...] one group specifically qualified to study the archaeological record” (Lynott and Wylie 1995:29).

This raises the question, who else is qualified? If one subscribes to the idea that there are many ways of knowing the past (i.e., archaeological and ethnographic techniques, oral history), then it would seem that many stakeholders would be “qualified” to help in the interpretation of the archaeological record. Archaeology should be engaged in as a human endeavor not limited to the study of material culture (McGuire 1997:86). As such, “[...] a diversity of archaeologies should arise from our relationships with different communities” (McGuire 1997:86). The idea of multiple archaeologies and stakeholders is perhaps where indigenous archaeology makes one of its greatest contributions to our discipline. The focus on stakeholders is amplified in the argument that “[...] we must recognize that [scientific and scholarly] interests are not the only legitimate ones at stake” (McGuire 1997:86).

Not all archaeologists are in favor of the creation of indigenous archaeology, arguing that it simply represents a movement toward old models of “Aboriginalism” or ideas of the “Noble Savage” (McGhee 2008). Many of these researchers believe that instead of conducting objective science that takes a critical approach to understanding the past, researchers are allowing indigenous groups to dictate how we interpret the past. In response to this, Croes (2010:215) argues that indigenous archaeology cannot be viewed as a sacrifice for scientists but has to be seen for what it is, a mutually beneficial and equal partnership. There are numerous projects in many parts of the world where indigenous groups are in control of the research being conducted and presented about their ancestors and these groups have very successful and long-term relationships with nonindigenous archaeologist. Indigenous archaeology promotes collaboration, but as Conklin (2003:5) argues this in no way means that the research should be modified to satisfy a particular group.

There are now many examples of projects where indigenous groups and archaeologists have established collaborative relationships that have produced research that is relevant to both parties. In Virginia the Chickahominy, Mattaponi, Nansemond, Pamunkey, Rappahannock, and Upper Mattaponi formed the Virginia Indian Advisory Board (VIAB) that worked with local archaeologists in the Werowocomoco Research Group (WRG). The goal of this collaboration was to develop a better understanding of the history of site of Werowocomoco where the Virginia Company encountered the Powhatan chiefdom (Gallivan and Moretti-Langholtz 2007). In Arizona, collaboration between the White Mountain Apache Tribe and archaeologists provided a great example of the power of collaboration. By listening to and working with the Apache, the indigenous people and the researchers were able to transform Fort Apache, a place that had symbolized the loss of their traditional way of life, into a heritage center that both revealed the negative history of the fort and celebrated the Apache culture both in the past and today (Colwell-Chanthaphonh 2007).

One of the more important outcomes of indigenous archaeology becoming more visible within the broader communities is that it provides a means for achieving

justice for past wrongs. This is especially true in the case of indigenous groups that have suffered, been exploited, and been subjugated by colonial powers (Colwell-Chanthaphonh 2007). By justice Colwell-Chanthaphonh (2007) does not mean retribution as retributive justice is often damaging instead of helpful. Instead he suggests that they type of justice that can be achieved through collaboration is restorative. The difference between these two concepts is illustrated by how justice can be sought for the genocide of millions American Indian people in the United States. Retributive justice would be to punish those responsible, but since the genocide happened many generations ago, there is no one to punish. Even if there were, the satisfaction of punishing a few for an atrocity that destroyed millions of people's lives and devastated whole cultures, this punishment would not be satisfying for many of the descendant communities. Instead, he argues that justice needs to be restorative and seek to reconcile the past with the present. Justice is an ongoing process of revealing the truth of the past, and while there can be multiple ways of interpreting data, all perspectives/conclusions should be considered. However, it is important to point out that not all perspectives/conclusions are equally valid. "Restorative justice" is thus an important form of justice a way for individuals and communities to seek healing when violence has suffused an entire community (Colwell-Chanthaphonh 2007:37). It is in deciding which conclusion has more validity that collaboration between the indigenous group and the archaeologists is the most productive. Chacon and Mendoza (2012b:489–490) acknowledge the potential pitfalls of assuming an unbridled advocacy position and provide a cautionary case study.

Although there is little doubt that indigenous archaeology is a valuable new approach in archaeology, Silliman (2008:4) makes a provocative point in stating that, though some are shining a light on what he terms "collaborative indigenous archaeology," others are setting it apart as different from the rest of archaeology. He argues that instead there needs to be a change in archaeology as a whole so it is more like this approach: "... more methodologically rich, theoretically interesting, culturally sensitive, community responsive, ethically aware, and socially just" (Silliman 2008:4–5). These calls for collaboration are appearing in increasingly more studies that include researchers from many different areas and examples of this are provided by Chacon and Mendoza (2012).

Chacon and Mendoza (2012) have participated in a number of collaborations, and one of their recommendations is a very specific protocol for what to do when the tribal representative disagrees with the conclusions of a study. They suggest that a private meeting be arranged with tribal elders or representatives to hear an explanation of the findings. This should normally occur before publication. Tribal representatives should be encouraged to present alternative conclusions or other ways to interpret the data. Sufficient time should be given to this process. If the researcher still believes that their original conclusions are correct, any publications that result should provide an accurate synopsis of the counterarguments put forth by the tribe. The tribe should have an opportunity to see the publication with their alternative viewpoints summarized. This protocol provides readers with the opportunity to decide for themselves which version to endorse

based on the merits of both ways of explaining the data (Richard Chacon, personal communication, 2012).

It is this fundamental shift in ethos that we are suggesting for the future of bioarchaeology as well. Instead of having students of bioarchaeology learn the various county, state, and national laws as a way of teaching them how to practice ethically, there should be a broader agenda to cultivate an ethical approach that goes beyond what is legally mandated. Instead of students taking one course on indigenous archaeology, they should be exposed to a broad range of other ways of knowing and thinking about the past that integrates the past with the present in ways that offer new pathways to collaborative research.

## 2.4 Summary

NAGPRA and NAGPRA-like legislation and mandates are here to stay. This will mean operating often in a bit of a gray area, with no clear guidelines for what it means to do the right thing ethically and morally. Bioarchaeologists of the world will need to be nimble and flexible in figuring out what it means to be responsible to the living descendants. This might take very different shapes depending on the groups involved, the timing of the research, and the place. Developing an ethos that is embedded in how bioarchaeologists do their work will take time to develop precisely because there will be no one right way to proceed. Modern bioarchaeology must attend to understanding what responsible scientific research looks like in any given situation. While it may include collaboration with indigenous groups, in other situations it may simply mean filing the appropriate forms with the tribal representatives. Chacon and Mendoza (Chacon and Mendoza 2012) argue that ethical guidelines should be crafted on a case-by-case, region-by-region basis.

The term “politically correct” is sometimes used to characterize the kind of approach that this text is advocating. The response to NAGPRA and NAGPRA-like legislation, rules, and regulations has not been embraced by the bioarchaeologists who feel that academic freedom and scientific integrity are compromised by such laws. The phrase “political correctness” is a smoke screen that dismisses everything that is distasteful to some researchers, especially if it raises the possibility that some scientific research is more ethical than others. Students and practitioners of bioarchaeology can generally ignore these kinds of name-calling.

Since an ethical approach to bioarchaeology will never be proscriptive or follow a predetermined set of steps, it is crucial to develop an ethos that encompasses how to practice an ethical bioarchaeology. If the worldview of all bioarchaeologists can shift to include practices that enhance the operationalization of responsible and ethical scientific research, it will ensure its role as an integrative, engaged and ethical enterprise. Green (1984:22) cited in Wood and Powell (1993:409) provides a succinct rejoinder to what it means to do ethical archaeology: “Be sensitive to, and respect the legitimate concerns of, groups whose culture histories are the subjects of archaeological investigation.” The careful wording here by stating *legitimate*

concerns is important because it suggests that each researcher will have to decide for themselves how to interpret and deal with issues raised by various groups.

## References

- Alfonso, M. P., & Powell, J. (2007). Ethics of flesh and bone, or ethics in the practice of paleopathology, osteology, and bioarchaeology. In V. Cassman, N. Odegaard, & J. Powell (Eds.), *Human remains: Guide for museums and academic institutions* (pp. 5–20). Lanham: AltaMira Press.
- Armstrong, G. J., & Barnes, K. (1999). The evolution of human disease and the rise of allergy: Epidemiological transitions. *Medical Anthropology*, 18(2), 187–213.
- Armstrong, G. J., Carlson, D. S., & Van Gerven, D. P. (1982). The theoretical foundations and development of skeletal biology. In F. Spencer (Ed.), *A history of American physical anthropology, 1930–1980* (pp. 305–328). New York: Academic.
- Armstrong, G. J., & Salzmann, Z. (1976). Problems of racial classification. *Acta Facultatis Naturalium Universitatis Comenianae Anthropologia*, XXII, 11–13.
- Atalay, S. (2006). Indigenous archaeology as decolonizing practice. *American Indian Quarterly*, 30(3/4), 280–310.
- Barrett, R., Kuzawa, C. W., McDade, T. W., & Armstrong, G. J. (1998). Emerging and re-emerging infectious diseases: The third epidemiologic transition. *Annual Review of Anthropology*, 27, 247–271.
- Bass, W. M. (2005). *Human osteology: A laboratory and field manual* (5th ed.). Columbia: Missouri Archaeological Society.
- Birkby, W. H. (1966). An evaluation of race and sex identification from cranial measurements. *American Journal of Physical Anthropology*, 24(1), 21–27.
- Black, H. C. (1968). *Black's Law Dictionary: Definitions of the terms and phrases of American and English jurisprudence, ancient and modern*. St. Paul: West Publication, Co.
- Blakely, R. L. (1977). *Biocultural adaptation in prehistoric America*. Athens: Southern Anthropological Society Proceedings, No. 11, University of Georgia Press.
- Boas, F. (1912). Changes in the bodily form of descendants of immigrants. *American Anthropologist*, 14(3), 530–562.
- Bogin, B., & Keep, R. (1999). Eight thousand years of economic and political history in Latin America revealed by Anthropometry. *Annals of Human Biology*, 26, 333–351.
- Brace, C. L. (1964). A non-racial approach toward the understanding of human diversity. In A. Montagu (Ed.), *The concept of race* (pp. 103–152). London: Collier Books.
- Brace, C. L. (2005). 'Race' is a four-letter word: *The genesis of the concept*. Oxford: Oxford University Press.
- Brace, C. L., Tracer, D. P., Yaroch, L. A., Robb, J. E., Brandt, K., & Nelson, R. (1993). Clines and clusters versus "Race:" A test in ancient Egypt and the case of a death on the Nile. *American Journal of Physical Anthropology*, 36, 1–31.
- Brickley, M., & Ives, R. (2008). *The bioarchaeology of metabolic bone disease*. London: Academic.
- Brooks, S. T. (1955). Skeletal age at death: The reliability of cranial and pubic age indicators. *American Journal of Physical Anthropology*, 26(1), 67–77.
- Brown, T. F. (1995–1996). The Native American Grave Protection and Repatriation Act: A necessary but costly measure. *The Nebraska Anthropologist*, 12(1), 89–98.
- Buikstra, J. E. (1977). Biocultural Dimensions of Archaeological Study: A regional perspective. In R. L. Blakely (Ed.), *Biocultural adaptation in prehistoric America* (pp. 67–84). Athens: Southern Anthropological Society Proceedings, No. 11, University of Georgia Press.
- Carey, D. P. (2007). Is bigger really better? The search for brain size and intelligence in the twenty-first century. In S. D. Sala (Ed.), *Tall tales about the mind and brain: Separating fact from fiction* (pp. 105–122). Oxford: Oxford University Press.

- Chacon, R. J., & Dye, D. H. (2007). *The taking and displaying of human body parts as trophies by Amerindians*. New York: Springer Science and Business Media.
- Chacon, R. J., & Mendoza, R. G. (2012). *The ethics of anthropology and Amerindian research: Reporting on environmental degradation and warfare*. New York: Springer.
- Chaiklieng, S., Suggaravetsiri, P., & Boonprakob, Y. (2010). Work ergonomic hazards for musculoskeletal pain among University Office Workers. *Walailak Journal of Science and Technology*, 7(2), 169–176.
- Chatters, J. C. (1998). Environment. In D. E. Walker Jr. (Ed.), *Handbook of North American Indians, Volume 12: Plateau* (pp. 29–48). Washington, DC: Smithsonian Institution Press.
- Chatters, J. C. (2000). The recovery and first analysis of an early Holocene human skeleton from Kennewick, Washington. *American Antiquity*, 65(2), 291–316.
- Chatters, J. C. (2002). *Ancient encounters: Kennewick Man and the first Americans*. New York: Touchstone.
- Cobb, A. J. (2005). Understanding tribal sovereignty: Definitions, conceptualizations, and interpretations. *American Studies*, 46(3–4), 115–132.
- Cobb, W. M. (1939). Race and runners. *The Journal of Health and Physical Education*, 7(1), 1–9.
- Cohen, M. N., & Armelagos, G. J. (1984). *Paleopathology at the origins of agriculture*. Orlando: Academic.
- Cole, D. (1985). *Captured heritage: The scramble for Northwest Coast artifacts*. Vancouver: UBC Press.
- Colwell-Chanthaphonh, C. (2007). History, justice, and reconciliation. In J. L. Barbara & P. A. Shackel (Eds.), *Archaeology as a tool of civic engagement* (pp. 23–46). Lanham: AltaMira Press.
- Colwell-Chanthaphonh, C. (2010). Remains unknown: Repatriating culturally unaffiliated human remains. *Anthropology News*, 51(3), 4–8.
- Conklin, B. (2003). Speaking truth to power. *Anthropology News*, 44(7), 3.
- Croes, D. R. (2010). Courage and thoughtful scholarship: Indigenous archaeology partnerships. *American Antiquity*, 75(2), 211–216.
- Cronk, L. (1991). Human behavioral ecology. *Annual Review of Anthropology*, 20, 25–53.
- Curtis, N. G. W. (2010). Repatriation from Scottish Museums: Learning from NAGPRA. *Museum Anthropology*, 33(2), 234–248.
- Deloria, V., Jr. (1997). *Red Earth, White Lies: Native Americans and the myth of scientific fact*. Golden: Fulcrum Publishing.
- Dongoske, K. E. (1996). The Native American Graves Protection and Repatriation Act: A new beginning, not the end, for osteological analysis—A Hopi perspective. *American Indian Quarterly*, 20(2), 287–297.
- Echo-Hawk, W. R. (1988). Tribal efforts to protect against mistreatment of Indian Dead: The quest for equal protection of the laws. *Native American Rights Fund Legal Review*, 14(1), 1–5.
- El-Najjar, M. Y., & McWilliams, K. R. (1978). *Forensic anthropology: The structure, morphology, and variation of human bone and dentition*. Springfield: Thomas.
- Ferguson, T. J., Dongoske, K. E., & Kuwanwisiwma, L. J. (2001). Hopi perspectives on southwestern mortuary studies. In D. R. Mitchell & J. L. Brunson-Hadley (Eds.), *Ancient burial practices in the American Southwest* (pp. 9–26). Albuquerque: University of New Mexico Press.
- Ferri, P. G. (2009). New types of cooperation between museums and countries of origin. *Museum International*, 61(1–2), 91–94.
- Ferris, N. (2003). Between colonial and indigenous archaeologies: Legal and extra-legal ownership of the archaeological past in North America. *Canadian Journal of Archaeology*, 27, 154–190.
- Gallivan, M. D., & Moretti-Langholtz, D. (2007). Civic engagement at Werowocomoco: Reasserting Native narratives from a Powhatan place of power. In J. L. Barbara & P. A. Shackel (Eds.), *Archaeology as a tool of civic engagement* (pp. 47–66). Lanham: AltaMira Press.
- Garner, B. A. (2009). *Black's law dictionary digital* (9th ed). Westlaw BLACKS: West Group.
- Gilbert, R. I., & Mielke, J. H. (1985). *The analysis of prehistoric diets*. Orlando: Academic.

- Gill, G. W. (1998). The beauty of race and races. *Anthropology News*, 39(3), 1–5.
- Goodman, A. H. (1994). Problematics of “Race” in contemporary biological anthropology. In N. T. Boaz & L. D. Woke (Eds.), *Biological anthropology: The state of the science* (pp. 221–243). Bend: International Institute for Human Evolutionary Research.
- Goodman, A. H., & Leatherman, T. L. (1998). *Building a new biocultural synthesis: Political-economic perspectives on human biology*. Ann Arbor: University of Michigan Press.
- Gordon, C. C. (1994). Anthropometry in the U.S. Armed Forces. In S. J. Ulijaszek & C. G. N. Mascie-Taylor (Eds.), *Anthropometry. The individual and the population* (pp. 178–210). Cambridge: Cambridge University Press.
- Gould, S. J. (1981). *The mismeasure of man*. New York: W. W. Norton and Company.
- Gravlee, C. C., Russell Bernard, H., & Leonard, W. R. (2003a). Boas’s changes in bodily form: The immigrant study, cranial plasticity, and Boas’s physical anthropology. *American Anthropologist*, 105(2), 326–332.
- Gravlee, C. C., Russell Bernard, H., & Leonard, W. R. (2003b). Heredity, environment, and cranial form: A re-analysis of Boas’s immigrant data. *American Anthropologist*, 105(1), 125–138.
- Green, E. L. (1984). *Ethics and values in archaeology*. New York: The Free Press.
- Harrod, R. P. (2011). Phylogeny of the southern Plateau—An osteometric evaluation of inter-tribal relations. *HOMO—Journal of Comparative Human Biology*, 62(3), 182–201. doi:10.1016/j.jchb.2011.01.005.
- Hendrick, H. W. (2003). Determining the cost-benefits of ergonomics projects and factors that lead to their success. *Applied Ergonomics*, 34(5), 419–427.
- Hoeveler, D. J. (2007). The measure of mind. *Reviews in American History*, 35(4), 573–579.
- Hooten, E. A. (1930). *Indians of Pecos Pueblo: A study of their skeletal remains*. New Haven: Yale University Press.
- Horsman, R. (1975). Scientific Racism and the American Indian in the mid-nineteenth century. *American Quarterly*, 27(2), 152–168.
- Hsieh, S. D., & Muto, T. (2005). The superiority of waist-to-height ratio as an anthropometric index to evaluate clustering of coronary risk factors among non-obese men and women. *Preventive Medicine*, 40(2), 216–220.
- Huds, D. (2011). Salaries of Bioarchaeologists. eHow. Accessed October 15, 2012.
- Huishu, Z., & Damin, Z. (2011). Simulation and ergonomics analysis of pilot visual information flow intensity. *Journal of Beijing University of Aeronautics and Astronautics*, 5, Article 5.
- Huss-Ashmore, R., Goodman, A. H., & Armelagos, G. J. (1982). Nutritional inference from paleopathology. *Advances in Archaeological Method and Theory*, 5, 395–474.
- Jackson, J. P., Jr. (2010). Whatever happened to the cephalic index? The reality of race and the burden of proof. *Rhetoric Society Quarterly*, 40(5), 438–458.
- Johanson, G. (1971). Age determination from human teeth. *Odontological Revy*, 22(Suppl 21), 1–126.
- Kakaliouras, A. M. (2008). Toward a new and different osteology: A reflexive critique of physical anthropology in the United States since the passage of NAGPRA. In T. W. Killion (Ed.), *Opening archaeology: Repatriation’s impact on contemporary research and practice* (pp. 109–129). Santa Fe: School of Advanced Research Press.
- Komlos, J. (1989). *Nutrition and economic development in the eighteenth-century Habsburg Monarchy: An anthropometric history*. Princeton: Princeton University Press.
- Komlos, J. (1995). *The biological standard of living on three continents: Further explorations in anthropometric history*. Boulder: Westview.
- Lang, J. C. (2011). Epistemologies of situated knowledges: “Troubling” knowledge in philosophy of education. *Educational Theory*, 61(1), 75–96.
- Larsen, C. S. (1987). Bioarchaeological interpretations of subsistence economy and behavior from human skeletal remains. In M. B. Schiffer (Ed.), *Advances in archaeological method and theory* (Vol. 10, pp. 339–445). San Diego: Academic.
- Larsen, C. S., & Walker, P. L. (2005). The ethics of bioarchaeology. In T. R. Turner (Ed.), *Biological anthropology and ethics: From repatriation to genetic identity* (pp. 111–120). Albany: State University of New York Press.

- Lewis, J. E., DeGusta, D., Meyer, M. R., Monge, J. M., Mann, A. E., & Holloway, R. L. (2011). The mismeasure of science: Stephen Jay Gould versus Samuel George Morton on skulls and bias. *PLoS Biology*, 9(6), 1–6.
- Lippert, D. (2006). Building a bridge to cross a thousand years. *American Indian Quarterly*, 30(3/4), 431–440.
- Lovejoy, A. O. (1936). *The great chain of being: A study of the history of an idea*. Cambridge: Harvard University Press.
- Lynott, M. J., & Wylie, A. (1995). *Ethics in American archaeology: Challenges for the 1990s, revised* (2nd ed.). Washington, DC: Society for American Archaeology.
- Mador, M. J., Rodis, A., & Magalang, U. J. (1995). Reproducibility of Borg scale measurements of dyspnea during exercise in patients with COPD. *Chest*, 107(6), 1590–1597.
- Malhi, R. S., Kemp, B. M., Eshleman, J. A., Cybulski, J. S., Smith, D. G., Cousins, S., et al. (2007). Haplogroup M discovered in prehistoric North America. *Journal of Archaeological Science*, 34, 642–648.
- Mapes, L. V. (2012). Kennewick Man Bones not from Columbia Valley, scientist tells tribes. *Seattle Times*. Accessed October 15, 2012.
- Maresh, M. M. (1955). Linear growth of the long bone of extremities from infancy through adolescence. *American Journal of Diseases of Children*, 89, 725–742.
- Martin, D. L. (1994). Patterns of health and disease: Health profiles for the prehistoric Southwest. In G. J. Gumerman (Ed.), *Themes in Southwest prehistory* (pp. 87–108). Santa Fe: School of American Research Press.
- Martin, D. L. (1998). Owning the sins of the past: Historical trends in the study of Southwest human remains. In A. H. Goodman & T. L. Leatherman (Eds.), *Building a new biocultural synthesis: Political-economic perspectives on human biology* (pp. 171–190). Ann Arbor: University of Michigan Press.
- Mason, R. J. (2000). Archaeology and Native American oral tradition. *American Antiquity*, 65(2), 239–266.
- McGhee, R. (2008). Aboriginalism and the problems of indigenous archaeology. *American Antiquity*, 73(4), 579–597.
- McGuire, R. H. (1997). Why have archaeologists thought that the real Indians are dead and what can we do about it. In T. Biolsi & L. J. Zimmerman (Eds.), *Indians and anthropologists in post colonial America* (pp. 63–91). Tucson: University of Arizona Press.
- Merbs, C. F., & Miller, R. J. (1985). *Health and disease in the prehistoric Southwest*. Tempe: Arizona State University.
- Miller, E. (1995). *Refuse to be Ill: European contact and aboriginal health in northeastern Nebraska*. Unpublished Ph.D. dissertation, Arizona State University, Tempe.
- Montagu, A. (1942). *Man's most dangerous myth: The fallacy of race*. New York: Columbia University Press.
- Morgan, M. E. (2010). *Pecos Pueblo revisited: The biological and social context*. Cambridge: Peabody Museum of Archaeology and Ethnology Harvard University.
- Nott, J. C., & Gliddon, G. R. (1854). *Types of Mankind: Or Ethnological researches, based upon the ancient monuments, paintings, sculptures, and crania of races, and upon their natural, geographical, philological and Biblical history*. Philadelphia: Contributions by Louis Agassiz, William Usher, and Henry Stuart Patterson. Lippincott, Grambo & Co.
- Ortner, D. J. (2003). *Indentification of pathological conditions in human skeletal remains*. London: Academic.
- Ousley, S. D., Billeck, W. T., & Hollinger, R. F. (2005). Federal repatriation legislation and the role of physical anthropology in repatriation. *American Journal of Physical Anthropology*, 128(S41), 11.
- Ousley, S. D., Jantz, R. L., & Freid, D. (2009). Understanding race and human variation: Why forensic anthropologists are good at identifying race. *American Journal of Physical Anthropology*, 139(1), 68–76.
- Pérez, V. R. (2010). From the singing tree to the hanging tree: Structural violence and death with the Yaqui Landscape. *Landscapes of Violence*, 1(1), Article 4.

- Pevar, S. L. (2012). *The rights of Indians and tribes*. Oxford: Oxford University Press.
- Pheasant, S., & Haslegrave, C. M. (2006). *Body space: Anthropometry, ergonomics, and the design of work* (3rd ed.). Boca Raton: CRC Press.
- Powell, J. F., & Rose, J. C. (1999). Chapter 2. Report on the Osteological Assessment of the "Kennewick Man" Skeleton (CENWW.97.Kennewick). In *Report on the Nondestructive Examination, Description, and Analysis of the Human Remains from Columbia Park, Kennewick, Washington* [October 9]. Washington, DC: National Park Service. <http://www.nps.gov/archeology/kennewick/>.
- Powell, M. L. (2000). Ancient diseases, modern perspective: Treponematosi and tuberculosis in the age of agriculture. In P. M. Lambert (Ed.), *Bioarchaeological studies in the age of agriculture: A view from the Southeast* (pp. 6–34). Tuscaloosa: The University of Alabama Press.
- Riding In, J. (1992). Without ethics and morality: A historical overview of imperial archaeology and American Indians. *Arizona State Law Journal*, 24, 11–34.
- Roberts, C. A. (2010). Adaptation of populations to changing environments: Bioarchaeological perspectives on health for the past, present and future. *Bulletins et Mémoires de la Société d'anthropologie de Paris*, 22(1–2), 38–46.
- Roberts, C. A., & Buikstra, J. E. (2003). *The bioarchaeology of tuberculosis: A global perspective on a re-emerging disease*. Gainesville: University Press of Florida.
- Roberts, C. A., & Manchester, K. (2005). *The archaeology of disease* (3rd ed.). Ithaca: Cornell University Press.
- Rogers, R. M. (2011). *Design of military vehicles with the soldier in mind: Functionality and safety combined*. Warren: US Army RDECOM-TARDEC, No. 21658.
- Rose, J. C., & Green, T. J. (2002). NAGPRA and the future of skeletal research. In M. A. Park (Ed.), *Biological anthropology: An introductory reader* (pp. 214–217). Boston: Reprint *General Anthropology*, 4(1), 8–10 (1997). McGraw-Hill.
- Rose, J. C., Green, T. J., & Green, V. D. (1996). NAGPRA is forever: Osteology and the repatriation of skeletons. *Annual Review of Anthropology*, 25, 81–103.
- Sagot, J.-C., Gouin, V., & Gomes, S. (2003). Ergonomics in product design: Safety factor. *Safety Science*, 41(2–3), 137–154.
- Sauer, N. J. (1992). Forensic anthropology and the concept of race: If races don't exist, why are forensic anthropologists so good at identifying them? *Social Science & Medicine*, 34(2), 107–111.
- Sauer, N. J. (1993). Applied anthropology and the concept of race: A legacy of Linnaeus. *National Association for the Practice of Anthropology, Bulletin*, 13, 79–84.
- Seidemann, R. M. (2004). Bones of contention: A comprehensive examination of law governing human remains from archaeological contexts in formerly colonial countries. *Louisiana Law Review*, 64(3), 545–588.
- Silko, L. M. (1987). Landscape, history, and the pueblo imagination. In D. Halpren (Ed.), *On nature* (pp. 83–94). San Francisco: North Point.
- Silliman, S. W. (2008). Collaborative indigenous archaeology: Troweling at the edges, eyeing the center. In S. W. Silliman (Ed.), *Collaborating at the Trowel's edge: Teaching and learning in indigenous archaeology* (pp. 1–21). Tucson: University of Arizona Press.
- Simpson, M. (2009). Museums and restorative justice: Heritage, repatriation and cultural education. *Museum International*, 61(1–2), 121–129.
- Singleton, T. A., & Orser, C. E., Jr. (2003). Descendant communities: Linking people in the present to the past. In L. J. Zimmerman, K. D. Vitelli, & J. Hollowell-Zimmer (Eds.), *Ethical issues in archaeology* (pp. 143–152). Walnut Creek: AltaMira Press.
- Smith, C., & Jackson, G. (2006). Decolonizing indigenous archaeology: Developments from down under. *American Indian Quarterly*, 30(3/4), 311–349.
- Smith, E. A., & Winterhalder, B. (1992). *Evolutionary ecology and human behavior*. New York: Aldine de Gruyter.
- Stapp, D. C., & Longnecker, J. (2008). *Avoiding archaeological disasters: Risk management for heritage professionals*. Walnut Creek: Left Coast Press, Inc.

- Stocking, G. W., Jr. (1982). *Race, culture and evolution: Essays in the history of anthropology*. Chicago: The University of Chicago.
- Stodder, A. L. W. (1990). *Paleoepidemiology of Eastern and Western Pueblo Communities*. Unpublished PhD Dissertation, University of Colorado, Boulder, Boulder.
- Thomas, D. H. (2000). *The Skull Wars: Kennewick man, archaeology, and the battle for Native American identity*. New York: Basic Books.
- Thorleifsen, D. (2009). The repatriation of Greenland's cultural heritage. *Museum International*, 61(1–2), 25–29.
- Turner, B. L., & Andrushko, V. A. (2011). Partnerships, pitfalls, and ethical concerns in international bioarchaeology. In S. C. Agarwal & B. A. Glencross (Eds.), *Social bioarchaeology* (pp. 44–67). Malden: Wiley-Blackwell.
- Gerven, V., Dennis, P., Carlson, D. S., & Armelagos, G. J. (1973). Racial history and bio-cultural adaptation of Nubian archaeological populations. *The Journal of African History*, 14(4), 555–564.
- Vaughan, L. A., Benyshek, D. C., & Martin, J. F. (1997). Food acquisition habits, nutrient intakes, and anthropometric data of Havasupai adults. *Journal of the American Dietetic Association*, 97(1), 1275–1282.
- Walker, P. L. (2000). Bioarchaeological ethics: A historical perspective on the value of human remains. In M. Anne Katzenberg & R. S. Shelley (Eds.), *Biological anthropology of the human skeleton* (pp. 3–39). Hoboken: Wiley.
- Walsh-Haney, H., & Lieberman, L. S. (2005). Ethical concerns in forensic anthropology. In T. R. Turner (Ed.), *Biological anthropology and ethics: From repatriation to genetic identity* (pp. 121–132). Albany: State University of New York Press.
- Washburn, S. L. (1951). The new physical anthropology. *Yearbook of Physical Anthropology*, 7, 124–130.
- Watkins, J. (2003). Archaeological ethics and American Indians. In L. J. Zimmerman, K. D. Vitelli, & J. Hollowell-Zimmer (Eds.), *Ethical issues in archaeology* (pp. 129–142). Walnut Creek: AltaMira Press.
- Weaver, R. M. (1960). Lord Acton: The historian as thinker. *Modern Age*, 4, 13–22.
- Wood, J. J., & Powell, S. (1993). An ethos for archaeological practice. *Human Organization*, 52(4), 405–413.



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