CHAPTER 1

BIOARCHAEOLOGICAL ETHICS: A HISTORICAL PERSPECTIVE ON THE VALUE OF HUMAN REMAINS

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INTRODUCTION

The rapidity of technological and cultural change in current times is forcing us to confront a myriad of moral dilemmas over issues as wide ranging as the ethics of cloning humans, the ownership of our genetic material, and the rights of animals relative to those of humans. These ethical issues concern the very nature of what it means to be human and our relationships, not only to other people, but also to the plants and animals that sustain us.

The enormous strides we have taken toward human equality during this century mean that formerly disenfranchised and enslaved members of minority groups are beginning to gain power and control over their lives. In many countries there has been a decline in the political dominance and moral authority of organized religions. Notions of multiculturalism and a growing acceptance of the moral principle of not discriminating against people based on gender, ethnicity, or religious beliefs mean that there is no longer a shared set of cultural values we can use for guidance in dealing with moral issues (Cottingham, 1994).

This increased tolerance of cultural diversity poses ethical dilemmas because, as the range of value systems and religious beliefs that are considered socially acceptable increases, so does the probability of social conflict. To deal with these issues, many scientific associations are beginning to reconsider ethical principles that underlie their research activities. The field of bioarchaeology is especially problematic in this respect, positioned as it is between medicine, with its ethical focus on generating scientific knowledge for use in helping individual patients, and anthropology, with its ethical principles that stem from deep belief in the power of cultural relativism to overcome ethnocentrism and encourage tolerance.

It is in this context that skeletal biologists are increasingly being forced to adapt their activities to the value systems of the descendants of the people they study. Human skeletal remains are more than utilitarian objects of value for scientific research. For many people, they also are objects of religious veneration of great symbolic and cultural significance. Over the past thirty years, formerly disenfranchised groups such as Native Americans and Australian Aborigines have increasingly been able to assert their claims of moral authority to control the disposition of both the remains of their ancestors and the land their ancestors occupied (Howitt, 1998; Scott, 1996). This trend toward repatriating museum collections and granting land rights to indigenous people can only be

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understood within a broader social and historical context.

To provide this historical perspective, I will describe the evolution of religious beliefs about the proper treatment of the dead and conflicts that have arisen over the centuries between these beliefs and the value scientists place on the empirical information that can be gained through research on human remains. This is followed by a discussion of the generally accepted ethical principles that are beginning to emerge in the field of bioarchaeology. Finally, some practical suggestions are offered for dealing with conflicts that arise when these ethical principles conflict with those of descendant groups.

THE HISTORY OF BELIEFS ABOUTTHE DEAD

Early in our evolutionary history people began to develop a keen interest in the remains of their dead comrades. At first this was undoubtedly simply a response to the practical considerations of removing the decaying remains of a dead relative from one's domicile or preventing scavengers from consuming the body. More elaborate patterns of mortuary behavior soon began to develop. Cut marks on the crania of some of the earliest members of our species show that as early as 600,000 years ago people living at the Bodo site in Ethiopia were defleshing the heads of the dead (White, 1986). It has been suggested that such practices reflect a widespread belief among our ancestors concerning the role of the brain in reproduction (La Barre, 1984).

By 50,000 to 100,000 years ago mortuary practices had evolved into elaborate rituals that involved painting bodies with red ochre and including food or animal remains with the body as offerings. Through time these cultural practices became associated with increasingly complex religious beliefs that helped people cope with the uncertainties of death. Depositing utilitarian items and valuables such as ornaments in graves became commonplace in the Upper Paleolithic period. Such practices suggest continued use of these items was anticipated in the afterlife. Expressions of such beliefs can be found in some of the earliest surviving religious texts. The Egyptian Book of the Dead, for instance, provides spells and elaborate directions for use by the souls of the deceased during their journeys in the land of the dead (Allen, 1960; Ellis N, 1996).

The belief that the soul persists in an afterworld has deep roots in Western religious traditions. The ancient Greeks held elaborate funeral rituals to help a dead person's soul find its way across the River Styx to a community of souls in the underworld. Once in the underworld, there was continued communion between the living and the dead. For example, the soul of a dead person could be reborn in a new body if their living family members continued to attend to their needs by bringing them honey cakes and other special foods on ceremonial occasions (Barber, 1988). By medieval times most people continued to view death as a semipermanent state in which the living and the spirit of the dead person could maintain contact with each other. Folktales about ghosts and corpses coming to life were widespread and contributed to the idea of the dead functioning in society with the living (Barber, 1988; Caciola, 1996). The issue of integrity of the corpse and the relationship of this to the afterlife dominated medieval discussions of the body: salvation became equated with wholeness, and hell with decay and partition of the body (Bynum, 1995:114).

After the Reformation, conservative Protestant groups continued to emphasize the profound significance of a person's physical remains after death. In fact, one of the more troublesome issues facing Protestant reformers after the abolition of purgatory in the early sixteenth century was the need to provide a rational explanation for the status of body and soul in the period intervening between death and resurrection (Spellman, 1994). One strategy for dealing with this vexing problem is provided by the constitution for the Old School Presbyterian Church, published in 1822, which

asserts that the bodies of deceased members of the church "even in death continue united in Christ, and rest in the graves as in their beds, till at the last day they be again united with their souls ... the self same bodies of the dead which were laid in the grave, being then again raised up by the power of Christ" (Laderrnan, 1996:54).

Such beliefs in the continuance of life after death remain prevalent in modern Western societies (Cohen, 1992). Recent surveys show that 25% oh European adults report having contact with the dead (Haraldsson and Houtkooper, 1991), and a significant number of Americans believe in reincarnation (Donahue, 1993; Walter, 1993). About half of the people in the United States believe that hell is a real place in which people suffer eternal damnation (Marty, 1997). In another survey, 80% of the North American population believes in some kind of an afterlife (Goldhaber, 1996; Tonne, 1996). Among Canadians, 4(1% believe in the Devil and 43% in hell (Belief in the Devil, 1995).

Surveys also show that, in spite of speculation about the secularizing effects of education and academia, most highly educated people, including professors and scientists, are about as religious as other Americans. Anthropologists are one oh the few groups that deviate significantly from the majority view that individual human beings continue to exist in some kind of an afterlife. Compared to faculty in the physical sciences, anthropologists are almost twice as likely to be irreligious, to never attend church, and one in five actually declare themselves "opposed" to religion (lannaccone et al., 1998). This is significant in the context of the ethical issues considered in this paper because it means that the values of the anthropologists who do skeletal research will often differ dramatically from those of descendants of the people they study.

Although the prevalence of conviction in an afterlife appears to have changed relatively little during the twentieth century, the cultural context in which it occurs has been dramatically transformed. The familiarity with death that characterized earlier societies in which people were forced to confront the dead directly on a daily basis has been replaced by avoidance of the dead. With the commercialization of the burial process by the "death-care" industry in wealthy countries, traditions such as wakes and ritual preparation of the dead For burial by family members have been replaced by the processing of the dead in remote settings (Badonc, 1987; Horn, 1998; Rundblad, 1995). This cultural trend toward lack of contact with the dead has greatly increased the cultural gulf between a public that has little familiarity with death and skeletal researchers, such as bioarchaeologists, who confront the dead on a daily basis.

THE HISTORY OF RESEARCH ON HUMAN REMAINS

Ambivalence toward scientific research on human remains has deep roots in Western societies. From its onset, scientific research oil the dead has been the domain of physicians who were often forced to work under clandestine conditions on the bodies of social outcasts. The earliest recorded systematic dissections of a human body were conducted in the first half ofthe third century B.C., by two Greeks, Herophilus oh Chalcedon and Erasistratus of' Chios. These studies were performed in Alexandria, a city where traditional Greek values were weakened by Ptolcmic influences, and probably involved vivisection and the use of condernned criminals (Von Staden, 1989: 52-53, 1992). In the ancient world, scientific research of this kind was extremely problematic because it violated Greco-Roman, Arabic, and early Judeo-Christian beliefs about the afterlife, impurity, and pollution (Bynum, 1994; Fknoyan, 1994; Von Staden, 1992), In the Christian world, anatomical studies of the dead were especially troublesome because many people feared resurrection would be impossible if their body had been dissected. This belief derived from the conviction that at resurrection the actual body is reconnected with the soul. People thus feared that

dissection would somehow interfere with this process and leave the soul eternally wandering around in search of lost parts (Bynum, 1994).

During the Renaissance the strength of religious sanctions against dissection began to weaken and, by the sixteenth century, surgeons in Protestant countries such as England were officially given the authority to take the bodies of hanged criminals for use in their anatomical studies. This practice had the dual purpose of furthering the healing arts and serving as a deterrcnt to criminals who feared the desecration of their bodies (I Iumphrey, 1973; Wilf, 1989). The repugnance of being dissected was so great that riots sometimes erupted after executions over the disposition of the bodies. Samuel Richardson observed one of these spectacles: "As soon as the poor creatures were half-dead, I was much surprised, before such a number of peace-officers, to see the populace fall to hauling and pulling the carcasses with so much earnestness, as to occasion several warm encounters, and broken heads. These, I was told, were the friends of the person executed, or such as, for the sake of tumult, chose to appear so, and sonic persons sent by private surgeons to obtain bodies for dissection. 'File contests between these were fierce and bloody, and frightful to look at" (Richardson, 1987).

As appreciation for the medical value of the information that could be gained through dissection increased, so did the need for anatomical specimens. Soon the demand for bodies for use in teaching and research outstripped the legal supply of executed criminals, and physicians increasingly began to obtain cadavers through robbing graves and hiring body-snatchers who were referred to as "resurrectionists" (Hutchens, 1997; Millican, 1992; Schultz, 1992). This practice was widespread and persisted well into the twentieth century in some parts of the United States. The desire for bodies even led to the series of infamous murders committed by William Burke and William Hare in Edinburgh in the 1820s, with the aim of supplying dissection subjects to Dr. Robert Knox, the anatomist. Hare turned kings evidence, Burke was hanged for his crimes, and the incident led to controlling legislation in Britain.

Grave-robbing activities sometimes met with violent public resistance. In 1788, for example, New Yorkers rioted far three days after some children peered through windows ol'thc Society of the Hospital of the City of New York and discovered medical students dissecting human cadavers, one of whom turned out to be their recently deceased mother. A mob of five thousand eventually stormed the hospital and the jail where several doctors had taken refuge. The militia had to be called in and finally dispersed the crowd by firing muskets into it.

To avoid problems such as this, the professional body snatchers hired by medical schools concentrated on robbing the graves of the poor and powerless. The cemeteries of almshouses were favorite targets and, in the United States, African-American graveyards were favored as places to plunder. Upon visiting Baltimore in 1835, Harriet Martincau commented that the bodies used for dissection were exclusively those of African Americans "because the whites do not like it, and the coloured people cannot resist" (Martincau, 1838:140).

Although much of the early anatomical research focused on resolving issues concerning physiology and surgical anatomy, from the beginning skeletal studies with a decidedly anthropological flavor were done to answer questions related to human variation and adaptation. As early as 440 B.C., Herodotus (484- 425 B.C.) reported on an investigation into the effect of the environment on the strength of the skull:

> On the field where this battle was fought 1 saw a very wonderful thing which the natives pointed out to me. The bones of the slain tic scattered upon the field in two lots, those of the Persians in one place by themselves, as the bodies lay at the first-those of the Egyptians in another place apart from them. If, then, you strike the Persian skulls, even with a pebble, they arc so weak, that you break a hole in them; but the Egyptian skulls are so strong, that you may stnite them with a stone and you will scarcely break them in. They gave me the following reason for this

> difference, which seemed to me likely enough: The Egyptians (they said) from early childhood have the head shaved, and so by the action of the sun the skull becomes thick and hard. (Herodotus, 1990)

Much of the early anatomical work on human variation had its roots in the belief of Aristotle and his contemporaries that Nature was organized hierarchically as a continuous chain. He was certain that all other animals existed for the sake of Man. This view of the world provided a useful framework for comprehending the enormous complexity of the natural world and also had the appeal of rationalizing the stratified nature of Greek society with powerful rulers and a social elite at the top and the slaves at the bottom (Clutton-Brock, 1995).

By the Middle Ages this hierarchical view of the world had been transformed into the Christian doctrine in which the world was seen as a perfect expression of God's will that descended in continuous succession through a "Great Chain of Being" from the perfection of the creator to the dregs of things at the very bottom of creation. This perspective permeated much of the work of early natural historians such as John Ray, who developed the doctrine of "natural theology," in which he argued that the power of God could be understood through the study of his creation, the natural world (Ray, 1692). In this context, the description of biological variation, including that found among humans, was a frankly religious activity in which the exploration of the fabric of the natural world at both its macroscopic and microscopic levels was seen as a way of revealing the "divine architect's" plan for the universe.

The expanded view of biological diversity provided by the specimens brought back by Columbus and other early European explorers stimulated a frenzy of species description and the first detailed anatomical studies of the differences between apes and humans. Through his careful dissections of a chimpanzee, Edward Tyson (1650-1708) was able to debunk myths based on the reports of classical authors such as Homer, Herodotus, and Aristotle that humankind contained several species including "satyrs," "sphinges," and "pygmies," and in 1779 Charles Bonnet (1720--1793) wrote a detailed account of the orangutan in which he noted a close relationship to us, albeit with the "lowest races" of our species (Bonnet, 1779; Clutton-Brock, 1995; Tyson, 1966).

After resolving the issue of whether humans and apes are members of the same species, Enlightenment scholars were still laced with the problem of interpreting the previously unsuspected extent of human biological and cultural diversity revealed by European colonial expansion into remote areas of the world. Linnaeus, for example, recognized five divisions of our genus, which included "Homo monstrosus," a catchall category for a variety of mythical creatures reported by early explorers. The debate soon took on a strong religious flavor and began to focus upon how the empirical facts of human variation could be made congruent with biblical accounts of Adarn and Eve and the Tower of Babel. Interpretations of human diversity became sharply divided between the adherents of the theory of monogenesis, which traced all humans to a single origin in the Garden of Eden, and the adherents of polygenesis, who rejected the criteria of interfertility as the basis for the identification of biological species and took the unorthodox position that Europeans, Africans, Asians, and Native Americans were derived from different ancestral forms.

By the end of the eighteenth century, evidence obtained from human skeletal remains began to assume an increasingly important role in these debates over the origins and significance of human biological and cultural differences. Cranial evidence (a total of 82 skulls), for instance, figured prominently in the famous doctoral thesis of Johann Friedrich Blumenbach (1752-1940) in which he argued that modern human diversity had arisen as a consequence of the degeneration of a primordial type (varietas primigenia) whose closest living approximation could be found in the people of the Caucasus Mountains (Blumenbach et al., 1865). Such studies generated considerable

interest in human cranial variation, and soon systematic efforts were begun to assemble research collections of human skeletal material from throughout the world.

In the United States, research on population differences in cranial morphology was dominated by Samuel George Morton (1799-1851), a physician from Philadelphia. Morton studied medicine at the University of Edinburgh where he was influenced by theories of polygenism and the hereditarian views of phrenologists that were in vogue at the time (Spencer, 1983). Underlying Morton's careful craniometric research was the basic theoretical assumption of phrenology: differences in skull shape corresponded to differences in the shape of the brain and consequent differences in brain function. To test these theories, Morton amassed a large collection of human crania from all over the world that he compared using cranial measurements. From this he derived a hierarchy of racial types with blacks at the bottom, American Indians intermediate, and whites at the top (Morton, 1839).

Morton's craniometric approach to understanding human variation set the stage for much of the osteological research done by physical anthropologists during the rest of the nineteenth century. Most of this work was typological in orientation and focused upon the classification of people into broad categories such as brachycephalic (round-headed) or dolichocephalic (long-headed) based on ratios of measurements. Although acceptance of the monogeneticists' theory that all humans trace their ancestry to a single origin gradually increased, especially after the publication of Darwin's theory of natural selection, a typological, craniometrically oriented approach emphasizing taxonomic description and definition over functional interpretation persisted well into the middle of the twentieth century in the work of influential skeletal biologists such as Ales Hrdlicka (1869-1943) and Ernest Hooton (1887-1954).

There are several reasons for the remarkable tenacity of the typological emphasis in research on human skeletal remains. First, there is the idea that human variation can be adequately accommodated by a few fundamentally different racial types, which conveniently coincides with beliefs in racial inferiority and superiority that continue to persist in modern societies. The idea of a straightforward relationship between the shape of a person's skull and their genetic makeup also was seductive to physical anthropologists because it meant that cranial differences could be used as a powerful tool to further one of anthropology's principle goals: producing detailed reconstructions of population movements and historical relationships. Finally, there is a practical consideration behind the persistence of the typological orientation of skeletal research. Until recently, the computational problems of someone attempting to statistically compare quantitative observations made on skeletal collections of any meaningful size were practically insurmountable. The typological approach, with all of its simplifying assumptions and loss of information on within-group heterogeneity, offered a cost-effective alternative to this practical dilemma.

The last point is nicely illustrated by the anthropometric work of Franz Boas (1858-1942), the founder of American anthropology and a strong opponent of simplistic hereditarian interpretations of human variation. Through his anthropometric studies of Europeans who immigrated to the United States, Boas showed that the shape of the cranial vault, a trait nineteenth-century racial typologists had fixated upon, is highly responsive to environmental influences and thus of limited value in taxonomic analysis (Boas, 1912). Boas realized the potential of anthropometric research for elucidating the cultural and biological history of our species and from 1888 to 1903 worked to assemble anthropometric data on 15,000 Native Americans and 2,000 Siberians (Jantz et al., 1992). In contrast to Hrdlizcka and many of his other contemporaries, Boas realized the necessity of statistical analysis for understanding the variability within these samples. Unfortunately, the computational capabilities of the data processing tools that were available at the beginning of the nineteenth century (i.e., pencil and

paper) made meaningful analysis of the information on human variation contained within this monumental collection of anthropometric observations impossible (Jantz, 1995). Consequently, almost nothing was done with these data until a few years ago when availability of computers with adequate data storage and processing capability made their analysis possible (see Pietrusewsky, Chapter 14).

During the past thirty years, physical anthropology has finally escaped from the methodological and conceptual shackles of nineteenth-century racial typology. Research on the skeletal remains of earlier human populations has entered a vibrant new phase in which the great potential Boas saw in studies of human variation as a source of insights into the biological and cultural evolution of humankind is beginning to be realized. This paradigm shift has involved replacing the futile nineteenth-century preoccupation with drawing stable boundaries around populations, whose biological and cultural makeup is constantly in flux, with new evolutionary ecological approaches that recognize the complexity and adaptive significance of interactions between genetic variability and developmental plasticity. This theoretical reorientation has resulted in a new bioarchaeological approach to the analysis of skeletal remains from earlier human populations that uses cultural, biological, and paleoenvironmental evidence to illuminate the processes of human adaptation (Larsen, 1997). With this new approach has come an increasing appreciation for the many ways the remains of our ancestors can help us to both better understand and devise solutions to the many seemingly intractable problems of violence, disease, and social inequity that we currently face.

THE SOURCES OF SKELETAL COLLECTIONS

To fully appreciate the concerns that modern indigenous people have about collections of human skeletons, it is necessary to understand the historical and social context in which skeletal collections have been made throughout history. The practice of collecting human skeletal remains as war trophies and for religious purposes has deep historical roots. It has been argued that taking the heads of the dead to obtain their power is among the earliest of ritual practices (La Barre, 1984). In the past, the taking of heads, scalps, and other body parts during warfare was a widespread practice, especially among Native Americans and Melanesians, and can nearly be considered a cultural universal (Driver, 1969; Hamer, 1972; Olsen and Shipman, 1994; Owsley et al., 1994; White and Toth, 1991; Willey and Emerson, 1993). Although suppressed in modern societies, such practices continue in the form of the collection of "trophy skulls" from battlefields by modern soldiers (McCarthy, 1994; Sledzik and Ousley, 1991).

Among Christians, the belief that proximity to the bones and other body parts of saints could bring miracles was common as early as the fourth century A.D. This use of human remains as objects of religious veneration gradually resulted in the accumulation of substantial skeletal collections. By the ninth century the remains of martyrs had become so valuable that competition between religious centers created a regular commerce that sometimes degenerated to the point of melees between monks attempting seize the bodies of martyrs by force of arms (Gauthier, 1986; Geary, 1978; Thurston, 1913). The belief that the miraculous powers of important religious figures could be accessed through their bones stimulated a lively market in human remains. At one point 19 churches claimed to possess the mandible of John the Baptist (Collin de Plancy, 1821). Philip II (1556-1598) of Spain, a zealous Catholic, commissioned an envoy to collect the remains of as many saints and martyrs as he could, and assembled a collection of 11 complete skeletons along with thousands of skulls, long bones, and other miscellaneous skeletal elements at his residence, the Escorial near Madrid (Wittlin, 1949). Belief in the magical powers of human remains was not limited to those of Catholic saints. When an Egyptian mummy was obtained by Leipzig,

Germany, in 1693 it soon became a tourist attraction owing to the common belief' "that it pierceth all parts, restores wasted limbs, consumption, heckticks, and cures all ulcers and corruption" (Wittlin, 1949).

Until the middle of the eighteenth century, Europe had no museum collections in the modern sense. Instead, there were vast collections held by monarchs and the Catholic Church that functioned as reliquaries, storehouses, and treasuries. During the Enlightenment, a strong belief in the power of empirical investigations of the natural world as a method for the discovery of God's laws brought with it a need for museums whose purpose was the preservation of historical artifacts and natural objects for scientific scrutiny. At first these collections took the form of "curio cabinets" maintained by wealthy aristocrats for their personal research and the edification of their friends. Many of these early collectors were physicians and, owing to their professional interest in human anatomy, they naturally included human skeletons and preserved anatomical specimens in their cabinets. For example, the large collection amassed by Sir Hans Sloane (1660-1753), the personal physician to Queen Anne and King George II, included a number of human skeletons. Upon Sloane's death, these skeletons and the rest of'his collection were bequeathed to the British Parliament at a nominal sum and served as the nucleus of the British Museum's natural history collection. In America, scholarly associations such as The Library Company of Philadelphia, which was formed in 1731 by Benjamin Franklin and his colleagues, began to maintain collections that included anatomical specimens and, around the same time, the Pennsylvania Hospital in Philadelphia established its teaching cabinet with the acquisition of a human skeleton and a series of anatomical models (Orosz, 1990:1(.1-17).

These collections of skeletons and anatomical specimens were of great value because they made it possible to provide instruction in surgical anatomy without off'ending Christians who had religious objections to the dissection of cadavers. During the last half of the eighteenth century, the inadequacies of the old system of learning anatomy by studying models and occasionally observing a demonstrator dissect a criminal's body became increasingly apparent. With the growth of medical knowledge, aspiring surgeons began clamoring for more hands-on experience so they could avoid the horrifying prospect of learning their trade through the butchery of their first living patients. This desire was reinforced by a growing public recognition of the value of being operated upon by someone with practical experience in dissection.

These social pressures resulted in an exponential increase in the demand for cadavers. To meet this need, "anatomical acts" were eventually passed that expanded the legal sources of cadavers to include the victims of duels, suicides, and, most importantly, unclaimed bodies. The demand was so great that this new legal supply of bodies was often inadequate and, throughout the nineteenth century, medical schools were still enlisting the services of body snatchers to obtain their instructional materials (Blake, 1955; Blakely ct al., 1997; Newman, 1957).

Although the increase in dissections opened the possibility of increasing the scope of' skeletal collections, this potential was not fully realized. Collections were made of specimens with interesting anomalies and pathological conditions but, as a rule, the rest of the dissected person's skeleton was disposed of in what often seems to have been a cavalier fashion (Blakely, 1997:167). From what can be discerned from the remnants of nineteenth-century medical school collections that survive today, little effort was made to create carefully documented skeletal collections of known age and sex for use in assessing the normal range of human variation. The failure to create such systematic collections probably stems in part from the prevalence of racist views that minimized the importance of variation within groups and exaggerated the significance of population differences.

The immensity of the carnage brought by the Civil War profoundly affected attitudes toward the dead in the United States (Laderman,

1996). The war desensitized people to death and this made it possible to view corpses with increasing detachment. At the same time, the logistic problems the military faced in preserving the bodies of so many dead soldiers for transportation back to their families turned corpses into commodities that needed to be processed by professionals such as doctors and undertakers. In this context of mass slaughter, rising professionalism, and growing rejection of religious beliefs in the resurrection of the body, surgeons struggling to devise standardized treatments for the sometimes horrifying injuries they faced began to view autopsies and other medical research on dead soldiers as an ethical imperative. To accommodate this research the Army Medical Museum was founded in 1862 as a repository for thousands of skeletal specimens, preserved organs, photographs, and other medical records obtained during the treatment and autopsy of military casualties (Barnes et al., 1870; Otis and Woodward, 1865).

At the close of the Civil War, army doctors shifted the focus of their collecting activities toward medical concerns arising from the Indian wars in the western United States, such as the treatment of arrow wounds (Bill, 1862; Parker, 1883; Wilson, 1901). One aspect of this work involved the collection of Native American crania and artifacts from battlefields and cemeteries. This was implemented through a letter from the Surgeon General's Office, dated January 13, 1868, that stated: "Will you allow me to ask your kind interposition in urging upon the medical officers in your departments the importance of collecting for the Army Medical Museum specimens of Indian Crania and of Indian Weapons and Utensils, so far as they may be able to procure them." Other documents make it clear that these collections were made under the protest of the Indians whose graves were being raided and that such activities could even result in further hostilities with the Indians (Bieder, 1992). Although government sanctioned grave robbing of this kind eventually stopped, it understandably continues to provoke outrage among the descendants of the people whose bodies were stolen (Riding In, 1992).

Beginning in the middle of the nineteenth century, large public natural history museums began to be established whose goals were both popular education and scholarly research (Orosz, 1990). These museums provided an institutional framework within which the large skeletal collections could be consolidated from the smaller private collections of physicians and wealthy amateur archaeologists. These new museums had the resources necessary to maintain staffs of professional research scientists and to augment their osteological collections through purchases from private collectors and the sponsorship of archaeological expeditions throughout the world.

In the United States, the most important natural history museums from the perspective of collections of human skeletal remains are the Smithsonian Institution, founded in 1846, the Peabody Museum of Archaeology and Ethnology, founded 1866, the American Museum of Natural History, founded in 1869, the Harvard Peabody Museum of Archaeology and Ethnology, founded in 1866, the Columbian Museum of Chicago (now the Chicago Field Museum), founded in 1893, the Lowie Museum of Anthropology (now the Phoebe Hearst Museum), founded in 1901, and the San Diego Museum of Man, founded in 1915. During the twentieth century the number of museums with significant holdings of human skeletal remains rapidly increased and by 1998 about 700 federal and private institutions possessed skeletal remains from an estimated 110,000 individuals.

The research value of these collections varies enormously depending upon the conditions under which they were collected. Owing to the cranial typology orientation of nineteenth-century physicians, most of the material collected before the beginning of the twentieth century consists of isolated crania, lacking associated mandibles or infracranial remains. Because of the predisposition of these researchers to interpret human variation within a framework of stable types that were comparatively immune to environmental influences,

most of them lack adequate provenience information and are simply labeled in terms of preconceived racial categories or broad geographical regions. All of these factors greatly reduce the value of such collections for research purposes. Fortunately, most of the skeletal material in museums derives from the work of professional archaeologists and is associated with at least some contextual information that allows the individual to be placed in a meaningful historical, environmental, and cultural context. This type of information is essential for modern bioarchaeological research, which relies heavily on contextual information to reconstruct the cultural ecology of earlier human populations.

During the first half of the twentieth century, several visionary anatomists realized the value of having skeletons from individuals of known age, sex, and ethnic background for use in anthropological and forensic research on the effects that environmental and genetic factors have on health, disease, and morphological variation. Working in conjunction with the teaching programs of medical schools, these researchers carefully recorded anthropometric data, vital statistics, health histories, and other relevant information on the people scheduled for dissection. Afterwards they prepared their skeletons for curation in research collections. Three of the largest of these dissection room collections were established in the United States, at the Washington University School of Medicine in St. Louis, the Western Reserve University in Cleveland, and Howard University in Washington, D.C.

A central figure in the creation of these collections is William Montague Cobb (1904-1990). Cobb, an African-American, who was an acknowledged activist leader in the African American community, realized the value that empirical data on human variation has as an antidote to racism (see also Ubelaker, Chapter 2). After receiving his medical degree at Howard University, he did postgraduate studies at the Western Reserve University where he helped T. Wingate Todd (1885-1938) assemble that university's skeletal collection. After writing a doctoral dissertation on anthropological materials, which included information on the geographic and ethnic origins of the people who contributed their skeletons to the Western Reserve collection, Cobb returned to Washington where he created a similar collection at Howard University (Cobb, 1936). A prolific author and dedicated teacher of anatomy, Cobb used his understanding of human biology, which in part was derived from dissections and skeletal research, to improve the health and reinforce the civil rights of African Americans (Cobb, 1939; Cobb, 1948; Rankin-Hill and Blakey, 1994).

In Great Britain and Europe, a different approach has been taken to the creation of known age and sex skeletal collections for use in anthropological research. The crypts outside Saint Bride's Church, London, were disturbed through bombing during World War II. Restoration of the church has resulted in a documented collection of skeletal remains dating from the mid-eighteenth century (Huda and Bowman, 1995; Scheuer and Bowman, 1995). Similar collections of people of known age and sex from historic cemeteries have been established in Coimbra, Portugal (Cunha, 1995), Lisbon, Portugal, Geneva, Switzerland (Gemmerich, 1997) and Hallstatt, Austria (Sjovold, 1990, 1993). However, a great many anatomical collections of skeletons of nineteenth- and twentieth-century individuals exist in anatomy departments and medical schools throughout Europe, Britain, and other countries.

THE VALUE OF HUMAN SKELETAL REMAINS

In the ongoing debate over the disposition and scientific analysis of ancient human remains in museum collections, there is a tendency for the ethical issues surrounding skeletal research and the maintenance of skeletal collections to be reduced to simplistic oppositions: science versus religion, right versus wrong, and so on. Although framing the complex social issues underlying the debate in this way may be polit-

ically expedient, it is counterproductive for anyone seeking a solution that balances the concerns of descendants against those of the scientific community.

From my brief discussion of the evolution of beliefs about human remains, it is obvious that the details of the rituals people have devised for the treatment of the dead have varied enormously among the cultures of the world through time. The practice of funeral rites by friends and relatives and the use of a method of disposing of the body appear to be human universals but, beyond that, there is little uniformity (Brown, 1991; Murdock, 1945). This diversity of beliefs about how the dead should be treated poses ethical dilemmas for bioarchaeologists when their scientific work conflicts with the beliefs of the descendants of the people whose remains they study.

One approach to resolving disputes over research on ancient skeletal remains is to view such disagreements as cultural issues arising from competing value systems (Goldstein and Kintigh, 1990). Conceiving of disputes over the treatment of the dead as products of conflicting value systems avoids polemics and self-righteous posturing in which each side battles for moral superiority and instead promotes communication and mutual understanding. This can eventually result in the discovery of solutions that are consistent with the value systems of both parties in the dispute.

The only justification for the study of skeletal remains from earlier human populations is that such research yields information that is useful to modern people. Although the value of skeletal research seems self-evident to the people who conduct it, there are many indigenous people who feel that such work is not only useless, but also extremely harmful owing to the damage it does to them and the spirits of their ancestors. This conflict between the values scientists and descendant groups attach to human remains is central to the most important ethical dilemmas bioarchaeologists face. Since mutual understanding is a prerequisite for finding a common ground between these apparently incommensurable world views, it is useful to briefly describe the values scientists and descendant groups attach to ancient human remains.

Bioarchaeologists focus their research on ancient human skeletal remains, not out of idle scientific curiosity, but instead because they believe that the information contained within the remains of our ancestors is of great value to modern people. Human skeletal remains are a unique source of information on the genetic and physiological responses our ancestors made to the challenges posed by past natural and sociocultural environments. Consequently, they provide an extremely valuable adaptive perspective on the history of our species.

Most of what we know about our recent history is based on inferences derived through analysis of artifacts, documents, oral histories, and other products of human cultural activity. Owing to their symbolic content, such cultural artifacts are difficult to interpret and often consistent with multiple, sometimes contradictory views of the past. The subjective aspects of attempting to interpret cultural artifacts from the perspective of our current cultural milieu are well recognized: Historical works often reveal more about the cultural values and political biases of the historian than they do about the reality of the historical event being described. All historians are products of the culture in which they live, and they are always selective in what they report.

Because of its biological basis in the physiological processes of growth, development, and acclimatization to environmental change, the information about interactions with past environments encoded in human remains provides an extremely valuable comparative basis for evaluating interpretations of the past based on artifacts, documents, and other culture-based sources. The historical data provided by skeletal studies are of such great value because the methodological problems inherent in extracting evidence from a skeleton are completely different from those historians face when they attempt to interpret the historical significance of the cultural products with which they work. The only way we can reduce

the cultural biases that distort our understanding of past events is through collecting a diversity of evidence from sources that are susceptible to different types of interpretative error. The greater the diversity of the evidence we have about the past, the easier it is to rule out alternative interpretations that are unlikely to reflect actual events. By using a series of data sources that, standing alone, would be open to many different interpretations, it is in this way possible to triangulate on what really happened in the past.

The unique perspective that skeletal evidence provides on the history of our species makes it a potent weapon against cultural relativists and historical revisionists who view the past as a source of raw materials they can exploit to refashion history into whatever narrative is currently considered au courant or politically expedient. In some schools of postmodernist thought, history is viewed as a symbolic construct devoid of any objective truth: all we are left with is an endless process of constructing conflicting narratives about the past that are all of equal merit or are only of merit because they are different. In some rarified corners of the humanities, the possibility of knowing with certainty that voluminously documented historical events such as the Holocaust actually occurred is actively debated (Braun, 1994; Friedman, 1998; Jordan, 1995; Kellner, 1994). In the world of these theorists, people interested in discovering what happened in the Holocaust are doomed to an academic life of continuously revisualizing and recontextualizing subjective impressions of subjective descriptions of the slaughter of millions of people into new, contradictory, and, from their perspectives, more meaningful imaginations of the past.

In contrast to the symbolic problems inherent in historical reconstructions based upon written records and oral histories, human skeletal remains provide a direct source of evidence about the lives and deaths of ancient and modern people that is, at a fundamental level, free from cultural bias (Walker, 1997). The skeletons of the people buried row upon row at concentration camps such as Terezin, the racks of skulls from the Cambodian killing fields at Tuol Sleng Prison, and the cut marks on the skeletons of the hundreds of massacred prehistoric Native Americans unceremoniously buried at the Crow Creek site in South Dakota speak volumes about real historical events that ended the lives of real people.

In certain respects, bones do not lie. To give a specific example from my own research, the presence of lesions indicative of severe, repeated physical abuse in the skeletons of children murdered by their parents says something very specific about a history of traumatic experiences that a child suffered during its short life (Walker, 2000; Walker et al., 1997). Although multiple "narratives" can be constructed based on the presence of such lesions (the child was extraordinarily clumsy or accident prone, the child's parents repeatedly beat him over a prolonged period until he died, and so on), at a fundamental level such skeletal evidence says something indisputable about a physical interaction that took place between the dead child and his or her physical environment. Unlike written records or oral histories, human remains are not culture-dependent symbolic constructs. Instead they provide an extraordinarily detailed material record of actual physical interactions that occurred between our ancestors and their natural and sociocultural environments. As such, human remains are extremely valuable sources of evidence for reconstructing what actually happened in the past.

This esoteric view that bioarchaeologists hold concerning the central role that collections of human skeletal remains play in helping us to obtain an objective view of history is not widespread. The vast majority of the world's population views human remains with a mixture of morbid fascination and dread because they serve as such vivid reminders of one's own mortality and impending death. The symbolic saliency of directly confronting a dead person has been deftly exploited for a diversity of religious, political, and economic purposes. Throughout the world, in many different settings, human remains are placed on public dis-

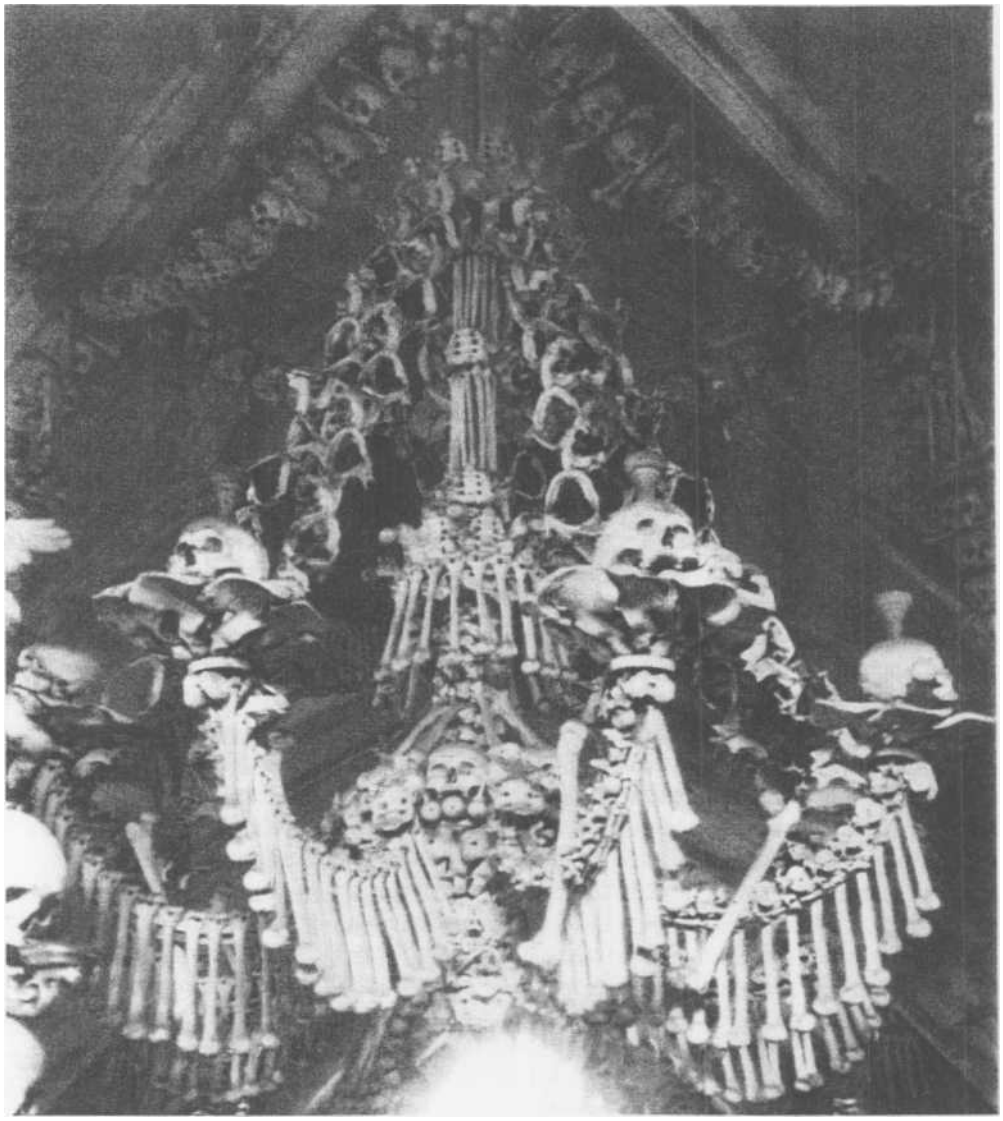

Figure 1.1 The interior of the All Saints Cemetery Chapel in Sedlec, a suburb of Kutna Hora in the Czech Republic. The chapel is decorated with the bones of some 40,000 people whose remains were excavated by from a nearby graveyard by Monks of the Cistercian order.

indigenous people suffered the greatest devastation at the hands of European colonists, ancient human remains have assumed great significance as symbols of cultural integrity and colonial oppression. In this postcolonial world gaining control over ancestral remains is increasingly considered essential to the survival and revitalization of indigenous cultures.

That the views of indigenous people concerning this issue have changed dramatically during the past forty years is amply illustrated by archaeological reports that describe the enthusiastic participation of Native Americans in the excavation of burials, some of whose study by bioarchaeologists are currently under dispute (Benson and Bowers, 1997; Brew, 1941;

Fewkes, 1898; Hewett, 1953; Hrdlicka, 1930a, 1930b, 1931; Hurt et al., 1962; Judd, 1968; Neuman, 1975; Roberts, 1931; Smith, 1971; Smith et al., 1966). As late as the 1960s, Inuit people in the Northwest Territory of Canada who I worked with seemed little concerned about the excavation of ancient skeletal remains. In fact, they were extremely cordial to the members of the expedition I was on and assisted us in any way they could. Although they expressed mild concerns about carrying human skeletons in their boats, they otherwise were supportive of and expressed considerable interest in our bioarchaeological work.

To comprehend the urgency of the current concerns Native Americans have about the treatment of their ancestral remains it is necessary to understand the magnitude of the recent disruptions of their cultures. Beginning at the end of the nineteenth century, systematic attempts began to be made to separate Native American children from their families, suppress their Native identities, and inculcate them with Christian values (Ellis C, 1996; Lomawaima, 1993). Simultaneously, the isolation that formerly characterized life on the remote reservations in marginal areas that the government relegated them to began to break down owing to the development of interstate highways, radio, television, and the intrusions of tourists. These developments have had such a devastating effect on the transmission of traditional beliefs and practices that the remnants of earlier times preserved in museums have increasingly become a cultural focus. Control over these collections is an important political issue for Native Americans because, by gaining control over the biological and cultural remains of their ancestors, they can begin to reassert their cultural identity within the dominant Euro-American culture.

When viewed within this context of cultural marginalization and repression, it is easy to see why many indigenous people see little value in what to them are the very nebulous goals of bioarchaeologists. Zimmerman (Ubelaker and Grant, 1989) presents evidence supporting the depth of Indian concern about the retention of museum collections. He cites an unpublished survey that John S. Sigstad conducted in 1972 of Indian tribes in the BIA Aberdeen region. All respondents agreed that human remains in museums should be reburied, 95% indicated bones should not be displayed in museums, and only 35% of the respondents believed that human remains should be excavated for scientific research (Ubelaker and Grant, 1989).

Some indigenous people have the erroneous belief that only the remains of their ancestors are studied and cite this as a reflection of the racist attitudes of the European colonists who robbed them of their land (Tobias, 1991; Vizenor, 1986). They feel that such research degrades them by singling them out to be "made fun of and looked at as novelties" (Mihesuah, 1996; Walters, 1989). Bioarchaeologists respond to this charge by pointing out the vast collections of non-Native American skeletal remains in European museums and arguing that it would be racist not to have collections of Native American remains in New World museums, since this would imply that knowledge of the history of the indigenous people of the New World had nothing to contribute to the understanding of our common past (Ubelaker and Grant, 1989).

Some indigenous people reject the epistemology of science, at least as it applies to their history and cultural affairs, and instead prefer to view the past as it is revealed through traditional ways of knowing, such as oral history, legend, myth, and appeal to the authority of revered leaders. For people with this perspective, scientific research directed toward documenting the past is not only superfluous, but also potentially culturally subversive owing to the capacity of scientific evidence to conflict with traditional beliefs about the past and, in this way, undermine the authority of traditional religious leaders. From this perspective, scientific investigations into the history of indigenous cultures are simply another manifestation of the attempts of an oppressive imperialist colonial power to control and weaken the belief systems of indigenous people so that they will be easier to exploit (Bray, 1995; Dirlik, 1996; Riding In, 1996).

In academia, this position clearly resonates with radical postmodernist theorists of the humanities who believe that reconstructing history as an objective reality is a hopeless endeavor and instead argue that history is a symbolic weapon that ethical people should use to help the marginal political and cultural constituencies of the world in their struggles against the holders of power (Hodder et al., 1995).

This tension between traditional and scientific views of the past has recently been brought into sharp focus through the controversy over the disposition of the 9,300-year-old human remains found at the Kennewick site on the banks of the Columbia River in Washington State (Hastings and Sampson, 1997; Lemonick, 1996; Morell, 1998; Petit, 1998; Preston, 1997; Slayman, 1997). Scientists who have examined these remains say they possess characteristics unlike those of modern Native Americans. They believe that research into reasons for this difference has the potential to make an important contribution to our understanding of the history of humankind. Members of the five Native American tribes that have claimed the skeleton, on the other hand, believe that the question of the cultural affiliation of this individual has already been resolved by their elders who tell them that they have lived in the area where the skeleton was found since the beginning of creation. The complexity of this dispute increased further when members of the Asutru Folk Assembly, a traditional European pagan religion, sued for the right to use scientific research to decide if this individual is one of their ancestors. They claim that "It's not an accident that he came to us at this time and place ... Our job is to listen to (the bones) and hear what they have to say" (Lee, 1997).

Modern indigenous people often frame such disputes over the power to control the interpretation of tribal history in spiritual terms. It is a common pan-Indian religious belief that all modern Native Americans are spiritually linked to all other Indian people living and dead (Walters, 1989). Another widely held belief is that space is spherical and time is cyclical (Clark, 1997). All living Indians thus have a responsibility for the spiritual well-being of their ancestors that requires them to assure that their ancestors are buried in the ground where they can be reintegrated into the earth and complete the circle of life and death (Bray, 1995; Halfe, 1989). Contemporary Native Americans who hold these beliefs argue that, so long as ancestral spirits are suffering because their bones are not buried in the earth, living people will continue to suffer a myriad of adverse consequences. Thus, any activity inconsistent with reburial, such as excavation, study, museum curation, and storage, is considered an act of desecration and disrespect. For indigenous people with such views, there is no middle ground upon which scientific research can be conducted on human skeletal remains and associated artifacts. These remains are of great spiritual and psychological importance and their reburial is required to heal the wounds of colonial oppression (Emspak, 1995; Murray and Allen, 1995)

ETHICAL RESPONSIBILITIES OF SKELETAL BIOLOGISTS

Given these sharply polarized views concerning the value of scientific research on human remains, what are the ethical responsibilities of skeletal biologists? On one hand, we have bioarchaeologists who believe that the historical evidence obtained from human remains is critical for defending humankind against the historical revisionist tendencies of repressive, genocidal political systems, and, on the other, we have indigenous people who believe that the spirits of their ancestors are being tortured on the shelves of museums by racist, genocidal, colonial oppressors. If we can accept the relativist perspective that both of these views have some validity, then it is possible to envisage a compromise that gives due recognition to both value systems.

Although there is still a broad spectrum of perceptions of what is right and what is wrong among modern people, with the precipitous

decline in cultural diversity that has occurred owing to the expansion of modern communication systems, we are seeing a worldwide convergence of values, at least concerning certain areas of human affairs (Donaldson, 1992). These shared values are developing as part of the evolution of the transnational political and economic systems that are beginning to unite the world's disparate cultures. The Declaration of Human Rights of the United Nations, for example, provides a generally accepted set of rules for ethical human behavior that most people can accept in principle, if not in practice. They include recognition of the right to equality, freedom from discrimination, freedom from torture and degrading treatment, freedom from interference with privacy, and freedom of belief and religion (UN, 1948). Other attempts to devise a set of ethical rules that encompass what some people believe is emerging as a culturally universal system of moral principles include widespread humanistic values such as the recognition that it is wrong to be indifferent to suffering, that tolerance of the beliefs of others is good, and that people ought to be free to live as they choose without having their affairs deliberately interfered with by others (Hatch, 1983).

The cultural values expressed by the assertion of basic human rights and universal moral principles such as these can be criticized as hegemonic attempts to use Western cultural ideas as tools for gaining power and political control for transnational business interests. For example, the Chinese government has recently criticized allegations concerning its suppression of the rights of political dissidents as insensitive to unique Chinese cultural values such as obedience to authority, collectivism, family, and other dispositions (Li, 1998).

This issue of developing universal, government-sponsored standards of ethical behavior is of more than theoretical interest to bioarchaeologists since it is commonly asserted that the maintenance of skeletal collections for use in scientific research is a violation of a fundamental human right. For example, Article X of the draft of the "Inter-American Declaration on the Rights of Indigenous Peoples" approved by the Inter-American Commission on Human Rights of the Organization of American States in a section entitled "Spiritual and Religious Freedom" specifically states that when "sacred graves and relics have been appropriated by state institutions, they shall be returned" to indigenous people (IACHR, 1995).

At the opposite end of the spectrum of political inclusiveness and governmental authority from the UN and OAS statements on human rights are the ethics statements that professional associations develop for their members to use as guides for the decisions they make during their everyday activities. The decline in the capacity of organized religions and other traditional social institutions to impose a unifying set of ethical principles acceptable to modern multicultural societies, and the constant stream of ethical challenges posed by new technological developments has stimulated enormous interest in the formulation of standards for ethical conduct in many areas of professional activity (Behi and Nolan, 1995; Bulger, 1994; Fluehr-Lobban, 1991; Kruckeberg, 1996; Kuhse et al., 1997; Kunstadter, 1980; Lynott, 1997; Muller and Desmond, 1992; Navran, 1997; Parker, 1994; Pellegrino, 1995; Pyne, 1994; Salmon, 1997; Scanlon and Glover, 1995; Schick, 1998).

Many professional associations and governmental agencies have developed ethical guidelines for use by researchers in the biomedical and social sciences that contain information directly relevant to resolving the ethical dilemmas bioarchaeologists face when they work with ancient human remains (AAA, 1986, 1997; AIA, 1991, 1994; CAPA, 1979; MRCC, 1998; NAPA, 1988; NAS, 1995; SAA, 1996; SAP, 1983; SPA, 1976; UNESCO, 1995).

Although only a few of these statements deal specifically with issues surrounding the study of human remains, a comparison of the principles for ethical behavior they espouse suggests considerable agreement on a few fundamental rules that can be used to guide researchers who work with ancient human remains: (1) human remains should be treated

with dignity and respect, (2) descendants should have the authority to control the disposition of the remains of their relatives, and (3) owing to their importance for understanding the history of our species, the preservation of collections of archaeological collections of human remains is an ethical imperative.

Each of these principles is based upon a complicated set of value judgments whose implications for the real-world practices of skeletal biologists depend in many ways upon the cultural lens through which they are viewed. For example, what is considered the dignified treatment of human remains varies widely depending on a person's cultural background. These ethical principles also contain an inherent contradiction since recognizing the rights of descendants may at times conflict with the preservation ethic.

Respect for Human Dignity

The ethical principle that human remains should be treated with respect and dignity is consistent with, and can be seen as an extension of, respect for human dignity, which is the cardinal ethical principle for modern research on human subjects in the biomedical and social sciences (Margareta, 1996; MRCC, 1998; UNESCO, 1995). This ethical principle is based upon the belief that it is unacceptable to treat human remains solely as a means (mere objects or things), because doing so fails to respect the intrinsic human dignity of the person they represent and thus impoverishes all of humanity. An argument can be made that since the remains of dead people are just "decaying organic matter" that "feels nothing, conceptualizes nothing, has no interests, and cannot suffer," in other words, that there is no person here to respect or disrespect, the respect is not for the body, but the antemortem person from whom the remains are derived (Lynch, 1990). Although it is true that, for most skeletal biologists, human remains are viewed as depersonalized and desanctified, there is still general agreement that they are nevertheless highly meaningful and should be treated with dignity and respect (Buikstra, 1981; Ubelaker and Grant, 1989).

A skeptic might question the wisdom of extending the concept of human dignity to the dead: What does the treatment of human remains have to do with human rights or human dignity? In view of the atrocities currently being perpetrated on helpless people by repressive governments throughout the world, would it not be more productive to focus the fight for human rights on living people who could actually benefit from the results? In my view, a convincing argument can be made that, although the human being that skeletal remains are derived from no longer exists, their former intimate association with a living person is more than sufficient to earn them respectful treatment. The logic of this argument is similar to that used by animal rights activists who admit that, although animals by definition do not have human rights, their ill-treatment does demean humans and thus has implications for human behavior (McShea, 1994; Man's Mirror, 1991). In the same way it can be argued that disrespectful treatment of human remains is morally repugnant because of its potential to desensitize people in a way that is likely to encourage a lack of respect for and consequent ill-treatment of the living (Grey, 1983:105-153).

If we accept the premise that it is unethical to treat human remains with disrespect, we are still faced with the problem that respectful treatment is a highly subjective concept. The cultures of the world have devised an enormousvariety ways of respecting the dead that include hanging the skulls of close relatives from the rafters of huts, using skulls of parents as pillows, and letting vultures feed upon dead relatives. Some modern people believe that pumping dead relatives full of chemicals, dressing them up, and burying them in the ground is respectful. Others believe that incinerating them, grinding up what's left in a mill, and putting the resulting bone meal in a cardboard box is respectful. In the cultural context of scientific research, respect for human remains derives not only from their association with a person who was once alive, but also

from an appreciation of the information about the past they can yield. To a scientist, respectful treatment of human remains includes taking measures to insure the physical integrity of the remains and the documentation associated with them, avoiding treatments that will contaminate or degrade their organic and inorganic constituents, and so on.

These convoluted academic arguments about the definition of and justification for treating human remains with respect, of course, seem bizarre to indigenous people who view ancestral remains not as inanimate objects devoid of life but instead as living entities that are ¡mbued with ancestral spirits. From the perspective of some Native Americans, for example, ancient human skeletons are "not just remains, they're not bone to be studied, you're dealing with spirits as you touch those remains" (Augustine, 1994). As Rachel Craig, a Native Alaskan put it, "I feel an obligation to give back to them, to speak for them. Our grandmothers have told us the importance of the spirit world. The spirits of those people cannot rest and make their progress in the spirit world unless they know that those bones are put back in the earth where they belong. That is our teaching" (Craig, 1994). This same view of the retention of skeletons in museums as interfering with the afterlife and separating the spirits of the dead from the community of the living is forcefully expressed by William Tallbull, a member of the Northern Cheyenne tribe: "We talk about people coming home. When the people came home from the museum and are buried at home, they all go and visit every house. This is where the joy comes in. They are home. They are here. They walk around through the village and become part of us again. That's all we are asking" (Tallbull, 1994).

Descendant Rights

Since disputes over who should have the right to control the disposition of ancient human remains are central to many of the ethical dilemmas bioarchaeologists face, it is useful to consider this issue in as broad a perspective as possible. Giving close relatives authority to make decisions about the disposition of the remains of the recent dead appears to be a cultural universal. Only in exceptional circumstances, such as the special dispositions mandated for the bodies of executed criminals as part of their punishment, and the control that coroners are given over bodies that might yield evidence relevant to legal proceedings, is the right of close relatives to decide the disposition of a body denied. Many cultures have special rules governing the disposition of the bodies of people who die under unusual circumstances, and some of these make exceptions to the rule of kin control over the dead. Herodotus, for example, observed that the Egyptians gave special treatment to the bodies of people who drown in the Nile or were eaten by crocodiles: "No one may touch the corpse, not even any of the friends or relatives, but only the priests of the Nile, who prepare it for burial with their own hands-regarding it as something more than the mere body of a man-and themselves lay it in the tomb" (Herodotus, 1990).

Considering the universal recognition of the rights of relatives, it not surprising that this is one issue upon which, as far as I know, all bioarchaeologists agree: if skeletal remains can be identified as those of a known individual for whom specific biological descendants can be traced, the disposition of those remains, including possible reburial, should be decided by the closest living relatives.

Many of the ethical dilemmas that skeletal biologists face arise not out of a disagreement over this fundamental principle of ethical behavior but, instead, over how the rights of descendants should be recognized in real-world situations. The first problematic area concerns how the rights of relatives with different relationships to the dead person should be balanced against each other. In modern legal systems authority over the dead is judged using a rigid hierarchy of rights. For example, the Uniform Anatomical Gifts Act establishes the following order of priority for people authorized to make decisions about the authorization of removal of body parts: (1) the spouse, (2) an

adult son or daughter, (2) either parent, (4) adult brother or sister, (5) the person's legal guardian at the time of death, (6) any other person authorized to dispose of the body. Even here, there is considerable room for cultural variation in rules governing control over the dead. In China, for example, because of its the pervasive patriarchal family structure, authority of the wife regarding funeral arrangements is likely to be less than that of the male members of his patriline (Cooper, 1998).

In contrast to the agreement about giving lineal descendants control over the disposition of the remains of close relatives, there is a no consensus concerning the question of the appropriate way to decide the disposition of human remains that are distantly related to living people. What is the ethical way to decide the disposition of the remains of people who are many generations removed from any living person? How shall we weigh the many attenuated genetic and cultural ties that link large numbers of living people to ancestors who lived thousands, hundreds of thousands, or even millions of years ago? Which living individuals should be granted the moral authority to decide the disposition of our ancient ancestors?

The basic elements of the dilemma can be better understood from a scientific perspective by considering how the genetic and cultural connections that link modern people and earlier generations vary as a function of time. The first problem is that the more distant an ancestor is from a descendant, the more descendants there are sharing the same genetic relationship to that ancestor. The variables that influence the number of shared ancestors that living people have are complex. However, one fact is indisputable: as we probe more deeply into our family tree, the probability of discovering an ancestor we share with a large number of other living people increases dramatically. In a lineage of people who each had two children and did not marry relatives, it would take seven generations, or about 250 years, to produce over five billion modern descendants. People, of course, tend to marry relatives and not everyone has the same number of children. Even if we account for these complicating variables, the fact remains that many living people are likely to be related to an individual who lived many generations ago.

If we really believe that relatives should decide the disposition of ancestral remains, how can we identify those descendants and allow them to make a collective decision about the proper treatment of their relative's bones? The problem of linking modern people to our hunter-gatherer ancestors is complicated by the highly mobile lifestyle of such populations. This decreases the likelihood that the ancestral remains of a modern group will be found in the territory in which that modern group currently resides. In situations of population replacement, it is in fact more likely that the modern people who now live in an area were directly responsible for the extermination of the ancient people who formerly occupied that same territory.

Even in cases where it is clear that descendants continue to occupy the land of their ancestors, there is still the problem posed by the expansion of living descendants with increasing genealogical remoteness. In an area such as Europe, with a relatively stable gene pool, someone who died more than a few hundred years ago is likely to be related to hundreds of thousands, if not millions of living people. For instance, DNA studies conducted on the 5000-year-old mummified body recently found in the Tyrolean Alps suggest a genetic relationship between this person and the 300 million or so contemporary people living in central and northern Europe (Handt et al., 1994). This of course does not include many millions of additional people living in North America and elsewhere with ancestral ties to northern Europe.

In the Western Hemisphere the problem of assigning rights for the control of ancestral remains to living descendants is complicated by gene flow between indigenous Americans and the people of Europe, Africa, and Asia. For example, geneticists estimate that 31 % of the contemporary gene pool of people identified as

Hispanic or Mexican Americans is derived from their Native American ancestors (Gardner et al., 1984; Ilanis et al., 1991). These Native American descendants are thus numerically a very significant component of the New World population and, if demographic trends continue, are likely to replace non-Hispanic Euro-Americans as the ethnic majority in the United States in less than one life span (Edmondson, 1996; Nicklin, 1997). If we believe that descendants should have a right to decide the disposition of the remains of their ancestors, then we need to find a way to incorporate the views of Hispanic Americans into the process through which the disposition of ancient American remains is decided.

Some people sec focusing on genetic relationships in this way as a myopic and misguided biological reductionism. After all, is not a person's cultural background more important than the genetic links that tie them to earlier generations'! From this perspective, there are two types of ancestors, genetic and cultural, and it is the cultural link that a person feels they have with the people who lived in the past that. counts. Although the idea of limiting authority to make decisions about the disposition of ancient human remains to people who share the deceased person's cultural identity makes some sense, applying this ethical principle is extremely problematic in real-world situations. if the strength of a modern person's belief in their cultural link to an earlier person's remains is to be the measure of moral authority, how are we to evaluate the relative validity of such beliefs?

To give a specific example, many Native Americans see the intrusions of the "New Age" movement into their cultural identity as the appropriation of Native American spiritual traditions by outsiders who are destroying Indian spirituality and contributing to white racism and genocide (Geertz, 1996, Hernandez-Avila, 1996; Jocks, 1996; Johnson W, 1996b; Kehoe, 1996; Smith, 1991; Specktor, 1989). Is it ethically acceptable to give the same authority to the beliefs of people who received their cultural identity during a psychotherapy session in which it was revealed to them that they are the reincarnation of an Inca princess, that we give to descendants with demonstrable genetic links to earlier populations? This is where the rejection of scientific evidence and the unconditional acceptance of cultural relativism can become problematic (Goldstein and Kintigh, 1990:587-588).

It is also fair to ask at what point does a living person's cultural connection to a dead person become so attenuated that it merges into the common cultural heritage of all people, and thus no longer provides a moral basis for special rights and control. Several cultural variables could be considered relevant here: a shared language, common religious practices, and so on. The difficulty is weighing the significance of such disparate cultural traits, especially in the context of ancient remains and cultural evolution.

This issue of cultural continuity is a contentious one, in part, because when indigenous cultures are marginalized, disrupted, and driven to the brink of extinction, remnants of the past, including ancestral human remains, become increasingly important as symbols of cultural oppression and survival. This inverse relationship between concern over ancestral remains and cultural continuity is illustrated by the differences between Latin America and North America in concern over ancestral remains and repatriation issues. In Latin American countries where a strong sense of "Indianness" has been integrated into the national identity, human remains are excavated and displayed without opposition in museums. In this context, they serve as symbols of a national past that is shared by and important to all citizens (Ubelaker and Grant, 1989). The government of the United States, in contrast, has historically considered Native Americans as outsiders to be dealt with by isolating them on reservations and suppressing their indigenous languages and beliefs to facilitate converting them into functional members of the dominant Euro-Amcrican culture. These government policies have devastated Native American cultures and contributed enormously to the hostility Indian

people feel over issues related to the control of ancestral remains.

In the United States, a legislative attempt has been made to use a combination of biological and cultural continuity as the basis for giving modern indigenous groups the rights over ancient skeletal remains. The Native American Graves Protection and Repatriation Act (NAGPRA) gives federally recognized tribes that can demonstrate a "cultural affiliation" to ancestral remains the authority to control their disposition. In this legal context, cultural affiliation means "a relationship of shared group identity which can be reasonably traced historically or prehistorically between a present day group and an identifiable earlier group." In this statute, cultural affiliation is established when "the preponderance of the evidence-based on geographical, kinship, biological, archeological, linguistic, folklore, oral tradition, historical evidence, or other information or expert opinion-reasonably leads" to the conclusion that a federally recognized tribe is culturally affiliated with an "earlier group."

Although NAGPRA has benefited many federally recognized tribes and has had the positive effect of increasing communication between Native Americans and bioarchaeologists, its exclusion of Native Americans who lack federal recognition raises serious ethical issues. It is derided by some Native Americans who see it as another step in the long history of attempts to define "Native American groups" in ways that facilitate their control and manipulation by oppressive governmental agencies. In California, for instance, many groups that by any even-handed definition are authentic "tribes" have failed to receive official recognition by the federal government, or have had their federal recognition removed, and thus are denied full access to the provision of NAGPRA (Goldberg, 1997; Walker, 1995).

Again, these legalistic considerations and academic concerns over how to establish a connection between the living and the dead seem strange to indigenous people whose religious beliefs resolve such issues for them. Many indigenous people are creationists who reject the idea that all modern people share a common ancestor. Instead, some believe that their tribe is the result of a special creation and that they have lived in the area currently occupied by their tribe since the beginning of time. Such beliefs remove any uncertainties regarding ancestral relationships and result in acrimonious disputes between scientists and tribal members such as those that have occurred over the Kennewick skeleton (Hastings and Sampson, 1997; Lemonick, 1996; Morell, 1998; Petit, 1998; Preston, 1997; Slayman, 1997).

The Preservation Ethic

The final universally accepted principle of bioarchaeologists is the preservation ethic. Human remains are a source of unique insights into the history of our species. They constitute the "material memory" of the people who preceded us and thus provide a direct means through which we may come to know our ancestors. Because we believe that the lessons that the remains of our ancestors can teach us about our common heritage have great value to modern people, it is an ethical imperative to work to preserve as much as possible of this information for future generations. This position is championed by governments throughout the world who support archaeological research, encourage the conservation and preservation of archaeological resources, and discourage unnecessary destruction of archaeological sites (Knudson, 1986:397).

As caretakers of this fundamental source of information on the biological history of our species, we need to promote the long-term preservation of skeletal collections and in this way ensure that future generations will have the opportunity to learn from them and in this way know about and understand that history (Turner, 1986). Prehistoric research, including osteological study, is one way that our common heritage can be fully revealed (White and Folkens, 1991:418-423). This position is forcefully expressed in the Society for American Archaeology Statement Concerning the Treatment of Human Remains:

WHEREAS human remains constitute part of the archaeological record and provide unique information about demography, genetic relationship, diet, and disease which is of special significance in interpreting descent, health and nutritional status in living and ancient human groups; and

WHEREAS education and research in the anthropological, biological, social and forensic sciences require that collections of human skeletal remains be available to responsible scholars; and

WHEREAS the study of humankind's past should not discriminate against any biological or cultural group:

THEREFORE BE IT RESOLVED that the Society for American Archaeology deplores the indiscriminant reburial of human skeletal remains and opposes reburial of any human skeletal remains except in situations where specific lineal descendants can be traced and it is the explicit wish of these living descendants that remains be reburied rather than being retained for research purposes; and that no remains should be reburied without appropriate study by physical anthropologists with special training in skeletal biology unless lineal descendants explicitly oppose such study.

AND BE IT FURTHER RESOLVED that the Society for American Archaeology encourage close and effective communication with appropriate groups and with individual scholars who study human remains that may have biological or cultural affinity to those groups (SAA, 1984).

The preservation ethic is based on the scientific premise that there are aspects of our shared reality that have the potential to be brought into sharper focus through the examination of ancient human skeletal remains. The fact that each person sees the world through a slightly different cultural lens does not mean that it is impossible to translate between these different experiences to find a common basis of understanding. The physical facts that we have for deciding what happened in the past are not infinitely plastic and this places material constraints on our culturally biased interpretations.

The progressive aspect of creating the more accurate view of reality that we strive for is an important justification for the preservation of skeletal collections. Most scientists recognize the cultural influences that focus their observations on certain aspects of reality and color the inferences they make based on those observations (Glock, 1995; Tomaskova, 1995; Wylie, 1989). Although we know that our conclusions are to some extent distorted by our cultural biases, we take comfort in the fact that these distortions will be detected and corrected through future research by others with different cultural perspectives.

For this self-correcting aspect of the scientific method to be operative, the evidence upon which our conclusions are based must be available for scrutiny by future researchers. In experimental fields such as physics, this is accomplished through repeating experiments. In historical sciences such as bioarchaeology, our reconstructions of what happened in the past are refined and corrected through the reexamination of collections using new analytical techniques and theoretical perspectives.

During the past twenty years, the rate at which this self-correcting process operates has increased markedly as a result of the restudy of skeletal collections in museums using newly developed analytical techniques that have greatly expanded the types of information we can retrieve from ancient human remains. Especially exciting are new chemical techniques that provide precise information on the types of food people ate (Hult and Fessler, 1998; Stott and Evershed, 1996; Tuross and Stathoplos, 1993; and see Katzenberg, Chapter 11, and Sandford and Weaver, Chapter 12), procedures for reconstructing ancestral relationships through DNA analysis (Hagelberg et al., 1994; Stone and Stoneking, 1993; Von Haeseler et al., 1996, and see Stone, Chapter 13). New techniques are also being developed for reconstructing the disease histories of human populations through the analysis of pathogen-specific bone proteins (Drancourt et al., 1998; Hoffman, 1998; Ortner et al., 1992).

The development of these new, enormously informative, analytical techniques underscores how valuable human remains are as a source of insights into the history of our species. The information content of a cultural product such as stone tool is very meager in comparison to the wealth of biological and cultural information that can be extracted from a human skeleton. The historical information an artifact yields is limited to data on the activity patterns and mental processes that can be inferred from its physical properties, form, and archaeological context. As Carver (1996) has pointed out, there is a subjective aspect to the identification of the artifacts of human cultural activity that are measurable, historically meaningful entities within the corpus of mud and stones that humans have left as the traces of their past activities. Through archaeological research, what was once muck is transformed into monuments and the thunderstones of one generation become the flint axes of the next.

The information contained within the structure of the human skeleton, in contrast, is of a different sort. It is not a culture-dependent symbolic construct. Skeletal remains instead have their basis in adaptive physiological and demographic processes operating at the individual and species levels. Encoded within the molecular and histological structure of skeletal tissues is a detailed record of the person's childhood development and adult history of metabolic responses to the challenges encountered in his or her natural and sociocultural environment. This information can be supplemented by an equally rich record of ancestral relationships and the evolutionary history of our species recorded in the structure of the DNA molecules preserved within a skeleton. The information about historical events encoded in the skeletons of our ancestors can be thought of as a complex message from the past that we can decode through bioarchaeological research. Each skeleton has a unique story to tell about that individual's life as well as the evolutionary events that constitute the history of our species. By working to preserve ancient skeletal remains, we ensure that future generations will be able to gain access to the important historical information they contain.

SOURCES OF CONFLICT

The ethical principles described above have an inherent potential for conflict. The preservation ethic, with its basis in the belief that the information that skeletal studies can yield is of great value to all people, can easily conflict with the ethical principle that the descendants should have the right to decide the disposition of their ancestor's remains. If we recognize the validity of the interests of both descendants and scientists in human skeletal remains, how do we deal with the ethical problems that arise when the preservation ethic conflicts with the desires of descendants?

When the remains of close relatives are involved, there is unanimity among bioarchaeologists that the concerns of descendants should override any scientific interests in those remains. Ethical dilemmas, however, frequently do arise when the ancestor-descendant relationship is less clear-cut. How do we balance the scientific value of very ancient skeletal remains against the concerns of modern people who are remotely related to those same individuals?

In balancing the scientific value of archaeological collections against descendant rights, most scientists see the strength of the ancestor-descendant relationship as a continuum that becomes attenuated with succeeding generations. At one end of this continuum we have remains of people with living children and grandchildren who have an undisputed right to determine the disposition of their close relative's remains. At the other we have the remains of very distant relatives, such as the earliest members of our species, to which all modern people are equally related. From this evolutionary perspective, descendant rights are seen as decreasing as the number of generations separating the living and the dead increases. At some point, claims by one modern group of descendants to

decide the disposition of ancient human remains are counterbalanced by the right of all people to have access to the unique source of evidence on the history of our species that human skeletal remains provide. How do we decide when the scientific value of skeletal evidence is sufficient to override the concerns of remotely related descendants?

There is no easy answer to the question of how to balance descendant rights against the right of all people to know about the past, because the values skeletal biologists and descendants attach to human remains are essentially incommensurable. Part of the problem arises from the fact that many modern indigenous people do not accept the idea that the ancestor-descendant relationship becomes attenuated with time. Instead they see the spirits of their ancestors, no matter how distant, as an integral part of the modern community of the living. Nor do they see themselves as closely related to the rest of humanity. Instead they believe that they are the products of a special creation that occurred in the area their tribe currently occupies and this is an issue of faith about which scientific evidence is irrelevant (Johnson G, 1996). For instance, Armand Minthorn, a member of the Umatilla tribe, which claims the 9500-year-old Kennewick skeleton, made this point when he stated: "We know how time began and how Indian people were created. They can say whatever they want, the scientists" (The Invisible Man, 1996). The implication of such beliefs is that all human remains, no matter how ancient, if they are from the area in which a group believes they were created, are those of their direct ancestors.

Although such creationist interpretations of the history of our species seem strange to many scientists, they are shared by a substantial number of nonindigenous people. For example, a recent survey found that about 20% of the people in the United States shared the Christian belief derived from a literal interpretation of the bible that God created the cosmos about 5000 to 10,000 years ago (Goldhaber, 1996).

Some archaeologists argue that the utilitarian approach of attempting to balance scientific value against descendant rights is an ethnocentric attempt to frame the problem within the "Eurowestern" system of cultural values that emphasizes finding solutions to problems that maximize benefits and minimize costs (Klesert and Powell, 1993). We can all agree that we will never find a culture-free metric for weighing the value of knowing what actually happened in the past against the concerns descendants have about ancestral remains. However, even if we agree that the benefit of giving control over ancestral remains to people who identify themselves as descendants always outweighs their value as a source of scientific information, we still face the problem of determining who should be able to claim standing as a descendant and what is the ethical thing to do when there are competing claims.

When dealing with close relatives, where the genealogical link between ancestor and descendant is known, allocating descendant rights over the remains of their relatives is fairly straightforward. For example, we might establish a hierarchy that gives a person's spouse, children, parents, and siblings the authority to control the disposition of their remains. Even such a simple scheme as this is open to charges of ethnocentrism because it reifies western kinship systems that emphasize the importance of genetic relatedness as a criteria for moral authority and invests the rights to make such decisions in a person's nuclear family. Other societies might give greater authority to elder members of a person's patriline or matriline, or disregard the modern Western preoccupation with genetic relatedness altogether in favor of another culture-dependent conception of relatedness.

Such cultural differences in ways of conceiving the ancestor-descendant relationship can even transcend the species boundary. For example, I know people who claim the moral authority to remove the bones of dinosaurs from museum collections because they believe, based on their creation myths, that these remains are those of their ancestors before they were transformed into human form. What are we to do with people with sincerely held

beliefs about an ancestor-descendant relationships such as this when those beliefs conflict with our own?

Even if we are willing to recognize the validity of such claims and agree that the moral authority of belief in a close ancestor-descendant relationship always outweighs any scientific value skeletal collections might have, we are still faced with the dilemma of deciding what to do when there are conflicting claims for the same skeletal collections. This problem is vividly illustrated by several recent cases in the United States in which people with different beliefs about the past have disputed each other's assertions of moral authority to control archaeological collections. In Hawaii, 15 federally recognized native groups became involved in a dispute over the disposition of ancestral remains from Mokapu on the island of Oahu (NAGPRA, 1994). One of these groups insisted that scientific research be conducted on the remains of these ancient individuals to determine their ancestral relationships while others viewed such work as a deep insult to the spirits of the their ancestors. In a similar case, Stanford University acceded to the reburial demands of one group of Ohlone Indians without scientific analysis over the objections of other Ohlone people who, from the Western genealogical perspective, were equally related to those remains (Gross, 1989; Workman, 1990). Another acrimonious fight over descendant rights has arisen in the American Southwest between the Navajo and Zuni Indians as part of a government-instigated land deal that prohibits the Navajo from burying their dead in certain traditional burial areas and requires them to renounce claims on sacred sites (Benedek, 1992; Cockburn, 1997). Both tribes have publicly asserted their ancestral rights to the remains of what archaeologists call the Anasazi culture. In other disputes, people who have documentary evidence that they are descendant of the indigenous people from an area have objected to the descendant rights claimed by people who lack such documentation (Erlandson et al., 1998; Haley et al., 1997; Kelley, 1997).

One option for dealing with the conflicts that arise when several groups of people assert the moral authority that comes with belief in descendancy from distant ancestors is to take refuge in the legal system where lawyers, politicians, government functionaries, and politically astute special interest groups can wrestle with each other to find a solution to the vexing question of who should have legal standing as a descendant. Although they appear to envisage possible exceptions in cases of "extraordinary scientific value," this is in essence what Klesert and Powell (1993) suggest when they argue that "we must abide by the preferences of the legally recognized descendants" in disputes concerning the excavation and analysis of ancient burials. For those who view our legal systems as distillations of the moral principles of the people that laws govern, turning the ethical problem of defining "real" descendants over to the courts is very appealing. This political strategy, of course, has the added practical advantage of not eliciting legal sanctions. The moral problem of relying on laws to decide which groups have the right to determine the disposition of human remains has its basis in the faulty assumption that we all live in just societies. Laws have, after all, in the recent past been used as the mechanisms through which groups have been defined by democratically elected governments for purposes of apartheid, slavery, and genocide.

The difficulties associated with legislative solutions to the ethical problem of determining the disposition of skeletal collections are illustrated by the problems that have arisen in Israel and the United States through legislative attempts to resolve disputes over the control of skeletal collections. Ultraorthodox Jewish organizations in Israel, such as the Atra Kadisha, who regard all academic study involving human remains a violation of Jewish law, have long been at loggerheads with physical anthropologists over the excavation and the handling of human remains, including skeletons of extreme antiquity such as those of Neanderthals (Watzman, 1996a, 1996b, 1996c). Owing to the compromises necessary for coalitions of

political parties to maintain control of the Israeli government, court rulings have been issued that make the study of unearthed human remains impossible.

In the United States, the Native American Graves Protection and Repatriation Act institutionalizes long-standing inequities in the treatment of federally recognized and non-federally recognized descendants (Walker, 1998). Particularly troubling from an ethical standpoint is its failure to acknowledge the existence of authentic descendant groups that, for one reason or another, have either failed to receive or rejected federal tribal recognition. This omission is especially unfortunate for the many federally unrecognized descendants in California and the eastern United States where the vagaries of the colonial process allowed the government to avoid giving Indian tribes the rights of self-determination that go along with federal recognition. Even if such federally unrecognized groups were given legal standing as descendants, the law would still present ethical problems because, with the minor exception of granting rights to people who can show a direct genealogical connection to the remains of known individual, it fails to recognize the rights of the many people of Native American descent who lack any tribal affiliation.

RESOLVING CONFLICTS

If we cannot rely on our legal systems to make difficult ethical decisions concerning who descendants are and under what conditions their rights should take precedence over the preservation ethic, what basis is there for finding equitable solutions that balance these potentially conflicting ethical principles? First, it is important to recognize that there is no inherent conflict between the maintenance of skeletal collections for scientific research and respect for the dead. As I previously mentioned, in many countries research upon and the public display of ancestral remains are matters of national pride. In other situations, arrangements can often be made that satisfy the religious and symbolic concerns of modern descendants while allowing scientific research on ancestral remains to continue. At St. Bride's Church, London, the skeletons of people with known descendants whose burials were disturbed during the German bombings of World War II are respectfully maintained in a special room where they are available for scientific research (Huda and Bowman, 1995; Scheuer and Bowman, 1995). In this way, the religious and symbolic concerns of descendants are respected, while at the same time making it possible for these remains to continue to yield important insights into the lives of eighteenth- and nineteenth-century Londoners that are not adequately documented in written records (Walker, 1997, 2000).

In all societies, cultural understandings of sacredness and ethical behavior are constantly being reshaped in response to changing social realities. This is especially true for the issues surrounding the treatment of ancient human remains because the social context of bioarchaeological research is a modern one not confronted by earlier generations. For many indigenous societies the curation of ancestral remains and their study is a new phenomenon that presents practical problems requiring the development of new rituals, new conceptions of sacredness, and new beliefs concerning what is respectful and disrespectful behavior. In other societies, especially sedentary ones accustomed to maintaining large, intensively used cemeteries, a long history of facing the practical and symbolic problems posed by the disturbance and handling of ancestral remains has resulted in traditional solutions. For example, the Chumash Indians of southern California, with whom I have worked for the past twenty-five years, had specialists called liwimpshit, which means "custodian of the algebra," who were familiar with the human skeleton and the art of arranging bones. These medical practitioners not only could set bones, but they could also arrange all the bones of the human skeleton properly, and determine whether those ancestral bones had once belonged to a man or a woman (Walker and

Hudson, 1993:46, 48). The need for someone qualified to deal with human bone derived from Chumash burial practices, which emphasize the importance of having the remains of the dead near to the living. Cemeteries were, therefore, located adjacent to or within villages. As the size of Chumash settlements grew, so did the size of their cemeteries, and this frequently necessitated the excavation and disturbance of ancestral remains (King, 1969).

Although the social context of the issues surrounding the treatment of the dead that the modern Chumash face are very different from those they confronted in the past, traditional beliefs about the treatment of the dead have served as a basis for creating a situation in which bioarchaeological research can continue while ensuring that due respect is shown for their dead. Through working with tribal members over the years, my colleagues and I have developed a cooperative arrangement through which Chumash ancestral remains and associated burial objects are being repatriated from other universities and museums to a safe keeping place at my campus. This is highly desirable from the perspective of descendants because of our location near the center of the area historically occupied by the tribe. We have constructed a specially designed subterranean ossuary to receive these remains as part of the construction of our new social sciences and humanities building. This ossuary was designed through consultation with both federally and non-federally recognized tribal members to ensure that it meets their spiritual needs, and also solves the practical problem of providing security against future disturbance that would be unavailable in an unguarded reburial area. The ossuary also makes it possible for scientific research on these collections to continue under the supervision of descendants so that future generations can gain a deeper understanding of the history and accomplishments of the tribe.

Mutually acceptable solutions such as this, which balance spiritual and practical concerns of descendants against the important historical information skeletal research can provide, are the outcome of personal relationships, mutual trust and respect, and the recognition of common interests. Such relationships require time to nurture. My academic colleagues and I have spent our entire professional careers working with Chumash descendants to protect and learn from the archaeological record left by their ancestors. This has involved assisting descendants and local law enforcement authorities in the apprehension and prosecution of grave robbers and looters and actively working to minimize the threats urban development poses for their sacred sites and archaeological resources. At the request of descendants we have given seminars and workshops on archaeology, osteology, and the intricacies of the laws that govern the management and protection of archaeological resources. Whenever possible, we have actively involved descendants in our research projects. Such collaborations are enormously rewarding, not only on a personal level, but also professionally, because of the important insights descendants can provide into the history of their culture.

Not all groups have religious traditions that can be easily built upon to allow scientific research conducted on the remains of the dead. The strong objections ultraorthodox Jewish have to any skeletal studies already have been mentioned (Watzman, 1996c). As the claims of Hopi and the Navajo to archaeological remains from the ancient Anasazi culture show, it is easy for the control of bones and burial sites to become enmeshed in larger battles over unrelated economic and social issues concerning the control of land and natural resources, environmental preservation, and so on. This of course greatly complicates the problem of finding a basis for compromise. Sometimes collaboration with descendants may be difficult or impossible owing to antagonism toward Western science, and strong traditional beliefs about the retention of a person's spirit withir their bones. Some native Hawaiians, for example, believe that people possess *mana*, which after death resides in the bones, and have argued in court that the publication of information about skeletal collections is offensive and will steal the

hele, 1993). Many Plains Indian tribes also have strong beliefs about the residence of souls in their ancestral remains. This, along with animosity stemming from racism, genocidal attacks by the U.S. military, cultural suppression in boarding schools, and economic marginalization on reservations makes the prospects for the preservation of skeletal collections from most of the Plains area bleak (Ubelaker, 1994:395).

In situations such as these it may be impossible to obtain a compromise that allows skeletal research to continue. However, from the personal experiences I have had in working with many different groups of indigenous people, once the shroud of mystery associated with what osteologists actually do is removed through direct contacts between people, it is often possible to find a foundation upon which mutual understanding and cooperation can be built. The most obvious basis for developing such collaborations is in the identification and analysis of ancient human remains that are inadvertently disturbed through erosion, for example, or during construction projects. In such situations, the value of close collaboration between osteologists and descendants is obvious. After it has been decided that remains are indeed human, the issue of whether or not they are modern (and thus possibly relevant to a forensic investigation) needs to be resolved. If they are indeed ancient, the question of which modern group of people they are affiliated with needs to be considered. This issue is especially important to some indigenous people who have strong religious sanctions against the burial of non-group members in their cemeteries. The value of osteological research is also self-evident in forensic investigations relating to the prosecution of grave robbers. I have collaborated with Native Americans in several of such cases. In one, we matched a fragment of a mandible confiscated from a suspect's home, with another piece of the same mandible that tribal members had recovered from the area of an ancient grave disturbed by looters. This incontrovertible evidence connecting the defendant with the crime scene resulted in a guilty plea. In another case, we used skeletal evidence to successfully refute a grave robber's attempt to exonerate himself by claiming that the Native American remains he excavated were from a person of European ancestry, and thus not protected by the state's Native American graves protection law. Through the process of working on such cases, I have seen the views of people who once saw little value in skeletal research change dramatically as they increasingly became aware of many important insights skeletal studies can give us into the lives of those who have gone before us.

When skeletal collections are lost owing to our inability to find equitable solutions that balance the concerns of modern descendants against the need to preserve collections so that future generations will have substantive information about the past, it is perhaps of some solace to remember that we live in an entropic world in which the natural processes of decay and disintegration and the economic and social realities of modern life continuously conspire to destroy the faint traces our ancestors have left for us in the archaeological record. We cannot turn this tide. All we can do is work to preserve as much of the physical evidence of our common heritage as possible. Those ancestral remains and the facts about the history of our species that they reveal will be our legacy to future generations.

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