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Aubrey Koonce *Four Fields, Two Anthropologists, and a Brief Encounter*

American anthropology has a complex and complicated history with numerous profound influences that resulted in the formation of the four-field approach in anthropology, these being Biological, Cultural, Archaeology, and Linguistic Anthropology, each with considerable variation in their naming. To fully comprehend the methodology and theoretical implications of these subfields and their institutionalization, one needs to look to the past. Understanding the beginnings of anthropology provides scholars with insights into how some of the most influential contributors of yesterday and today have utilized various approaches to a holistic view for their conceptual breakthroughs. Well-informed and thorough education in all fields of anthropology often lead to more complete theories and conclusions. In order to develop this point in the history of anthropology as an academic discipline, this paper focuses on an examination of correlations and differences between Adolf Bastian and Franz Boas, regarding the initial stages of the four-field approach in anthropology, and the psychic unity of humankind. Franz Boas is considered the 'father' of American Anthropology, and many of his foundational thoughts and theories can be correlated with Adolf Bastian's writings, the 'father' of German anthropology and museum studies. A closer comparison of these two key figures in the history of anthropology contributes to the main objective of this paper that is to develop the understanding of these theorists' works, ideas, and concepts, and to establish a better understanding for why these four fields are systematically interconnected and foundational even for the anthropology we practice today.

Justine Ely and Madison Bates *Cotton Textile Decomposition Study*

This paper addresses concurrent evidence of patterns of decomposition in cellulose-based textiles and soft tissue as it seeks to identify baseline data on which to establish guidelines for further research in the area of recent historic and crime scene recovery. As a part of everyday life, clothing provides valuable insight in forensic and archaeological contexts. It is regularly encountered in crime scenes as well as recent historical burials. Many studies have been conducted to explore the decomposition of human cadavers, but to date, only a handful of studies examine the effect clothing has on cadaver decomposition. The major variables that affect the degradation of organic material are soil and temperature. Research shows that by assessing more than one variable in a burial, the range of error in estimating the depositional time frame can be reduced. The present research examines decomposition of cotton textile, a natural fiber, in outdoor exposures over time. The findings presented here illustrate how cotton fiber changes, buried or exposed, in and out of context with soft tissue remains. The findings of this study demonstrate how the presence of soft tissue contributes to variation in the pattern of breakdown of cotton textiles and in reverse, the presence of cotton textiles affects the pattern of decomposition. This research is part of a long-term research project conducted at the Wichita State University Biological Anthropology Laboratory, Skeleton Acres Research Facility (SARF) in Leon, Kansas.

Tiffany Nutter Trejo *An investigation of reflections of Osteoporosis and Obesity in the Lower Vertebral Region of the human skeleton*

This study reports on an investigation of the potential relationship between measures of body size qualitative and quantitative evidence of degenerative bone diseases (osteoporosis).

Nine measurements capturing the size and shape of the lower vertebral elements (T11-S1) of 261 White individuals, 108 females and 153 males, ages 30-60 years among a studied group from the William M. Bass Donated Skeletal Collection at the University of Knoxville Tennessee. (FAC UTK 2018). The vertebrae were also score for the presence or absence of skeletal evidence of osteoporosis. Additional measures including, but not limited to body mass index (BMI) were also recorded. Preliminary results identify an apparent relationship BMI or body size and osteoporosis and that this relationship is more prominent in females. The findings presented for the particular study sample are considered consistent with previous established research documenting the relationship between osteoporosis and obesity in different populations..

Elayne Rye *Ethnobotany of the southern plain*

The purpose of this research was to discover the ethnobotany of the Southern Plains Indians, specifically the Wichita tribe(s). The study of the plants native to the Southern Plains is important to add to our understanding of the Wichita culture, and to compare current vegetation to the botanic diversity of the past. Knowing the plants found in archaeological sites, as well as which plants are edible or medicinal, can lead to speculating and understanding how these plants have been used by indigenous peoples. The use of electronic databases and hardcopy sources were used to research the plants and their uses in the Kansas and Oklahoma areas. A number of sources were consulted but not much data was found that tied to the Wichita tribe(s) specifically, however a substantial amount of plants and their uses were found for the Southern Plains area. Due to the difficulty of associating the botanical history with the Wichita, my research focused more on the Kansas and Oklahoma regions.

Cailyn Trevaskiss *Trauma Analysis in a Midwestern Environment: A Visual-Centric Observation Record of Decomposition in Eastern Kansas*

The study of exposure of soft tissue in varied conditions to different environments can provide opportunities to document temporal and spatial variation in and among potential factors associated with the process of decomposition. This research documents an experimental research effort focused on the comparison of trauma and non-trauma induced carcasses for the purpose of further understanding the decay process under different circumstances. Pairs of domestic pigs, (*Sus scrofa*), including one control animal dual (no trauma induced) and one individual with deep lacerations induced on the hind or shoulder region were laid out at the Wichita State University State University Biological Anthropology Laboratory, Skeleton Acres Research Facility (SARF) in rural Kansas. Three pairs of carcasses were placed in double-layered cages for protection and were recorded by a camera suspended above them. Each pair was placed at a different location, in varying levels of sunlight and exposure. This protocol was repeated for three three-month-long consecutive experiments were conducted to examine the potential impact of seasonal changes. Observations recorded throughout the study report on seasonal and locational differences among the patterns of cadaver decomposition and place the observations made here in the context of past decay research results.

Jakob Hanschu *Archaeological space is an archaeological product: Theorizing Archaeological Spaces*

Archaeologists have long been concerned with the spatiality of the sites they excavate. For example, in the latest edition of *American Antiquity* (vol. 84, iss. 1) one hundred percent of the articles and reports included one or more maps. Much of these concerns with spatiality view space as scientific or abstract, though some archaeologists have attempted to discuss spaces as “humanized” (e.g., Tilley 1997). However, very few scholars seem to be concerned with the types and meanings of spaces that they are actively producing and reproducing through the processes of excavation, mapping, publication, and other activities. In this presentation, I wish to examine how present-day archaeology and archaeologists become involved in creating and portraying sites as particular types of contextualized spaces. This will be accomplished through an exploration of my own experience excavating, mapping, and publishing on 14RY652, a prehistoric burial mound in the north-central Flint Hills, and a synthesis of literature from archaeology, anthropology, human geography, and Science and Technology Studies

Gracie Tolley *Untitled Jackman Project: Renovation Of A Museum Gallery*

In the past few years, Anthropology departments across the country have been making dramatic changes to their museum studies programs. Primarily, this is due to the increase in museology and coordinating academic fields of interest. These programs promote hands-on learning and real-world work experiences at the undergraduate and graduate level. Using applied practices, the subfield of museum studies tries to comprehend the past by curating artifacts and other physical remains. During spring 2019, students at Wichita State University are in the developmental stages of the renovating of the Lowell D. Holmes Museum of Anthropology. Notably, the renovation is over the Jackman gallery, and the exhibit “Journey Around the World” will inhabit the gallery for the next several years. Updating exhibits is a crucial task for museums as they present new narrative elements of culture and art to the public. This exhibit will be kept up by current and future museum studies students. It will feature numerous cultures from across the globe and will display items from the museum's ethnographic collection. The presentation demonstrates the procedure of which the exhibit was planned and constructed in. The project includes examining different aspects of the other fields within anthropology under a contemporary museum context and perspective.

West Ryan *Differential Rate of Human Decomposition in an Enclosed Vehicle Compared to an Outdoor Environment*

This study compared the decomposition rate of two cadavers in different locations and body positions in a closed vehicle, with two cadavers (controls) in similar body positions but in an outdoor surface environment. All the research was conducted at the Applied Anatomical Research Center at Sam Houston State University. It was predicted that the study would show slower rates of decomposition for the vehicle cadavers versus the control cadavers placed outdoors. It was expected that the controls would reach all stages of decomposition faster than the cadavers in the car would. This was expected because 1) controls would be exposed immediately to insects while there would be a delay in access for the vehicle subjects, 2) the controls would have complete access to normal atmospheric conditions allowing the body's after death biochemical processes to occur without hindrance, and 3) the vehicle cadavers would have

a reduced amount of oxygen levels and air circulation, with the potential for an increase in carbon dioxide, and higher humidity would increase the possibility of adipocere formation. The Total Body Score was used as a standardized reference to describe the stages of decomposition for all four subjects. Results showed that the control cadavers went through the fresh and early stages of decomposition faster than the experimental cadavers.

Madison Wrobley *Life as a Hydraulic Citizen: An Analysis of Water Access in Kathmandu, Nepal*

While Kathmandu is located in a country with abundant water resources, people across the city have limited access to potable water in their homes and must spend extensive time and resources to secure and manage a sufficient supply. Through a description of the ways people access water including municipal supply lines, private delivery, vendors, wells, and community taps, I show the complex ways people navigate their environment to make life in the city possible. In this thesis, I analyze what it means for there to be a lack of water in Kathmandu both in the official discourse and the lived reality. The water infrastructure is not only a set of pipes or even a collection of different sources, formal and informal. It is a network that both shapes and is shaped by the daily act of collecting water and the conversation surrounding water availability and quality. The conflicts that arise from unequal access and the disruptions that are present at every level have consequences on the way people perceive their position in the city. The ways people conceptualize, and experience scarcity affect everyday life in the changing valley.

Haley Rodriguez *Trepanation and Scalping an Analysis of Contrast and Technique on the Cranium*

Trepanation and scalping are two separate techniques seen performed on the cranium, in which significant lesions are left upon it. Trepanation also known as “burr hole” has been used throughout history as a surgical procedure during which a hole is scrapped or drilled into the cranium to relieve pressure or malevolent spirits that were thought to be causing abnormal behavior. Evidence of trepanation has been seen to appear as far back as the Neolithic era and still appears until present day. Scalping is a similar practice in which the scalp is separated from the cranium along with the hair with the use of a thin blade or what is sometimes referred to as a scalping knife. This practice has appeared in different cultures from nearly all continents, usually in connection to war trophies, or accidents. In this research, I am identifying the difference between these two practices from not only each other but also from other pathological features that can appear on the cranium, such lesions caused by yew or syphilis. This analysis was done through a review of literature on these techniques and the methods that were used to perform them, allowing for a distinction to be made between the two and how to separate one from the other.

Jasmine Garcia *Does Hydrocephalus Interfere with the Estimation of Ancestry Derived from the Skull?*

In a forensic context, identification of an unknown individual, based on skeletal remains, involves the expertise of a Forensic Anthropologist. Estimating the ancestry of an individual is based on observation as well as metric assessment. The most reliable and accurate area of the skull to estimate ancestry is the face, more specifically the nose region of the face.

Measurements of the skull and mandible are input into FORDISC®, a discriminant function analysis, to distinguish the unknown's ancestry from multiple ancestral groups. When pathologies are present in the skull, such measurements may be skewed and if not removed from the analysis, can distort the results. In this study, we examined the possibility of having a pathology of hydrocephalus, an abnormality that results from an abnormal build-up of cerebrospinal fluid (CSF) in the brain, increase of intracranial pressure, and abnormal skull growth, and still use the skull to estimate ancestry. In this study, a skull with Hydrocephalus was provided by the Applied Anatomical Research Center, Measurements were taken of the entire skull and then were placed into FORDISC to estimate ancestry. As predicted, skewed measurements were removed. However, measurements of the face region produced results of a probability of 99% African; the correct ancestry.

Rachel Wendt *Fire at the Footprint Site: experimental burn study and the response of buried bone*

The purpose of this research is to analyze the distribution and nature of burned bone recovered from the Footprint Site, located in the Texas Panhandle. The site occupation is estimated to 1200-1450 A.D. and was originally excavated by F.E. Green in 1964. The structure showed evidence of burning, resulting in the collapsing of the roof on top of archaeological features, such as human cadavers or shallow burials. The remains recovered from Room I at the site, which is estimated to be around 32 individuals, became commingled. This, combined with unclear provenance, has led to further analysis by multiple researchers (Moore-Jansen, 2005). During analysis, approximately 8% of the skeletal material were identified as exhibiting burn lesions. This experiment simulated a burn that reasonably replicated the type of fire that would have occurred in an Antelope Creek Style home. In the structure, dry bone, green bone, and bone with soft tissue were placed in multiple locations at various depths, and will be analyzed for charring, calcination, and discoloration to serve as comparative tools and provide insight into the skeletal material at the Footprint Site.

Benjamin Moss & Hannah Cervenka *Blunt force trauma versus burn fractures: An experimental study*

Reconstructing and analyzing burned skeletal materials to accurately differentiate between potential antemortem, perimortem, and postmortem trauma are addressed in the present study. Past literature defines a multitude of effects related to burning, including bone color change, shrinkage, deformation, and fragmentation. This research explores the potential to effectively isolate different types of fractures or fracture patterns in burnt bone. Blunt force trauma was applied to three crania of *Sus scrofa domestica*, a common breed of large white pig, all of which were then burned to the point of showing some degree of calcination. The remains were recovered from the burn site and examined in the Wichita State Biological Anthropology Laboratory. Through the process of stabilization, reconstruction and comparative analysis, the findings of this demonstrates that different types of fractures are observable in each of the crania, it remains inconclusive as to whether that trauma is perimortem or postmortem in nature. It is also inconclusive so far as to whether the fracturing present reflects applied blunt force trauma or the trauma resulting from the exposure to heat. It is concluded that additional investigation is necessary to explore further the potential for distinguishing burn versus blunt force trauma.

Alfredo Jahn VI *Identity and Belonging Among Young Adult Bosnian-Americans in St. Louis*

Questions of assimilation, ethnic presentation, and cultural understanding are necessary to examine in the changing contemporary rhetoric and politics surrounding immigration in the U.S. This ethnographic study investigates personal understandings of cultural identity and community belonging among second-generation Bosnian immigrants. Through semi-structured interviews and participant observations at cultural community events, the study explores the importance of transnational practices, material culture, the role of community, and engagement with family stories and religion to understandings of Bosnian identity and positionality within the broader historical narrative of diaspora. The study critiques traditional understandings of second-generation immigrant assimilation patterns, finding respondents retaining an affinity for their parents' culture and language. Stories of the homeland and opportunities to visit were for many indispensable in shaping conceptions of identity, while experiences of religion, though popularly considered elemental to ethnic identity in the Balkans, were found to be relatively less influential. The study provides a characterization of contemporary assimilatory trajectories of second-generation immigrants, examines cross-generational cultural reproduction, and informs understandings of conceptions of delineations of Balkan ethnic identities decades after the Bosnian War.

Margaret Spell *Degradation of Human Cadaver Phalanges Using Household Chemicals*

Forensic Anthropology studies, using household chemicals to degrade bone and soft tissue has only been completed on animal bone and tissue and human cadaver teeth. Even though criminals have used chemicals to dispose of their victims, there is limited published data concerning the chemical effects of household products on human remains. The present study observed and documented the effects of household chemicals on hand phalanges from a cadaver at the Applied Anatomical Research Center (AARC) at Sam Houston State University, Huntsville, Texas. The distal and intermediate portion of the second, third, and fourth phalanges of the left and right hands were placed into six different household chemicals: Coca-Cola®, hydrogen peroxide, bleach, muriatic acid (hydrochloric acid), and acetone to observe if and how long the soft tissue and bone would degrade. Distilled water was used as the control. It was predicted that muriatic acid and bleach would cause the most degradation, while distilled water and hydrogen peroxide would not cause any change. Day 22 of the study, muriatic acid was the most caustic, with no bone/tissue remaining. Bleach also had significant effects, while no significant changes occurred with distilled water, hydrogen peroxide, acetone, or Coca-Cola.

Walker Burgett *Morphometric Variation of the Human Femur and Tibia*

Anthropologic research is critical to the ability to identify individuals based on skeletal material alone. This project examines the femur and tibia bones of the human leg using metric analysis to examine skeletal variation between individuals. Seventeen measurements – 12 standard and 5 non-standard were taken from the right femur and tibia of 408 individuals from the Hamann-Todd collection located in Cleveland, Ohio along with 28 individuals from the WSU collection in Wichita, KS. Statistical analysis was conducted using a combination of Microsoft Excel and SPSS (Statistical Package for the Social Sciences) software. This research confirms the validity of metric observations by examining simple measurements in establishing differences between sex and group affiliations, and establishes that skeletal measurements

provide important information that can accurately be used to identify unknown individuals. Based on the quantitative analysis of the collected data, it is determined that variation between sex and group does exist. Results demonstrate strong accuracies with simple measurements that have low inter-observer error and can be easily replicated. This study adds to what is known and what can be learned about sexual dimorphism and group affiliation, increasing our knowledge about variations between population and the mechanisms that operate within them.

Stephanie Baker *The Microanatomy of Bone Trauma*

Trauma morphology in human bones provides evidence regarding the mechanism of injury or death. For example, weapon type, caliber of bullet, and the trajectory of impact can all be estimated from the damage to bone. Such damage is generally examined at the gross anatomical level. However, recent work with computed tomography scans suggests more data may be available on a finer scale. Here, we study asymmetry in human bones with identifiable trauma by examining skeletal specimens housed at the Applied Anatomical Research Center (AARC) in Huntsville, TX. The specimen included in this study is a skull with ballistic trauma. The bone was scanned at the University of Texas Computed Tomography Lab. Amira 5.6.0 was used to visualize, render, and collect data. Cortical bone thickness was measured using the provided measuring tools in Amira 5.6.0, and microfractures were counted each at regular intervals around the circumference of each wound by observing the internal and external surfaces of the bone. Nonparametric methods were used to analyze data, and preliminary results suggest asymmetry in both variables. Our ultimate goal is to provide law enforcement and the medicolegal community with a larger, more refined data set to better estimate the causes of bone trauma.

Joan Bayles *Investigating The Origins Of The Great Bend Aspect Through Reanalyzing Lithic Assemblages of Pratt Phase Sites, Zyba Site, 14RC410, and Two Early Hunting Camps*

The Great Bend aspect is the designation for proto-historic Wichita sites in central and southern Kansas, dating from A.D. 1425 – 1700. The origins of the Great Bend aspect have not been studied in depth previously, but comparisons with the earlier Central Plains tradition suggest that the latter was not directly ancestral to Great Bend. Patterns of tool-stone acquisition, ceramic vessel forms and surface treatments, and formal stone tool types all differ. This research employs stacked outline comparative analysis of lithic assemblages from sites of the Pratt phase, the Zyba site, an early Little River site in Rice County, and early hunting camps along the Walnut River. These sites appear to date immediately before the emergence of Great Bend and at least half a century after the disappearance of the Central Plains tradition. This research tracks the changes in material culture as the Great Bend aspect developed; the origins of the Great Bend aspect provide implications for the broader context of movement and social change on the Great Plains.

Rachel Yanko *Digitizing historical radiographs and their potential use in future research.*

The WSU Biological Anthropology Laboratory (BAL) houses a collection of historic radiographs that are in rapidly deteriorating condition. The process of digitization can be an extremely expensive process which requires the proper resources and time to achieve the desired result. In a joint venture with the BAL and the Ablah library we are designing the procedure for

scanning and building the database with the intention of placing it in Open Source. The potential uses of this database, if deployed properly, can be useful in not only biological, medical/cultural anthropology but also in the medical field as chronological, serial studies of tuberculosis as well as potentially a source for influencing social policies relating to contained populations in the hope of minimizing the spread of infectious diseases.

Lissette Varela *Sexual Dimorphism in the Upper Arm: An Analysis of Humerus Size Variation Between Two Collections*

Past research on the cranium and pelvis have demonstrated greater reliability for estimating sex. Recent studies have shown high accuracy rates in postcranial long bones foregrounding the relevance of the humeral bone. (Ogedengbe et al. 2017). This preliminary review of sexual dimorphism in the humerus examines size and shape variation between males and females. Current standards are reassessed and tested through comparative examination between samples of size and shape variation. Research was done by characterizing and quantifying the main direction of size variation and whether the two groups; Cadaver and Odd Fellows differ significantly in some aspect of size. The collection consists of a total of fifty-five humeri including twenty-eight males, twenty-five females and two of unknown sex representing different collections. Osteometric board, sliding calipers, and measuring tape were used in humerus measurements. Many standard humeri-metric measurements (Moore-Jansen et al. 1994) were included. Measurements were divided into seven groups; maximum length, epicondylar breadth, vertical diameter of humerus head, horizontal diameter of humerus head, maximum and minimum diameter of humerus at midshaft, and circumference of humerus at midshaft. The measurements of comparison were mean, range and standard deviation. In the comparisons made, there's considerable correlation between male and female maximum diameter of humerus at midshaft and circumference of humerus at midshaft measurements. The data suggest that male and females shape does not change while its size does. The t-test results revealed significant differences between the mean values of males and females ($P < 0.001$), which indicated the presence of sexual dimorphism in the measurements of the humerus for each collection.