

## TECHNICAL NOTE

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# Variation as Evidence: Introduction to a Symposium on International Human Identification

In the on-going genocide trial of *The Prosecutor v. Popović et al.* (IT-05-88-PT) (1), demographic evidence about the population structure of victims has again been challenged. How the Trial Chamber views this evidence has yet to be determined, but this is not the first time in a criminal case of genocide that anthropological evidence about the number of victims or age and sex distribution of multiple victims has been under scrutiny. In the case of *The Prosecutor v. Radislav Krstić* (Case No. IT-98-33, Judgment, August 2, 2001; Appeals Chamber Judgment, April 19, 2004) (2), the defense attorney also challenged demographic evidence presented by the prosecution and in doing so, differed markedly from American homicide trials. In American criminal trials, methods for identification have often been challenged when they are used to identify the perpetrator of a crime such as the use of fingerprints or DNA to link a suspect to the scene or victim. In contrast, among international trials of violations to International Humanitarian Law (IHL), particularly in cases involving charges of genocide or conspiracy to commit genocide, the identity of the victims rather than the perpetrators has been primarily at issue.

Genocide is defined in Article II of the *Convention on the Prevention and Punishment of the Crime of Genocide* (Adopted by Resolution 260 (III) A of the U.N. General Assembly on 9 December 1948, Entry into force: 12 January 1951), which states:

...genocide means any of the following acts committed with intent to destroy, in whole or in part, a national, ethnical, racial or religious group, as such:

- (a) Killing members of the group;
- (b) Causing serious bodily or mental harm to members of the group;
- (c) Deliberately inflicting on the group conditions of life calculated to bring about its physical destruction in whole or in part;
- (d) Imposing measures intended to prevent births within the group;
- (e) Forcibly transferring children of the group to another group.

Therefore, the Collective identity of the victims or who the victims are (i.e., civilians or soldiers; "men of fighting age"; or children, adults, and the elderly) as well as their activities at the time of death (i.e., detained, hospitalized, or engaged in combat) provide

critical evidence in the prosecution of genocide as these factors not only inform as to the manner of death but also provide evidence about the intention of those perpetrating the crime by targeting specific groups of people. Collective identity is defined as the group or population to which the individual belongs (3,4). This is not a racial, ethnic, or ancestral classification in the traditional sense. Rather, based on the specific context it may be defined by sex, gender, age, ancestry, nationality, religion, organizational membership, disability, activities, and other circumstances surrounding the death. Collective identity or what may also be thought of as contextually identified persons are also highly relevant in other areas of IHL such as war crimes, grave breaches against the Geneva Conventions, and crimes against humanity.

The indictment in the case of *The Prosecutor v. Popović et al.* (IT-05-88-PT, Second Consolidated Indictment, June 14, 2006) states that the accused acted:

...with intent to destroy a part of the Bosnian Muslim people as a national, ethnical, or religious group ... killed members of the group by planned and opportunistic summary executions. With the same intent, they caused serious bodily or mental harm to both female and male members of the Bosnian Muslim populations of Srebrenica and Žepa, including but not limited to the separation of able bodied men from their families and the forced movement of the population from their homes to areas outside the Republika Srpska.

As demonstrated in this example, stakeholders on both sides of the criminal trial have an interest in how demographic data is measured and presented. The defense team questioned anthropological witnesses about how age intervals were constructed, the minimum number of individuals counted, the accuracy of age estimation, and the relevance of protocols or methods to Bosnian populations (*The Prosecutor v. Popović et al.* [IT-05-88-PT, Second Consolidated Indictment, June 14, 2006. Transcripts March 14, 2007 p. T 8803]).

As international courts such as the The International Criminal Tribunal for the Former Yugoslavia (ICTY) and International Criminal Court (ICC) as well as other emerging courts prosecute violations to IHL, challenges to anthropological evidence, particularly related to demographic information are likely to emerge and be highly debated. Most poignantly, challenges to estimation parameters for age, sex, and stature derived from one population and applied to other populations are at issue as the reliability and accuracy of applying methods across populations have been challenged both scientifically and legally as discussed here.

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As a research question, the issue of human variation is a fundamental concern of biological anthropologists, regardless of how it is measured. The application of varying statistical methods for estimating individual and population parameters across populations have at times blurred interpretations, as results may not have been directly comparable. To investigate the applicability of methods derived from one population and used to reliably estimate individual and population parameters for other groups, a symposium was organized for the 2004 Annual Meeting of the American Academy of Forensic Sciences, in Dallas, Texas entitled, "Estimation and Identification in American and International Populations." The goal for organizing the symposium was to provide a forum for discussion of identification methodology. More specifically, the purpose was to investigate the accuracy, reliability, and repeatability of methodological standards in osteology when applied across populations.

The symposium resulted from an intensive investigation into methods for age, sex, and stature estimation for Balkan populations, following the court challenges in *The Prosecutor of the Tribunal against Radislav Krstić* (Case No. IT-98-33). This investigation was a collaborative effort by the Forensic Anthropology Center at the University of Tennessee (UT) and the United Nations, International Criminal Tribunal for the Former Yugoslavia (ICTY). Responding to the questions raised during the Krstić trial, the Office of the Prosecutor (OTP) developed an internal project by which standard methods used for constructing a biological profile were investigated for Balkan populations, thereby ensuring that the most scientifically accurate and precise means of establishing the demographic profile of victims and individual identification be achieved. Data used for the ICTY-UT research project came from evidence collected by the ICTY during its investigation, via The Hague following Chain of Custody. Permission to use this data was given by the ICTY to UT who entered into a working relationship with the expressed goal of sharing data and results that would aid OTP in their investigations as well as other agencies working on human identification in the region. An essential component of this effort was the publication of scientific findings to ensure the admissibility of any new method or revised biological parameters for existing methods in court.

Specifically, the purpose of the investigation was to (1) test whether biological variation among Americans and East European populations was significant and if so, to recalibrate parameters for age, sex, and stature estimation for specific use in the regions of the former Yugoslavia and (2) to apply a Bayesian set of statistical methods including transition analysis, hazard modeling, and likelihood estimation so that the methods used were highly reliable and quantified to ensure that evidentiary standards for admissibility were met and that measures of variation among populations were not a statistical artifact due to methodology. The use of scientific methodology as evidence in criminal courts typically requires that it is accepted by the general scientific community and that probability levels or error estimates are provided when appropriate. While anthropological evidence falls within the purview of scientific expert testimony and therefore expert opinion (i.e., admissible without probability statistics), particular methods used are quantified and evidence such as demographic profiles may be stronger when associated with standard levels of error (5,6). While a Bayesian statistical approach provides a reliable set of parameters for individual age estimation, anthropologists are still faced with the task of how to interpret that data to construct age intervals when multiple methods are used. The use of hazard modeling and Bayesian statistics is meant to overcome the role experience, personal preference, and training contribute to one's interpretation of the

data; however, further research and practical applications for multi-trait approaches are needed. This further demonstrates the critical need for forensic anthropology to be a research driven field, for educational programs to frame it as a specialization beyond core training in biological anthropology, and for international focus to emphasize data collection and analysis as well as casework. The American Forensic Databank that has helped redefine standards in the United States through such programs as Fordisc must be expanded to represent an International Forensic Databank that includes data for diverse populations to ensure that a human rights agenda for human identification is successful as a humanitarian effort and criminal pursuit.

Although the specific evidentiary standards vary by judicial system, it may be assumed that there are basic standards required within a refereed scientific community that are minimally necessary for acceptance by a trial chamber and/or appellate court, as is clear by the challenges presented in these two examples. For example, some of the testimony regarding anthropological methods presented in the case of *The Prosecutor v. Popović et al.* (IT-05-88-PT), was in regard to prior testimony over anthropological methods presented to an entirely different court, The International Criminal Court of Rwanda (*The Prosecutor v. Rutaganda* [ICTR-96-3], *Transcript March 15, 2007*) (7). Therefore the discussion and presentation of methods and results at scientific meetings and through publication are essential components for any research in forensic anthropology or presentation of such research in court. Rules of admissibility for the ICTY (Rule 89 of the ICTY Rules, amended December 1, 2000 and December 13, 2000) does not require judges to follow particular national laws regarding the acceptance of scientific evidence, although standards for inclusion tend to follow the same guiding principles offered in federal case law, such as *Daubert v. Merrell Dow Pharmaceuticals, Inc.* (509 U.S. Supreme Court 579, 1993).

The symposium published in this issue of *JFS* is the synthesis of this initiative. In total there are 10 papers in this series on the following topics: a review of osteological methods and their application to Balkan populations; age estimation through use of the pubic symphysis and teeth; sexual dimorphism; stature; and inter-observer error. A list of the papers in this series follows:

- Skeletal estimation and identification in American and East European populations (E.H. Kimmerle, R.L. Jantz, L.W. Konigsberg, J.P. Baraybar).
- When DNA is not available can we still identify people? Recommendations for best practice (J.P. Baraybar).
- Estimation and evidence in forensic anthropology: Age-at-death (L.W. Konigsberg, N.P. Herrmann, D.J. Wescott, E.H. Kimmerle).
- Analysis of age-at-death estimation through the use of pubic symphyseal data (E.H. Kimmerle, L.W. Konigsberg, R.L. Jantz, J.P. Baraybar).
- Pubic bone age estimation in adult women (G.E. Berg).
- New formulae for estimating age-at-death in the Balkans utilizing Lamendin's dental technique and Bayesian analysis (D.A. Prince, L.W. Konigsberg).
- A Bayesian approach to estimate skeletal age-at-death utilizing dental wear (D.A. Prince, E.H. Kimmerle, L.W. Konigsberg).
- Inter-observer variation in methodologies involving the pubic symphysis, sternal ribs, and teeth (E.H. Kimmerle, D.A. Prince, G.E. Berg).
- Sexing and stature estimation criteria for Balkan populations (R.L. Jantz, E.H. Kimmerle, J.P. Baraybar).
- Issues in the global applications of methodology in forensic anthropology (D.H. Ubelaker).

The last paper in this series, by D.H. Ubelaker provides a discussion of the general topic and each of the papers in the series.

This investigation built on the protocol traditionally used by the ICTY and later by the Office on Missing Persons and Forensics in Kosovo (UNMIK). The data presented in this collection of papers come from a variety of American forensic, anatomical, and museum collections that are positively and/or presumptively identified, as well as data from the ICTY including the following: (1) demographic data about victims of genocide in the Balkans; (2) antemortem data about ICTY cases collected through the investigative and identification processes; and (3) data on skeletal features used for estimating biological profiles from autopsy records, skeletal samples, and casts. It should be pointed out that the use of particular anatomical or skeletal features for estimating individual parameters were never in question; rather it was the specific parameters for various methods that were at issue. The goal in applying forensic methods to varying cultural, biological, or judicial frameworks is to apply methods that are scientifically accepted and accurate but that are managed through protocols that are adaptable enough to fit each context. Towards that end, it is the hope of those who participated in this research project that the methods presented here serve as a model for future research into population specific methods and illustrate the importance of skeletal data for modern people in a variety of biological and cultural settings. Practitioners working in the United States will find the methods and Bayesian statistics presented in this series a useful framework as secular trends, migration, changes in health and diet, and biological diversity require the continued development and refinement of methods used to aid in the identification process. Anthropologists working throughout expanding regions of the world will also find this series informative and that applying a framework that is biologically and culturally relevant is necessary to meet the new challenges presented in cases of IHL. Therefore, forensic anthropologists need a biocultural research agenda for international populations that includes the collection of data for missing persons, unidentified decedents, and known/identified individuals.

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