



Physical Anthropology Section – 2010

H83 The Assessment and Determination of Forensic Significance in Forensic Anthropology

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After attending this presentation, attendees will better understand the theoretical groundwork from which to assess forensic significance via three models of decision making.

This presentation will impact the forensic science community by examining and formulating more systematic, supportable investigative, and analytical processes; and, by developing a higher theoretical framework for the field of forensic sciences as a whole.

The purpose of this presentation is to examine the decision making processes and underlying theory governing the determination of the forensic significance of human remains. Currently, decisions of forensic significance are made based largely on investigator experience, with little in the way of a systematic examination or discussion of the theory underlying conclusions. Attendees of this presentation will gain a theoretical groundwork from which to assess forensic significance via three models of decision making. The impact of this discussion on forensic anthropology will be felt not only in courtroom, by further codifying and systematizing our methods, but throughout the field of Forensic Science, by introducing a higher theoretical platform from which to unify its sub-disciplines.

Forensic significance, the relevance of human remains or physical evidence to a medico-legal case, is the cornerstone of forensic investigation. Establishing the forensic significance of found human remains is often the first step in the investigative process and the basis upon which human and material resources are allocated in a death investigation. The determination of the forensic significance of human remains may seem to be an obvious decision, based on context or the investigator's experience, but a closer examination of the decision making process is warranted in the age of *Daubert* and *Mohan*. Transparent, repeatable and statistically supportable methods of positive identification, assessment of the biological profile and trauma analysis have been required of the discipline as a result of these rulings, but the crucial step of establishing the need for a death investigation to begin have not. Rather, forensic significance is taken as the basis from which all other methods proceed. Authors such as Byers (2008), Rogers (2005) and Berryman (1991) have addressed specific issues of establishing forensic context, but the decision making process and the theory underlying it have not been examined systematically in the literature. Dawes et. al (1998) demonstrate the superiority of actuarial (information/calculation) over clinical (experience/discretionary) based methods of decision making in medicine and psychology. Klepinger argues; however, that age of automatic, formula based decision making in forensic anthropology has not yet arrived and may never (2006). In an attempt to bridge the gap between these approaches and to address the underlying theory behind the determination of forensic significance, three models are proposed for the decision making process: the Forensic Significance Paradigm, The Bayesian Model, and the Hierarchy Model.

The Forensic Significance Paradigm borrows its structure from Inman and Rudin's (2002) discussion of the origins of evidence. The focus in this model is the identification or inclusion of human remains within a class (modern, historic, archeological) along with the individualization of those remains by excluding specific characteristics (cemetery, autopsy, coffin artifacts). The Bayesian Model uses the concept of hypothesis formation followed by iterative decision making at each step of evidence collection and analysis (Taroni, 1998). The hypothesis of forensic significance is re-evaluated with each piece of evidence collected and at each step of the analysis of the remains. The Hierarchy Model, based on the Hierarchy of Propositions Model described by Cook et al (1998) requires a pair of opposing propositions at each of three levels of decision making. This model combines the identification/individualization process of the Forensic Significance Paradigm with the step by step deliberation of the Bayesian Model.

By assuming that the determination of forensic significance is an obvious, experience based activity, without investigating the underlying theory and thought processes behind decisions of significance, forensic anthropologists run the risk of a lack of transparency in the courtroom and potentially incorrect judgment. Examining the processes by which we determine forensic significance serves two purposes: the formulation of more systematic, supportable investigative and analytical processes; and, the development of a higher theoretical framework for the field of forensic sciences as a whole.

Forensic Anthropology, Forensic Significance, Theoretical Models