



Physical Anthropology Section – 2007

H59 Craniometrics as Jantz Taught Us: Multiple Lines of Evidence to Deduce the Affiliation of Painted “Aztec” Skulls

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After attending this presentation, attendees will understand how to use linear and three-dimensional coordinate data in discriminant function analyses to verify the national or ethnic affiliation of crania of unknown geographic and temporal origin. Participants will also develop an appreciation for the necessity of considering and evaluating other types of evidence including reported mortuary practices and artistic representation when concluding national and/or ethnic origin.

This presentation will impact the forensic community and/or humanity by demonstrating the importance of using multiple lines of evidence to differentiate “historic” from forensic cases. This presentation also illustrates multiple statistical methods for estimating national and ethnic affiliations.

Five painted adult skulls, reported to be pre-contact Aztec, were at various times on exhibit at the Field Museum of Natural History in Chicago, Illinois. Documentation pertaining to acquisition reveals little information about provenience. The markings on the skulls are elaborate, decorative, colorful, and primarily geometric in design. The morphology of the skulls suggests a more recent origin than 400 – 800 years ago. Additionally, the skulls lack any “indigenous” traits that would be expected to characterize pre-contact Mexican remains. The authors of this investigation thought that the postmortem modifications in the form of these elaborate paintings, as well as the inconsistent morphology were highly suspicious. To authenticate the origin of the skulls, three lines of evidence are used; 1) traditional craniometrics analyzed using FORDISC, 2.0 and the known samples that comprise the associated craniometric database, 2) 3D Cartesian coordinate size and shape variables using regional data from Central America, and 3) bioarchaeological, archaeological, and ethnohistorical evidence of documented mortuary and other cultural practices of the Aztec. The inclusion of the third line of evidence highlights the application of the biocultural approach, the methodology of which puts the “anthropology” in “forensic anthropology.”

First, using FORDISC 2.0 American Hispanic males (which in this version of FORDISC primarily consist of individuals of Mexican descent) as well as White, Black, and American Indian males and females are used in a discriminant function analysis to classify the “Aztec” skulls. Two of the five skulls classify as White Females. The other three skulls each classify as a Hispanic Male, American Indian Male, and Black Male, respectively. Finding that the population variation of the five skulls is highly heterogeneous suggests they are not of pre-contact “Aztec” origin or even from a single population.

To further investigate the possible origin of these skulls, the authors present the among-sample variation and classification results using three-dimensional landmark coordinates of the skulls when compared to samples of pre-contact Mexicans from Tezontepec ($n = 6$), 20th century Mexicans from Tarasco ($n = 20$), and documented samples of Spanish ($n = 20$), American Whites ($n = 20$), and Terry Blacks ($n = 20$). The landmark-based Procrustes superimposition approach, based on geometric morphometry, was used. Thirteen standard craniometric landmarks were used to reflect the among-group variation. A multivariate analysis of variance (MANOVA) and Mahalanobis squared distances (D^2) were used to examine group membership.

Given the possible age(s) and cultural affiliation of the 5 skulls in question, bioarchaeological, archaeological and ethnohistorical sources of information on Aztec mortuary ritual and other cultural practices were consulted and the data derived from them are incorporated into the final interpretation regarding national, ethnic, and/or ancestral affiliation(s). Variables are identified that represent documented alteration for aesthetic or cosmetic purposes, body preparation after death, and disposition practices, including evidence for cranial shape modification, dental alteration, painting, incising, carving, burning, dismemberment, and cannibalism. Central to the verification effort, was not only a comparison of the five skulls to the forensic databases available, but to consider the biological and cultural distinctions between groups living within the Aztec sphere of influence in order to narrow the possible ethnic or ancestral affiliation. These groups include those of the Triple Alliance that maintained their own cultural identity, those that succumbed to Aztec social and political influence, the Aztec, and those that were sacrificed as part of ritual offerings.

This study serves as a reminder that the line between historic and forensic, “Hispanic”, “American Indian” or “Other” may be blurred. Careful consideration of multiple lines of evidence, including cultural practices, and the aid of statistical modeling as offered through FORDISC and modern methods from geometric morphometrics are imperative anthropological tools.



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Craniometrics, Classification, Authentication