



Forensic Anthropology

If you have ever seen the FOX TV show "Bones" then you may know more about the field of forensic anthropology than you think. The series is loosely based on the works of real-life forensic anthropologists. So, if you haven't seen the show then check it out- it's pretty cool! You can watch episodes by following the link below:

<http://www.fox.com/fod/play.php?sh=bones>



Now, **Forensic anthropology** can roughly be described as the application of the science of physical anthropology to the legal process. Most forensic anthropologists have been specialists in **physical anthropology**, which is the study of human biological function and variation, particularly skeletal biology. Within the last 20 years, forensic anthropologists with know-how in archeological methods have played increasingly important roles in the recovery of human remains.



Brief history of forensic anthropology



The use of forensics in physical anthropological knowledge dates back to about 100 years in the United States, about as long as the field of physical anthropology has been academically recognized. In 1939, W.M. Krogman published "A Guide to the Identification of Human Skeletal Material" in the *FBI Law Enforcement Bulletin*, marking the beginning of the second period of forensic anthropology development.

During the times of World War II and the Korean War, physical anthropologists became involved, and were needed to identify the departed victims of the war. The need for standard information on skeletal development and variation in American populations inspired significant and systematic data gathering and analysis, mostly in young American males. These important contributions increased forensic anthropology's visibility within the world of physical anthropology, and in the forensic community.

The Physical Anthropology Section of the American Academy of Forensic Sciences was established in 1972. Since then, it has expanded from just 14 members to over 200, and is still quickly growing. In 1977, division members formed the American Board of Forensic Anthropology (ABFA) to examine and certify forensic physical anthropologists at the postdoctoral level.

Forensic anthropologists apply standard scientific techniques developed in physical anthropology to identify human remains, and to assist in the detection of crime. This is what makes their job so important! The physical anthropologist's ability to understand the forms and variations of the human skeleton in individuals and populations complements the forensic pathologist's emphasis on soft tissue. Therefore, the application of knowledge concerning human skeletal biology has been the basis of forensic anthropology as a profession. Although, this focus has expanded by some specialists to include: **forensic taphonomy**, which is the interpretation of mostly outdoor death scenes and **postmortem** (after death) processes, and **forensic archaeology**, the recovery of scattered or buried remains.

The examination process of human remains by the forensic anthropologist includes three tasks. One of those tasks is providing a **biological profile** (age, sex, stature, ancestry, anomalies, pathology, individual features) of the **victim**. The second task would be recreating the postmortem period based on the condition of the remains and the recovery environment. Lastly, they would provide data regarding the death event, including evidence of trauma occurring during the **perimortem period** (time of the death).



Taphonomy



Forensic Anthropologists are often called upon to partake in or even direct body recoveries in outdoor settings. Knowledge about the human physical form and function must be combined with scientific knowledge concerning postmortem changes in order to understand the condition of human remains. For example, in an outdoor scene, these changes can be characterized as decomposition of a body, alterations, scattering by scavengers, freezing, and the like. Postmortem changes must be distinguished from **antemortem** (immediately before death) conditions in order for the anthropologist to estimate the correct time of death and so on.

Archaeology



The methods of archaeology are vital tools for the forensic anthropologist handling recoveries, mainly when remains have been buried or scattered. Commonly used methods in archaeology include: infrared photography, metal detectors, and ground-penetrating radar. Accurate methods of excavating buried remains can be critical in the location and interpretation of trace evidence linked with the bodies. Archaeological methods demand complete documentation of the history for each artifact, so maintaining a record for each piece of evidence recovered at a scene is a normal part of the excavation process.

Processing at the scene of the crime

The forensic physical anthropologist regularly participates in searches by law enforcement or medical examiner officials. They can also participate in the recovery of remains in a mass fatality incident or human rights investigation. These searches may be focused on a certain location or a broad area. They may be done in conjunction with search and rescue teams, **cadaver dogs** (dogs trained to find the scent of a decomposing body), or divers.

Processing a scene containing buried remains requires a significant amount of effort and experience, especially if the remains are decomposed or skeletal. First, the area to be examined will be gridded in order to preserve the information and layout of the scene. Before any work is started, the area must be photographed and documented. Any living plants or insects directly associated with the body after death must be collected. The excavation process involves using small instruments such as the **trowel** (a shovel-like digging tool) and brushes. These tools prevent any damage to the deteriorating tissue of the decomposing bodies. Once certain body parts are photographed, they are usually bagged in order to prevent loss of small bones, fingernails, teeth, or any other evidence.



Estimating Age

One thing that a forensic anthropologist must be able to do is estimate the age of a person by means of their bones. The skeleton is formed by the development of ossification centers. **An ossification center is where the process of bone formation occurs, in which connective tissues such as cartilage are turned to bone or bone-like tissue.** For example, in long bones, bone tissue develops from a set of **three main ossification centers: the shaft of the bone or diaphysis, and an epiphysis (the round end of the bone) at either end.** These three centers will eventually grow together when the individual has reached full size. The timing of this process is patterned, depending on the age, sex, bone element involved, nutritional and hormonal status, and individual variation of the person. By the time a fetus is completely developed, around 405 ossification centers are present. When an individual reaches adulthood (usually in their 20s) that number reduces to 206 fully formed bones.

Bone development may differ considerably from person to person. As a result, age estimates should always be expressed as ranges and should provide as many indicators as possible for a single set of remains.

