AN OUTLINE OF FORENSIC ANTHROPOLOGY

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Anthropology is the study of humans. This diverse field is traditionally divided into three subfields: **cultural** (social) anthropology, **archeology**, and **physical** (biological) anthropology. Cultural anthropologists study the beliefs and customs of people in different (usually third world) societies. Archeologists excavate and study the artifacts and architecture of ancient peoples. Physical anthropologists study the anatomy, growth, adaptation, and evolution of the human body. All of anthropology is **comparative** in its approach, examining the differences and similarities between people across the globe and through time.

FORENSIC ANTHROPOLOGY

Forensic anthropology is the application of anthropological research and techniques to the resolution of medicolegal issues, drawing primarily from physical anthropology and archeology. The critical distinction between a forensic anthropologist and a general anthropologist is the former's focus on **human identification**. The subfields of forensic anthropology are:

- forensic osteology
- forensic archeology
- forensic taphonomy

Osteology is the study of the skeleton. Archeology involves the controlled collection and excavation of human remains and other evidence from the scene. Taphonomy is the study of changes occurring to human remains at the time of and after death, including trauma, decomposition, and environmental modification.

EMPLOYMENT

Most forensic anthropologists teach at universities or work in museums and do forensic consulting on a part-time basis. A few are employed as full-time forensic scientists, particularly for the U.S. government and military. Caseloads range from a handful to many dozens of cases a year, depending on the geographic location and population size. At the University of Indianapolis we currently see 15 to 20 cases a year, not including animal remains and ancient skeletons.

QUALIFICATIONS

The vast majority of anthropologists are NOT trained to assist in death investigations. A qualified forensic anthropologist has developed a unique combination of specialized skills that are not normally possessed by general anthropologists or by medical doctors, pathologists, or dentists. These qualifications and skills should include:

- a Ph.D. in physical anthropology, with formal graduate coursework in osteology, forensics, and archeology under the supervision of qualified experts;
- established expertise in human osteology, including skeletal variation, growth, histology, odontology, pathology, and biomechanics;
- training and experience in human identification methods;
- laboratory and museum experience involving the analysis and inventory of human skeletal material;
- a strong background in human anatomy and gross dissection;
- coursework in probability, statistics, and quantitative analysis;
- fieldschools in archeological methods;
- field experience in the excavation of archeological and forensic human burials;
- training in evidence collection and crime scene analysis;
- active membership in the Physical Anthropology Section of the American Academy of Forensic Sciences and the American Association of Physical Anthropologists;
- a record of research, papers, and publications in the field;
- a record of lectures and participation in professional training seminars in forensics;
- college teaching experience in anthropology;
- trial experience.

After completing a Ph.D. in physical anthropology and obtaining sufficient forensic experience, one may apply for certification by the American Board of Forensic Anthropology. Those who complete the rigorous examination become Diplomates (D.A.B.F.A.). There are currently about 50 active board-certified Diplomates in forensic anthropology in North America (for more information, see the Board's website at **www.csuchico.edu/anth/ABFA**).

ADDITIONAL TRAINING

Some forensic anthropologists may have specialized training and expertise in specific aspects of forensic and skeletal analysis, including:

- clay or graphic facial reproduction;
- photo or video superimposition techniques;
- positive identification using radiographic techniques;
- scanning electron microscopy;
- dental analysis;
- close-up and scene photography;
- thin sectioning techniques and analysis of bone histology;
- ability to cast skeletal materials;
- preservation of skeletal materials for long-term curation using commercial preservatives;
- rehydration and preservation of mummified or decayed soft tissues, such as fingerprints;
- analysis of special forms of evidence, including:
  - -- insects (entomology, to estimate time since death)
  - -- blood residues (to determine species of origin)
  - -- hair and fur (to determine species of origin and ancestry)
  - -- decomposition fluids in soils (to estimate time since death)
  - -- pollen (palynology)
  - -- sediments and geological mineral traces (to establish the origin point of buried materials);

- remote sensing for hidden (clandestine) graves using ground penetrating radar, infrared technology, and metal detectors;
- biochemical and trace-element analysis of bone and soft tissues;
- DNA analysis and interpretation;
- assistance at mass disaster scenes;
- involvement in human rights violation cases.

WHAT FORENSIC ANTHROPOLOGISTS GENERALLY CANNOT DO

- autopsies;
- make the final determination of cause or manner of death (this is the job of the pathologist, coroner, or medical examiner);
- make final positive identifications on the basis of dental or medical x-rays (a forensic odontologist or radiologist is best trained to do this).

In Indiana, forensic anthropologists have no legal authority independent of the umbrella extended by medicolegal officials. We therefore serve at the pleasure of the police, coroners, and pathologists. We cannot work at a crime scene without being accompanied by an official. If human remains are present, we cannot disturb them until we are given explicit permission by the coroner. In addition, we prefer to work closely with a pathologist from the outset of a case. If remains are determined to be ancient in origin, we must notify the State Archeologist before continuing.

WHAT MEDICOLEGAL PROFESSIONALS CAN DO TO HELP

- Call the anthropologist early in the investigation, to coordinate recovery efforts. There is no urgent reason to remove decomposed or skeletonized remains from the scene as long as it can be secured. The slight inconvenience of waiting will be offset by the increased quality and extent of the evidence that can be recovered by the anthropologist.

- Context is extremely important, and so the anthropologist will need to visit the scene even if the remains have already been recovered.

- Scene photos and police reports will be extremely helpful.

- If the remains must be removed from the scene, DO NOT package them in airtight plastic bags! Paper sacks are much better. If substantial soft tissues are present, the specimens and/or paper sacks can be placed in a zippered body bag or plastic Rubbermaid container.

REFERENCES FOR FURTHER READING

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