

The Role of a Forensic Anthropologist in a Death Investigation

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Introduction

The role a Forensic Anthropologist plays in a death investigation is crucial to the field of forensic science as a whole. Forensic Anthropologists understand the forms and variations of various forms of skeletal properties, and apply their knowledge to their work in order to obtain reasonable conclusions. The main focus of a Forensic Anthropologist is to process crime scenes, examine and process remains, develop a biological profile, compile appropriate documentation, and testify in the provincial and federal courts. Their knowledge of the human body contributes to the outcome of a death investigation by providing law enforcement agencies with expert answers and conclusions, which ultimately aids in the outcome of any given case.

Scene Processing

Forensic Anthropologists contribute to scene processing and the location of buried remains by providing law enforcement agencies their expert advice during an investigation. When a Forensic Anthropologist is called to the scene, there are several roles the specialist must accomplish. Firstly, the anthropologist must conduct "on-site identification of scattered remains as they are found to determine whether they are human" [1]. This detection allows the anthropologist to then proceed with "[revisions] of the search strategy in response to emerging anatomical scatter patterns, as well as [inform] the search team when the remains are complete and [when] the search can be discontinued" [1]. Any crime scene is delicate in nature, and the likelihood of contamination is continuously an issue. This is primarily due to the "destruction of the remains by the perpetrator, animals, or time/ [which] makes identification of the subject difficult, if not impossible" [2]. In order to preserve the scene, grids are placed around the crime area. Following this, an anthropologist will set up a screening area where "material from the grave and surrounding area will be systematically sifted through a screen to reveal human remains, artefacts, fibres, and associated insects [1]. Finally, the anthropologist will set up a staging area for excavation; this includes the screening of various plants, earth materials, metals, and sediment [1]. Although scenes are not processed solely by a Forensic Anthropologist, this expert contributes to the discovery and preservation of human remains.

Remains Examination

Forensic Anthropologists must be able to differentiate between human and nonhuman remains, and also have the ability to perform a taphonomic assessment and a soft tissue examination in order to process and inspect remains effectively. When an anthropologist is required to examine remains, the scientist must be able to "differentiate bone from non-bone material/ then differentiate human bone from nonhuman bone" based on the evidence presented [3]. Once the expert has determined if the bones are in fact fragments of a human body, they must then perform a taphonomic assessment. In Forensic Anthropology, "taphonomic consideration has come to mean interpretation of all events affecting the remains between death and discovery," which is determined by using applications such as "estimation of post-mortem interval, environmental reconstruction, reconstruction of post-mortem events, and distinguishing evidence

of foul play from alterations caused by other taphonomic factors" [4]. Forensic Anthropologists also examine "soft tissue changes, including decomposition rates and patterns, disarticulation, dispersion of body parts, and modification of both soft tissue and bone" in order to establish a proper assessment of the remains at hand [5]. The distinction between human and nonhuman remains, followed by the taphonomic assessment and soft tissue examination performed by the Forensic Anthropologist helps this specialist to determine whether or not the materials acquired are of importance in the investigation.

Developing a Biological Profile

Forensic Anthropologists offer unknown deceased individuals an identity by developing a biological profile to portray their physical characteristics. There are various contributing factors that help these professionals establish an individual's age, sex, and stature. When a Forensic Anthropologist must determine an entity's age, they must first apply their knowledge of skeletal and dental development to their conclusions. Firstly, ossification centers in bones help determine age in individuals. These developments "are patterned, depending on age, sex, bone element involved, nutritional and hormonal status, and individual variation" [1]. Following this, ascertaining age also depends on the dental development of the subject. Forensic Anthropologists apply "odontological identification of the individual based on the dental record and support radiographs," which assists them in establishing the age range of the individual [6]. If an anthropologist were to be perplexed by the evidence at hand, there are radiographic studies of living individuals that are offered to these specialists for references [1]. When a forensic expert must determine the biological sex of a subject, "the hip bones exhibit the most sexually dimorphic elements of the skeleton," making it a crucial element in determining the sex. Anthropologists can determine the difference between male and female pelvises, primarily due to "the discrete sex-specific differences in size and shape" [7]. Given this, the pelvis bone under examination by these specialists grants an excellent opportunity to determine the biological sex of the subject. When a Forensic Anthropologist must establish the living stature of a subject, there are many formulas that they can use. Despite this, the "most reliable results are based on long bone lengths and particularly the bones of the lower limbs," or more commonly referred to as the use of allometry [8]. The various different applications of knowledge that anthropologists apply into their work aid in ascertaining a subject's age, biological sex, and stature which eventually generates a biological profile for a previously unknown individual.

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Received May 02, 2012; Accepted June 16, 2012; Published June 18, 2012

Citation: Stanojevich V (2012) The Role of a Forensic Anthropologist in a Death Investigation. J Forensic Res 3:154. doi:[10.4172/2157-7145.1000154](https://doi.org/10.4172/2157-7145.1000154)

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Cause of Death

The evidence that a Forensic Anthropologist presents to a coroner or medical examiner is crucial in understanding and determining the cause of death in an investigation. Forensic Anthropologists “commonly classify traumatic events as resulting from sharp forces, gunshot or blunt forces”. Blunt force damage “produces impact marks or fractures, and can fragment bone,” which can ultimately determine shape, trauma type, or weapon class [1]. When an anthropologist investigates a gunshot wound, they will “reconstruct a skull shattered by gunshot in order to evaluate the injuries” [1]. These evaluations help the forensic specialist to determine the entrance and exit wounds, as well as how many shots were fired. Blunt and sharp force damage, as well as gunshot wounds “[generate] unique skeletal attributes that are usually readily identifiable in unmodified remains”. These injuries ultimately aid the Forensic Anthropologist in providing the coroner or medical examiner with information necessary to determine the cause of death, based on damages to the bones.

Documentation and Eyewitness Testimony

A Forensic Anthropologist may be considered an expert in his or her field of study. These forensic specialists, and various other forensic scientists, are expected to document all procedures with the utmost precision. Anthropologists must include a “full range of anthropological measurements and determinations,” also taphonomic assessments, biological profiles, individualization of characteristics, and evidence of perimortem trauma [1]. If a Forensic Anthropologist is “involved in [a] criminal investigation, which may ultimately be dealt with in a court of law, the impact of their work can carry serious consequences with regard to the outcome of a case” [9]. It is crucial that the specialist testifying remains scientifically neutral during the hearing. This is primarily due to the fact that they “shoulder a considerable amount of responsibility, not only to the legal community, but also to the victim and the accused within the crime in question” [9]. Documentation and eyewitness testimony is required of most forensic scientists, as it helps the overall outcome of a death investigation by providing the legal system with a scientific explanation of evidence.

Conclusion

Forensic Anthropologists play an important role in establishing the cause of death in an investigation. These individuals work together in order to draw conclusions from evidence, primarily by applying their knowledge of the human skeleton to a case or subject at hand. The main focus of a Forensic Anthropologist is to process the crime scene, examine and process remains, create a biological profile, provide appropriate documentation of their findings, and testify in the court of law. Their knowledge of the human body contributes to the outcome of a death investigation by providing law enforcement agencies with expert answers and conclusions, which ultimately aids in the outcome of any given case.

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