

**ABSTRACTS of the 5th Annual Meeting of the
Midwest Bioarcheology & Forensic Anthropology Association
University of Iowa, Iowa City, Iowa
October 17, 1998**

Abstracts are given in alphabetical order by senior author; all papers are podium presentations unless noted otherwise.

(1) BENEFIEL, Angela. "Forensic Anthropology and Automobile Accidents." (poster presentation)

Automobile accidents account for a large number of fatalities each year in the United States. The application and practice of forensic anthropology to such fatalities is a valuable resource for better understanding the resulting skeletal trauma. Using established estimation techniques, the analysis of an accident victim can reveal patterns of injuries of a diverse nature as well as account for particular skeletal evidence pertaining to the manner death. This poster identifies some of the typical injuries associated with automobile accidents as demonstrated by a case from the forensic anthropology facility at the Biological Anthropology Lab at Wichita State University.

(2) CAHUE, Laura, & H.P. Pollard. "Ethical and Legal Dilemmas of Bioarchaeological Research in a Tarascan Community in the Lake Patzcuaro Basin."

The archaeological site of Urichu is located within the ejido land of the modern Tarascan town of San Francisco Uricho, in the Lake Patzcuaro Basin, in the state of Michoacan in west Mexico. A research team, headed by Dr. Helen P. Pollard, from the Department of Anthropology at Michigan State University, has been working at this site since 1990, investigating the development of the Tarascan state.

The project has reached local, regional, and state notoriety due to increasing conflict and resistance to continued research from the agrarian sector in the community of San Francisco Uricho. This paper examines the ethical and legal dilemmas faced by the research team as they sought to negotiate with community leaders, community workers employed by the project, municipal and state officials, and various levels of INAH: Instituto Nacional de Antropología e Historia (the national institute of anthropology and history) archaeologists. The lessons learned go far beyond a simplistic polarization of native vs. non-native ideologies and agendas. This case illustrates the social, political and economic impact of bioarchaeological work on Mexican indigenous communities. It brings into focus the active participation of these communities in global and national indigenous rights movements, and examines their resistance to archaeological research within the context of economic stress and eroding, fragmenting local leadership.

(3) CALENTINE, Leighann. "Morphological Changes in Bone When Exposed to Fire." (poster presentation)

Changes in the appearance of bone when it is exposed to fire are represented in this poster. A sample of deer bone was exposed to fire for differing lengths of time to replicate charring and

calcination. A previously burned femur exhibits the tell-tale transverse and windshield cracking as well as changes in color.

(4) CALENTINE, Leighann, & Marti WALZ. "Microscopic Changes in Bone When Exposed to Fire." (poster presentation)

A pig bone was cut into several sections. One section was not burned, one section was charred, and one section was completely calcined. Histological analysis was then undertaken. The section that was charred was opaque and the microstructure was not clearly visible. The microstructure of the completely burned bone was once again visible.

(5) CARTER, Melinda. "Infectious Disease and Diffuse Osteopenia in Prehistoric Illinois: A Unique Case from the Larson Site (11F3)."

This paper reports on skeletal lesions observed in the analysis of a mortuary assemblage from the Larson site (ca. AD 1250 - 1300), Fulton County, Illinois. One individual, a young adult female, has proliferative cortical and medullary bone remodeling on most long bones and both clavicles. Periosteal inflammation, cortical thinning, medullary occlusion, and healed foci that may be healed pyogenic cloacae suggest systemic osteomyelitis. No involucrum is evident, and no sequestered bone is visible at postmortem diaphyseal breaks. Inflammation is bilateral and most severe at metaphyseal regions, especially of the leg and forearm bones. The entire skeleton is light in weight, indicating diffuse osteopenia. This individual also had poor dental health and experienced moderate vertebral degenerative arthritis. No other individuals in this small assemblage display signs of systemic infection. The differential diagnosis includes chronic haematogenous osteomyelitis, chronic sclerosing osteomyelitis, venereal syphilis, hyperparathyroidism, and Paget's disease. Pertinent diagnostic characteristics of each condition will be addressed. Inflammatory proliferation in concert with diffuse osteopenia suggests both infection and endocrine dysfunction. This evidence contributes to previous research that demonstrated how population growth, adaptation to sedentary lifeways, changes in subsistence practices, and extensive trade increased the frequency of infectious disease during the Middle Mississippian period in the central Illinois River valley (e.g., Lallo et al. 1978).

(6) CARTER, Melinda, Dawn HARN, & Angela TINE. "Osteological Evidence for Prehistoric Violence at the Larson Site (11F3), Fulton County, Illinois."

The Larson site (11F3) is a large Spoon River Mississippian (ca. AD 1250 - 1300) temple town that sits atop a bluff spur at the confluence of the Illinois and Spoon Rivers, along the western edge of the central Illinois River valley. Like other large village sites (e.g. Orendorf 11F1284) in the region, there was a stockade around the central plaza and habitation area. Fortification of local sites and osteological signs of violent trauma at Norris Farms #36 (11F2167), an Oneota cemetery 10 kilometers to the north, are strong evidence for antagonistic encounters in Fulton County during late prehistory (Milner et al. 1991). At the Larson site, a pit feature excavated from within the habitation area contained a high concentration of disarticulated and excessively fragmented human bones. A recent analysis of these remains found prehistoric cutmarks, spiral "green" fractures of long bones, impact scars, scorching, and carnivore gnawing. At least 10 individuals are represented by very few skeletal elements each. The commingled bones include at least 2 infants, 2 children, 2 adolescents, 1 young adult female, 1 middle adult female, and 2 adults (at least 20 years old, sex indeterminate). Four individuals (2 adult females and 2 probable adults, sex indeterminate) had been scalped. The age/sex distribution of the assemblage, in conjunction with compelling evidence that these people were victims

of aggression, gives rise to several hypotheses regarding small-scale intergroup conflict in the late prehistoric central Illinois River valley, a resource-rich region of the time. The relatively short period of occupation at the Larson site may have been fraught by socioeconomic tensions caused by a northward influx of Mississippian peoples (Conrad 1991; Emerson 1991; Harn 1991), southern incursion by the Oneota, who were themselves victims at Norris Farms #36 (Santure et al. 1990; Milner et al. 1991), or local raiding parties vying for limited seasonal resources and hunting territory.

(7) DURAY, S.M., H.B. MORTER, & F.J. SMITH. "Cervical Spinous Process Morphology: A Neglected Indicator for Forensic Identification of Race from the Skeleton." (poster presentation)

Determination of race (ancestry) is an important step in the identification of individuals in forensic cases. Race is most commonly assessed using cranial traits. Few reliable postcranial indicators are known. In this study, the frequency of bifidity of cervical spinous processes at different vertebral levels was examined in a sample of 359 Americans of African (Black) and European (White) descent. The sample was selected from the Hamann-Todd Collection, a large modern anatomical collection of known sex and race. Spinous processes were classified as "bifid," "partially bifid," or "nonbifid" based on previously defined criteria. Sex and race were kept entirely unknown to the classifier (S.M.D.) during data collection. Data were analyzed using Chi-square and logistic regression analysis. At C2, most individuals (91%) had bifid spinous processes. At C7, nearly all (98%) had nonbifid spinous processes. Significant differences between race/sex subgroups were found at C3-C6. At each of these levels, whites showed a higher frequency of bifidity than blacks and males a higher frequency of bifidity than females. Differences between races were greater than differences within races. Logistic regression analysis revealed C3 and C4 to be the most useful levels for identifying race. Based on these levels, 76.05% of the sample was correctly classified by race (80.25% for whites, 72.09% for blacks). Pending further study, morphology of the cervical spinous processes may provide an additional method for the determination of race in skeletal forensic cases.

(8) GOLDSTEIN, Lynne. "The Impact of NAGPRA on the Future of Bioarchaeology: Ethical and Professional Responsibilities." (abstract not available)

(9) GRAUER, Anne. "Issues of Death, Issues of Ownership."

Historically associated human skeletal material is frequently uncovered during the excavation of building foundations and/or during archaeological investigations. Their detection can elicit sobs from the developer and/or archaeologists, a flurry of activity from the press, and a shout of excitement from bioarchaeologists. While these reactions may be predictable, they are often unwarranted and misleading. This paper will discuss the costs and benefits of bioarchaeological research to developers and archaeologists, the public and/or the descendent community, and to the bioarchaeologists themselves.

(10) HARPER, Nathan. "Skeletal Evidence of Child Abuse: An Overview."

The abuse and murder of a child is among the most reviled criminal acts. Every year between 2,000 and 4,000 deaths are caused by child abuse (Schitt and Krugman, 1992). Evidence of child abuse dates to prehistoric times and lately has featured prominently in the news. Such high profile cases as the "British au Pair" or Matthew Eappen trial and the current investigation involving Marie Noe show the importance of forensic investigation into cases of suspected child abuse. This presentation gives an overview of skeletal signs of varying types of child abuse using gross and

radiological observations, comparisons of injuries resulting from direct abuse and accidents, and signs of ongoing abuse.

(11) INDRIATI, ETTY. "A Dental Anthropological Approach to Coca-leaf Chewing in the Andes." (poster presentation)

The effects of coca-leaf chewing on teeth in the Prehispanic Andes have been associated with various lesions such as massive calculus formation, green calcareous accretion, antemortem posterior tooth loss, root caries, and irregular alveolar resorption. These suppositions are, however, not based on clinical evidence from contemporary coca-leaf chewers. This results in the absence of knowledge on the distribution of coca-leaf chewers in the Prehispanic Andes, although the practice has been evident for five thousand years. I have developed a method for predicting the occurrence of coca-leaf chewing for Prehispanic Andean remains, based on oral health surveys of contemporary Andean coca-leaf chewers and non-chewers. Logistic regression analysis was used to yield a formula to predict the likelihood that any individual is a coca-leaf chewer. The Logistic Model is then applied to prehispanic skeletal remains from highland Tiwanaku Bolivia, the southern coast of Peru, and the northern coast of Chile, dating from 2500 BC to AD 1600. The results of this work are important not only methodologically but also for revealing the distribution of coca-leaf chewers across populations in different geographical regions and through time in the Andes. This in turn demonstrates that dental or biological phenomena, together with archaeological evidence, can provide indelible clues to unravel past cultures, when written records are not available.

(12) JARSKI, Allison, & Peer MOORE-JANSEN. "Cranial Thickness and the Effect of Age."

The present paper addresses the potential effect of age on cranial thickness in a sample of African American crania from the U.S. Midwest. Potential differences between male and female are also reviewed. Previous research explored cranial thickness as a means of determining sex and age differences in a Caucasoid sample from the U.S. Southeast, concluding that females exhibit a steady increase in cranial thickness with age. The increase is noted in the frontal region in particular and, although it is described as steady, it is followed by an abrupt increase in thickness around age 65. In turn, males exhibit a steady decrease in thickness with age. The results reported are in contrast to other studies of cranial thickness which indicate that measurements increase with age in both males and females.

For the present study, a sample was drawn from the R.J. Terry Collection. Each cranium was measured at 19 landmarks/areas of the vault using spreading calipers. At present, preliminary findings reveal a general trend towards an increase in cranial thickness in females and males, although to a lesser extent in the male crania. The difference between the results presented here and previous findings is suggested to reflect a potential group-specific effect. Sexually dimorphic features are also noted in the cranium but vary among landmark and locations.

(13) JOHNSTON, Cheryl, Matthew WILLIAMSON, & Steven SYMES. "The Fort Laurens Skeletal Sample: Cranial Trauma."

Fort Laurens, located near the present day town of Bolivar, Ohio, was established in 1778 under the command of General Lachlan McIntosh. During the nine months of the fort's occupation, at least 21 individuals were buried in the fort's cemetery. Instances of cranial traumata were identified and described for 19 of these individuals. Type, location, and dimensions of each trauma were recorded.

Results indicate an average of 3.8 instances of cranial traumata per individual. All individuals exhibit at least one instance of cranial trauma, and the maximum number exhibited by any one individual is eight. Types of trauma observed include blunt force and at least two distinct types of sharp trauma. Radiography failed to provide confirmation of gunshot trauma although perimortem damage consistent with gunshot trauma was observed.

(14) KIMMERLE, Erin, Matthias OKOYE, & Karl REINHARD. "Deaths in Custody in Nebraska, USA: A Statistical Analysis and Report of Unusual Cases."

All medicolegal cases from the Lancaster County Coroner's Office in Lincoln, Nebraska, USA, 1991 through 1996, were reviewed for deaths which occurred in custody. The leading manners of death, in ranked order, include: natural 45.1% (23/51), suicide 33.3% (17/51), homicide 11.8% (6/51), accident 7.8% (4/51), and undetermined 2% (1/51). Each manner of death is explored considering the following variables: cause of death, age, sex, and race of the decedents. The findings of this investigation are compared with previous studies in other geographic regions of the country. Many similarities and differences in the frequencies of the modes of death are discussed. In addition, six unusual case studies are presented and may serve as a reference for pathologists and other forensic scientists confronted with aberrant cases, including one accidental death, one homicide, and four suicides.

(15) KISSACK, Zachary. "Surgically Implanted Skeletal Appliances and Their Forensic Applications." (poster presentation)

I address the topic of surgically implanted skeletal appliances in the skeletons of living humans and the potential role that such appliances can assume in forensic identification. Various artificial appliances implanted during surgical reconstruction and/or repair, particularly in cases dealing with the shoulder, are discussed. Pictures/diagrams will show a typical shoulder joint as compared to one that has been repaired through the use of surgically implanted staples. The potential use of surgical appliances in forensic identification arises from the fact that appliances implanted into the human skeleton are cataloged according to type and manufacturer as well as by individual serial number.

(16) MYERS, Jeri. "Skeletal Analysis of an Athlete."

The discovery and early confirmed identification of skeletal remains found in western Nebraska provided forensic anthropologists an opportunity to evaluate skeletal pathology and anomalies in the context of a known lifestyle. The extensive athletic training and documented injuries of the individual under discussion correspond with bone remodeling resulting from trauma, pronounced osteological development at sites of muscle attachment, evidence of osteolytic activity, and arthritis. Side preference associated with particular repeated motions required in sports in which the individual was known to have participated may explain the observed asymmetry of some skeletal elements.

(17) NAWROCKI, Stephen. "An Overview of Human Taphonomy."

Human taphonomy is a subfield of anthropology that examines the role of peri- and postmortem processes on human bone and soft tissues. The central concerns of human taphonomy include: (1) distinguishing between "pseudotrauma" and damage actually inflicted at the time of death, (2) explaining the postmortem history of a skeleton and applying this information in archeological and demographic contexts, and (3) estimating the postmortem interval for the more recently deceased.

This presentation will outline our lab's protocol for constructing a 'taphonomic profile' for a skeleton, a task that actually begins early in the excavation of a burial. These procedures apply equally to ancient and recent human remains. It is important it is for the osteologist to participate firsthand in the field recovery of the remains, in order to gain an appreciation for the microenvironmental factors that came to bear during the postmortem interval.

(18) NAWROCKI, Stephen, Christopher SCHMIDT, Tammy GREENE, Lilith JUDD, Heather THEW, Jennifer GABRA, & Cassandra KUBA. "A Workshop on Human Taphonomy."

This purpose of this hands-on workshop is to acquaint participants with the field of human taphonomy. Participants will be able to inspect firsthand examples of the major categories of taphonomic processes and alterations, drawn from the collections of the University of Indianapolis Archeology & Forensics Laboratory.

(19) SEIS, Michael, & Peer MOORE-JANSEN. "Metric Determination of Sex Using Bones of the Ankle."

The present paper examines metric variation between sexes among bones of the human ankle joint. Preliminary findings reveal sexually dimorphic differences in size in this part of the human skeleton. A total of 162 males and females from the Terry Collection housed at the Smithsonian Institution, Washington, D.C. The bones investigated include the tibia, the talus, and the calcaneus. Several measurements were taken of the tibia, including length, proximal breadth, and antero-posterior and medio-lateral diameters and circumference at the position of the nutrient foramen. Measurements specific to the distal tibia include a circumference, distal breadth, width, and inferior articular surface breadth and width. Measurements of the talus include breadth, length, superior articular surface breadth and length. Length, middle breadth, and posterior height and breadth of the calcaneus conclude the measurements of the study. All measurements and permutations of between and among measurements are examined for degree of sexual dimorphism, and their potential for skeletal sex determination is tested. The findings calibrated from the Terry Collection sample are tested on an independent skeletal series of recent cadaver and forensic cases housed at the Wichita State Biological Anthropology Laboratory.

(20) SIMMONS, Tal. "Ethical Considerations of Forensic Anthropology and Human Rights: War Crimes Investigations in Bosnia."

A forensic anthropologist must remember that first and foremost he/she is an anthropologist, i.e. an individual who must be sensitive to the views of different cultures. It is becoming more common for forensic anthropologists and students in the field to work abroad on exhumations and identifications of victims recovered from mass graves. Such individuals are in the employ of organizations dedicated to the investigation of war crimes and/or human rights violations. Each such organization has policies governing the conduct of its employees; such policies cover rules governing confidentiality, data collection, publication, etc. Individuals working in situations such as these must be aware that, tempting though it is to collect data from the thousands of skeletal remains encountered in these situations, there are ethical as well as legal considerations concerning this work.

Skeletal remains recovered in situations such as the fall of Srebrenica, the tribal warfare in Rwanda, etc. are highly sensitive materials, legally, politically and culturally. In contemplating research projects based on collecting data from skeletal remains recovered in these contexts, one must

be aware that permission to conduct the research must still be obtained. However, because the infrastructure of the country may be greatly disrupted, it may be exceedingly difficult to discover all of the proper individuals, agencies, and/or authorities which actually have the authority or responsibility to grant that permission. In addition, families of the missing as well as religious leaders of the community may have to be consulted. Research that will potentially aid the identification process is probably most appropriate and acceptable under these conditions. Research that actively incorporates local colleagues is also appropriate.

In no circumstance should one assume that the skeletal remains are readily available for study. In no circumstance should an employee of an organization conducting this type of work assume that data collection is allowed; the employee has been hired to perform certain tasks, not to collect data for personal projects.

(21) WOLFE STEADMAN, Dawnie. "Preliminary Analysis of the Pawn Shop Mummy."

A mummified human skull was confiscated from a pawn shop by the Des Moines Police Department in June, 1998. The soft tissue of the face and submandibular region are extremely well preserved, as is a full mustache. The vault was quarter-sectioned and, while the brain was removed, the dura mater remained in situ. At the time of discovery, the authorities were concerned that the skull was from an American Indian cemetery or that of a recent missing person. However, anthropological analysis determined that the skull was of a Caucasian adult male, approximately 4050 years of age. The manner of death could not be determined. The type of autopsy, purposeful exposure of the right mastoid region and chemical preservation of the soft tissue are consistent with a historical anatomical preparation used for teaching purposes. Two modes of investigation are currently being pursued to determine the antiquity of the preparation: the types of preservatives and autopsy tools utilized. The results of these investigations and analyses will be presented and the importance of interdisciplinary collaboration will be emphasized.

(22) WESCOTT, Daniel. "Variation in Asymmetry of the Humerus Within the Arikara: A Preliminary Look."

Because the gross architecture of a bone is, at least in part, a reflection of the physical loads placed on it, examination of bone size and shape can often provide significant clues regarding habitual physical activities. An examination of bilateral asymmetry in the architecture of limb bones can even further assist in teasing out patterns associated with habitual physical activities. Activities requiring equal use of the right and left limbs result in a relatively small degree of bilateral asymmetry. Activities requiring a greater use of one limb over the other, on the other hand, will induce an increased bone density and mass in the dominant limb bone. The outcome of this increased bone mass in the dominant limb is a more pronounced bilateral asymmetry of the limb bones. This paper presents and discusses preliminary results of an investigation into the bilateral asymmetry exhibited in the external dimensions of humeri from precontact and postcontact Arikara. The preliminary results indicate a possible temporal change in humeral bilateral asymmetry.

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