



## Physical Anthropology Section – 2007

### H51 The Fourth Era of Forensic Anthropology: Examining the Future of the Discipline

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After attending this presentation, attendees will learn about trends in training, education, research, and employment that are creating the future of forensic anthropology as a broad-based scientific discipline.

Forensic anthropology is experiencing new trends in training, education, research, and employment that are impacting its future. The impact of these changes will impact how other forensic disciplines think of forensic anthropology and its interactions with forensic anthropologists.

As a scientific discipline, forensic anthropology is relatively new. Stewart (1979) and Thompson (1982) have both recognized three eras in the development of forensic anthropology. In the period before World War II, although physical anthropologists consulted occasionally on forensic cases, there was no formal instruction, little published research, and scant attention by the medicolegal community. From the 1940s to the early 1970s, forensic anthropology garnered increased attention by the military (for war dead identification), other government agencies, and medicolegal investigative departments. The field professionalized in the 1970s with the establishment of the physical anthropology section within the AAFS and the creation of the ABFA. This third period was also characterized by an increase in the number of AAFS section members, research and publications, training programs, employment, and acceptance by the forensic community.

A fourth era of forensic anthropology has recently emerged. Several trends characterize the era. Grounded in skeletal biology and anatomy, the new forensic anthropology employs a broad knowledge of anthropology, human variation, and human biology in solving forensic questions. Forensic science laboratories, crime laboratories, and medical examiner offices employ forensic anthropologists to do more than traditional forensic anthropology- laboratory management, crime scene documentation, missing persons administration, quality assurance, and forensic project management are now routinely conducted by forensic anthropologists. Forensic anthropologists are now asked to serve as forensic managers to solve large-scale human identification problems in cases of disasters, mass graves, human rights, and missing persons. Employment of forensic anthropologists with MA/MS degrees in non-academic/applied positions has increased over the past decade, a trend that speaks to the potential of forensic anthropology outside its traditional roles.

These trends in the field lead to several questions:

- Is a new definition of the field required?
- Are students receiving the training necessary to succeed in these new areas?
- Is the field prepared to handle these new challenges?
- What trends in biological science, law, forensic science, and culture will impact forensic anthropology?
- What legal decisions and ethical trends will impact the field?

By looking at trends in research, the evolution of training programs, the broad-ranging employment of



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forensic anthropologists, and the application of the science to solve complex human problems, this symposium examines this new era in forensic anthropology. Among the topics to be discussed are:

- Future of education and training
- Future of trauma analysis
- Future of assessing ancestry
- Considerations for ethical standards in forensic anthropology
- Forensic anthropology and meeting evidentiary/legal demands
- Management of forensic laboratories and projects
- Changing role of forensic anthropology in medical examiner/ coroner setting
- Future of human rights work and humanitarian identifications
- Future of employment

The session will conclude with a discussion among participants and questions from the audience.

**Future of education and training:** The profession of forensic anthropology requires advanced graduate training within physical anthropology, especially human skeletal biology, and closely related fields such as human biology/anatomy and archaeology. Therefore, the academic programs and faculty providing the required graduate training share a profound responsibility as gatekeepers to the profession. Faculty at institutions offering degree programs that seek to prepare these future forensic anthropologists must provide the educational framework that defines the field, while at the same time the evolving roles of practicing forensic anthropologists must constantly re-define academic programs. This symbiosis revolves around twin missions: The education and training of the next cohort of traditional academic anthropologists; and the training of practicing forensic anthropologists with specialized knowledge and expertise that lies beyond traditional physical anthropology.

The 1970s and early 1980s marked the establishment of the first graduate programs that implemented specialized curricula to prepare students for careers in forensic anthropology. The first graduate programs specializing in forensic anthropology during this “establishment phase” were those at Arizona, Florida, New Mexico, South Carolina and Tennessee.

Our “Fourth Era” of forensic anthropology can be witnessed as the “expansion phase”, marked by an explosion in student interest nurtured by an exponential growth in media attention. This resulted in an increase in the number of universities teaching undergraduate courses on the topic, and the development of several new graduate programs specializing in forensic anthropology, including Michigan State, Mercyhurst, UC-Santa Cruz, CSU-Chico, U-Indianapolis, and SUNY Binghamton.

In the past, academic training in forensic anthropology has been conducted exclusively within a physical anthropology curriculum, focusing mainly on human osteology and skeletal biology. In fact, many members of the AAFS Physical Anthropology section graduated from departments that did not provide specialized curricula on topics in forensic anthropology. However, the increasing breadth and scope of the field, including issues of human identification, skeletal trauma, estimating postmortem interval, taphonomic modification of bone, war crimes and mass disaster investigations have led to widening roles for forensic anthropologists. Do these ever-widening roles require specialized, interdisciplinary skills not offered by traditional academic-based anthropologists?

As the “Fourth Era” of forensic anthropology begins, a critical assessment must be undertaken to determine whether educational programs are keeping pace with recent trends and are progressing in ways that best serve the needs of the discipline. It is time to closely examine the required courses in the academic curriculum producing forensic anthropologists. Any consideration of the future of education and training in forensic anthropology must begin with a consideration of the future of the field itself. Originally defined as a laboratory-based discipline in which physical anthropologists are occasionally enlisted by law enforcement, it is not surprising then that, until the last ten years, only a handful of individuals worked full-time professionally as forensic anthropologists. Recently, an increasing number of non-academic jobs with forensic anthropology in the title or in the job description have appeared. This has occurred primarily because: 1) medical examiners now well-realize that forensic anthropologists have skills at the crime scene and at autopsy that provide valuable assistance to the multidisciplinary attempts at identification, determining cause and manner of death, and estimation of the postmortem interval, and 2) forensic anthropologists are indispensable members of both overseas human rights organizations and both private and governmental-directed disaster assistance teams.

It is clear that in the Fourth Era, forensic anthropology has been redefined as a robust and unique scientific field that requires specialized training. This requires new discussions related to educational philosophy, as well as future goals and standards for the profession. What are the essential components in the graduate education and training of a forensic anthropologist in this new era? Essential components to be discussed include: 1. Experience with large samples of human skeletons to provide the



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most basic and crucial understanding in human skeletal variation; 2. Specialized coursework on topics within forensic anthropology; and 3. Hands-on experience with real forensic cases.

It is also necessary to examine whether graduate programs with specializations in forensic anthropology are keeping pace with the trends in the field. Do the current programs meet the philosophical and practical needs of the profession? Such efforts by the programs at Florida, Mercyhurst, Michigan State, and Tennessee will be presented.

A discussion of the differing goals of Masters and PhD programs is also important. Classically, the primary goal of PhD programs in physical anthropology is to produce academics. Has the increasing number of jobs in forensic anthropology impacted this goal? In addition, the role of Masters degree programs in forensic anthropology will be addressed. Does a Masters degree open up any doors in forensic anthropology, or is it simply a stepping-stone to a PhD program?

Finally, basic issues surrounding graduate student admission criteria need to be examined. With increasing student interest and an upsurge in the number of applications to graduate schools, the question whether graduate programs have a responsibility to limit the number of students accepted into programs needs to be discussed. Issues such as challenges to fund students, access to forensic casework opportunities, and the ability to place graduated students in the job market must be considered.

**Changing role of forensic anthropology in medical examiner/coroner setting:** Forensic anthropologists have long been consulted by medical examiners and coroners in jurisdictions across the United States. Historically, many were biological anthropologists who were either informally trained or self-taught with regard to the medicolegal aspects of the discipline. Primarily employed as university professors, their involvement with forensic casework was due to their expertise with skeletal remains rather than their knowledge of the medicolegal structure. During the last twenty years, this model has evolved. Programs designed to train students in all aspects of forensic anthropology, including areas previously the domain of law enforcement and the legal community, arose and flourished. Doctoral and Master's level students were emerging with specialized knowledge designed specifically for the medicolegal arena, but they were still primarily involved with the academic community. The last ten years have seen a further evolution of forensic anthropologists employed in medical examiner and coroner offices, largely because of increased public, media, and professional attention on the field.

During the past year, several medical examiner offices in the United States advertised openings for full-time forensic anthropologists. These individuals will join a dozen or so practitioners already gainfully employed as full-time forensic anthropologists working at medical examiner or coroner offices. In addition, there are many more individuals whose primary occupation is serving medical examiners as consultants or contract employees.

The nature of the casework handled by these experts is also changing. In 1998, Reichs observed that between 1986 and 1995, approximately 47% of all casework reported by diplomates of the American Board of Forensic Anthropology was derived from medical examiner/coroner offices. In a small sample of forensic anthropologist currently working in the United States, this percentage has jumped to 85%. Similarly, Reichs reported that skeletal remains accounted for the majority of cases for most of the diplomates. This number has also shifted, with the sample polled demonstrating that decomposed and fresh bodies have increased substantially, and that the number of consultations involving the determination of traumatic injury to bone account for a large percentage of the caseloads.

**Future of human rights work and humanitarian identifications:** Over the past two decades, forensic specialists have played an increasingly active role in helping to expose the truth about violations of human rights and humanitarian law and in the humanitarian identification of victims of armed conflict and mass disasters. In the 1970's and 80's, the conflicts experienced by various countries throughout Latin America resulted in tens of thousands of disappeared persons. The first use of forensic anthropology to investigate these crimes was made in Argentina in the early eighties, resulting in the creation of a specialized team and the development of procedures later used elsewhere. In the mid 90's, scores of anthropologists and archaeologists of various nationalities were seconded to the Balkans to assist in the collection of evidence for the International Criminal Tribunal for the former Yugoslavia and to work with various organizations in the process of identification of the victims of the conflicts. Investigations continue there in what is, so far, the largest and costliest international forensic operation ever carried out to investigate the missing. The media attention given to the conflicts in the Balkans helped to sensitize the international community to the torment experienced by families who have lost a family member but are without news of their whereabouts. It also helped boost the forensic community's participation in clarifying the fate of the missing.

However, as the 21st century progresses, it appears that the forensic work in the Balkans can be considered the exception, not the rule. In most regions of the world in which people have gone missing,



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there are few, if any external organizations addressing the issue of the missing, and the constraints faced by investigators are often high, including lack of resources and security concerns. Thus forensic professionals find themselves stepping out of their traditional roles in the laboratory and the field to offer support and advice to a number of relevant actors in these contexts, from governmental authorities tasked with clarifying the fate of the missing, to family associations seeking psychological support, to local forensic professionals who are unfamiliar with the complex process of identification of large numbers of remains.

As forensic anthropologists and archaeologists continue to play an increasingly active role in exposing violations of human rights and humanitarian law, it is imperative that tomorrow's scientists understand some of the legal, cultural and scientific challenges they may face when applying their skills and knowledge for humanitarian purposes.

**Forensic anthropology and meeting evidentiary/legal demands:** The traditional definition of forensic anthropology as the application of physical anthropological analyses in a medico-legal setting is no longer sufficient to describe the current philosophical, methodological, and theoretical scope of forensic anthropology. In particular, methods developed within traditional physical anthropology are typically designed to address population level questions, not individual identity, and have little need to consider the potential legal and social ramifications of unreliable or inaccurate results. In contrast, forensic analyses must meet specific legal demands due to the evidentiary nature of the results. Because of the guidelines established from the United States Supreme Court in *Daubert v. Merrell Dow Pharmaceuticals*, 113 S.Ct. 2786 (1993), and from the Canadian courts in *R. v. Mohan*, 89 C.C.C. (3d) 402 (1994), and in the wake of the United States v. Plaza, Criminal NO. 98-362 (2002), anthropological methods may be challenged in court. Thus, it is critical for forensic anthropologists to ascertain, under the rubric of evidentiary examination, the effectiveness of current analytical methods.

While the results of a standard biological profile are rarely the focus of courtroom testimonies, the submission of the forensic anthropological report places all of its contents under legal scrutiny. Furthermore, the forensic anthropologist must be cognizant of how analytical results are expressed within the report and on the stand. Quality assurance is necessary for all forensic anthropological methods to insure method transparency (e.g., recognize method limitations). Researchers must clearly state method accuracy and precision in a manner that is not only statistically significant, but also forensically meaningful. Research intended to conduct validation studies of existing techniques must be performed exactly as described; modifications by each new team of researchers produces unlimited new methodologies, not validations of existing ones. Standardization of research results, including appropriate statistical models and levels of precision, in the form of best practice protocols will help ensure the high quality of forensic anthropological research, and provide a secure foundation for forensic anthropologists in the courtroom.

**Future of trauma analysis:** Historically, the physical anthropologist identified "more or less skeletonized" remains, with occasional requests to "describe any evidence of bone damage" (Stewart 1979). The traditional role of forensic anthropologists never considered, much less allowed, debates of cause and manner of death because the academician, with skills rooted in skeletal biology, only worked on dry, unidentified skeletons associated mainly with cold investigations. Today, forensic science demands nothing less than circumstances of death. Anthropologists can no longer veil or ignore these issues or their consequences in court. The evolution in the courtroom parallels the changes occurring in the field as taphonomy and trauma (ante, peri, and postmortem) interpretations now occupy much if not most of forensic anthropologists' energies.

With the emergence of this 'new' forensic anthropology, professionals, for the first time, are seeing the potential of working alongside forensic pathologists and realizing the value of soft tissues. This partnership lays the groundwork for modern anthropological trauma assessment where the anthropologists are privy to smoking-gun investigations and eyewitness accounts. Eventually, in this scenario, bones are retained and processed free of soft tissue for closer examinations, as evidence. Trauma assessment in bone essentially remained stagnant in anthropology until the flesh was 'put back on' and the body, not just the skeleton, was examined. The role of forensic anthropology is evolving, with strides toward improved trauma and taphonomic assessments; keeping in mind, this is the only area of anthropology pressured by burden of truth.

**Future of assessing ancestry:** For most of the 20th century, American forensic anthropology approached ancestry as a three- or four- way decision: European, African, Native American, or sometimes Asian, reflecting its physical anthropological heritage and overarching American belief in the existence of discrete biological races. In the latter part of the 20th century, demographic realities and Repatriation legislation necessitated a finer-grained assessment of ancestry than the traditional racial approach: assessments such as "Mongoloid" or even "Native American" were no longer sufficient.





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Evaluating ethnicity to the tribal level has proven to be quite doable, and unusual comparisons such as Alaskan Eskimo or Indian vs. Chinese, Sioux vs. Chippewa, Mandan vs. Arikara, and many others have been successfully conducted using craniometrics, mandibular metrics, cranial angles, and postcranial measurements. The same is true for Hispanic groups from the Americas. The construction of databases, especially the Forensic Data Bank, has proven essential to recording and evaluating human skeletal variation geographically and temporally. Given the increased mobility of humans around the world and human rights cases emerging all over the globe, more remains from various parts of the world need to be documented and added to the existing databases in order to improve the precision and accuracy of evaluating ancestry. The affinities of unknown remains can only be judged by the comparative samples available.

During the 21st century, forensic anthropologists (and other forensic scientists) will abandon the race concept when generating the biological profile in favor of probable geographic origins. Evaluating ancestry will be much more appropriate, refined, and productive than assessing race. Craniometrics will continue to be used most extensively to quickly investigate possible ancestries, estimate sex, and find morphological outliers. Statistical methods integrating metric and non-metric attributes will be used more frequently. Given the changing demographics in the United States, all American forensic anthropologists will benefit from an ethnic or "tribal" outlook on human variation, minimally with the indigenous African, Asian, Caribbean, Central American, and South American groups continuing to migrate to the US.

**Considerations for ethical standards in forensic anthropology:** Acceptable methods of handling human remains are decided by legal measures, professional standards and personal beliefs. For forensic anthropologists, professional standards are sketchy and behaviors are often influenced by the background of the individual investigator, circumstances of the death, and framework or level of institutional oversight.

Ethics is the judgment system by which the profession distinguishes acceptable and unacceptable behaviors. These beliefs are partly enacted into the legal system, detailing actions which are proscribed with appropriate forms of punishment or retribution activated within a statute of limitations. Some acts are not subject to criminal prosecution but are contestable in civil court.

Other actions, not illegal or formally contestable, are distasteful and seen as characteristic of someone not holding the same values as the majority of citizens. These acts may be viewed as evidence that the practitioner is greedy, self-centered, ignorant, misguided, or antisocial. Although punishment is not mandated, social repercussions may include diminished/destroyed reputation, shunning, or intervention.

Professional organizations codify the distinction of what is legal yet unacceptable into a Code of Ethics, outlining ideals to which all should aspire or characteristics of unacceptability. The authority behind these codes varies by organization. Some consider them merely a guide for good behavior while others strictly enforce them, barring violators from continuing membership.

Each individual is also guided by a personal code of ethics. This incorporates religious or spiritual beliefs and often reflects values with which each person was raised. There may be wide variation among individuals for acceptable personal behavior even though they may tolerate different behavioral expressions in others.

Handling of human remains are governed by legal requirements and by the personal code of ethics that each forensic anthropologist possesses. However, professional ethics cover only the expert witness aspect of the work and do not bear on the use of human remains in research and investigation. The forensic anthropologist faces a large "gray area" in which claims of scientific value, or "giving voice to the dead," only partly support his or her actions.

It is time that forensic anthropology held its place within biomedical research ethics where such guidelines are considered ubiquitous and universal. Professional standards could provide guidance if they acknowledge both research and casework functions. First, forensic anthropologists must conduct their work with respect to disciplinary standards – adequate sampling strategies, acknowledgement of confounding factors, transparency of methodology, replicability of techniques, and shared information. Second, forensic anthropologists must conduct their work with respect toward the victims whose remains are examined, their surviving families, and/or recognized representatives. Whenever possible, families should provide informed consent to the study and deceased's identity should be protected. When anatomical samples are taken, documentation should facilitate the repatriation back to the remains. Anatomical specimens should be retained only if other means of recording are inadequate for the study. Religious beliefs and cultural practices of the populations from which samples are drawn should be accommodated as much as possible. A common standard of ethics is difficult but not impossible to achieve and the authors hope to begin that conversation with this presentation.



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**Management of forensic laboratories and projects:** Ironically, the relative “newness” of forensic anthropology as a recognized discipline is also one of its strengths within the increasingly complex and integrated world of forensic science. Training in forensic anthropology continues to be broad-based and closely tied to its roots in academic anthropology. For this reason, forensic anthropologists are trained in, or at least exposed to, a wide range of procedures, techniques, and paradigms, including anatomy, osteology, odontology, statistics, molecular biology, archaeology, geology, material-evidence analysis, and cultural relativity and sensitivity.

Anthropologists, by virtue of this broad academic training, are well suited to the task of overseeing and managing large interdisciplinary forensic projects in which the integration of disparate scientific fields is vital to a successful outcome. Further, many anthropologists who have become accustomed to directing research programs (such as large archaeological projects) accrue valuable management experience. Such projects typically present challenges of recruiting qualified personnel, managing multidisciplinary teams, working with limited budgets, coping with high personnel turnover, and timelines.

**Employment in forensic anthropology:** Traditionally, forensic anthropologists were trained as academics, with employment coming from within the higher education system. Some anthropologists worked for the military and other government agencies, with research and consultation as their main focus. Forensic anthropologists conducted skeletal analysis for identification and associated interpretations, both as casework and for the development of new scientific methods. Their teaching responsibilities included training young anthropologists in the methods of forensic anthropology.

As the fourth era of the field defines itself, employment trends have seen forensic anthropologists using their skills beyond the traditional sphere. They are now employed in medical examiner offices, federal and state crime laboratories, disaster response agencies, non-governmental human rights organizations, and research institutions. This trend typifies the growth of forensic anthropology beyond skeletal casework. These jobs often include skeletal analysis as part of the responsibilities, but the actual position title does not usually say “forensic anthropologist.” As the next generation of forensically trained anthropologists begins their search for employment, trends in forensic science, societal pressures, and political agendas will impact areas of potential employment. A savvy forensic anthropologist may look outside traditional employment (i.e. in academe) to positions that may not list “forensic anthropologist” in the title. Federal agencies such as the Department of Homeland Security, the State Department, the Central Intelligence Agency, the Department of Justice, and the Department of Health and Human Services can benefit from broadly trained forensic anthropologists who can address complex questions in human identification, search/recovery, and medicolegal interpretation. Positions such as grant officer, scientific analyst, and program analyst are well suited for anthropologists with broad forensic training. Areas such as biometrics, disaster fatality assessment, terrorism-related forensic issues, and cultural issues of crime in the global setting are just some of the areas where a broadly trained forensic anthropologist could participate. Government contract firms with forensic, biometric, and disaster focuses are another avenue of employment. Anthropologists are currently employed in non-governmental organizations involved in human rights and humanitarian issues (International Committee of the Red Cross, Physicians for Human Rights, International Commission for Missing Persons, and Equipo Argentino de Antropología Forense), both in technical (fieldwork) and program management positions. In state and local medical examiner/coroner offices and crime laboratories, forensic anthropologists have proven their value to the medicolegal investigative process. As this employment trend continues, the field must consider the development of training programs for such positions. Potential developments in science and culture that may impact future forensic anthropologists could include areas such as nanotechnology, DNA modification, new weaponry, the man-machine interface, human cloning, increasingly sensitive surveillance systems, and new types and definitions of crime and justice in an expanding multicultural society.

**Forensic Anthropology, Future, Education**