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Introduction: Forensic anthropology and interdisciplinarity

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This supplement has been a stimulating project which has allowed us not only to examine the areas of work that forensic anthropologists are involved in on a daily basis, but also to explore the cross-fertilization that continues to occur between forensic anthropology, biological anthropology, and social anthropology. We are at an exciting point in our profession, having established a certification process within the United Kingdom, with the Royal Anthropological Institute (RAI) as our governing body. This certification process is now spreading internationally for forensic anthropology and work is ongoing on certification for those social anthropologists who take on work for the courts. This body of articles showcases both the past, the present, and the future of our specialties and how they interrelate.

What is forensic anthropology?

There is no one definition of forensic anthropology. At its core, forensic anthropology uses anatomical, physical anthropological, and social anthropological techniques to analyse the human, or what remains of the human, for medico-legal purposes.

Traditionally, forensic anthropologists have utilized their skills to assist with the identification of the deceased, especially after extensive decomposition and skeletonization, thermal damage, or fragmentation. Using both metric and non-metric methods that examine human bones, they compile a biological profile of the individual, identifying probable population affinity, age at death, biological sex, and stature. Additionally, more individuating features include information about diseases that were suffered, past injuries, congenital abnormalities, previous surgery, and dental treatment or bone anomalies. Whilst identification of the deceased remains central to the work

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of forensic anthropologists, their work has evolved over time and today includes assisting with recovery of remains (especially in situations where fragmentation and decomposition have occurred), assisting with establishing the time since death interval, and assisting the forensic pathologist with understanding the manner of death when there is relevant skeletal evidence.

History of forensic anthropology

Forensic anthropology is a relatively new discipline with its academic roots planted firmly alongside biological/physical anthropology, which in turn looks to anatomy as its academic originator. Many of the early medico-legal cases involved experts whose training was in human anatomy, such as Jeffries Wyman (1814-74), a professor of anatomy and physiology, who was called to give evidence in the trial of Harvard chemist Dr John Webster, who was accused of the murder of his colleague Dr George Parkman, to whom he was in debt. Parkman was last seen alive entering the Medical College at Harvard, where Webster's office was situated, on 23 November 1849. Parkman was reported missing by his family the next day, but despite extensive searches, his body was not found. When questioned, Webster reported that he had met with Parkman, had paid him some of the money that he owed him, and that Parkman had subsequently left the meeting alive. The college janitor, Ephraim Littlefield, became suspicious of Webster and spied him burning something in his furnace. He then chiseled his way into Webster's privy, where a pelvis and dismembered lower limbs were found. Further bone fragments were located in the furnace area, and after extensive searching a torso was found in a chest. Jeffries Wyman gave evidence at the twelve-day trial, having identified the bones as human and belonging to an individual measuring about 5 feet 10 inches, the height of the missing man. Further evidence was also heard that the body had been dismembered, and identification was presented by a dentist who had undertaken dental work on the victim, helping to confirm that the body found belonged to the missing Parkman.

Parkman's murder marked probably the first case in which scientific evidence of this type was presented in court. It was not the last, however, and cases such as the trial of Alfred Leutgert in Chicago in 1897 demonstrated that it was possible to gain forensic evidence from the bones of the victim, even if they were fragmented or damaged by post-mortem events. Alfred was accused of the murder of his wife, Louisa, after she went missing in May 1897. She was last seen alive walking with Alfred on 1 May and he reported her missing six days later. No evidence of Louisa was found despite searches until Alfred's factory became an area of interest. This factory produced sausages and the watchman pointed the searchers in the direction of one of the vats, where small fragments of bone and a gold ring, which was purported to belong to Louisa, were found. This time it was an anthropologist and ethnographer, Dr George Dorsey, who identified the bone fragments as belonging to a human female, and duly gave evidence in court. Each of these trials resulted in a great deal of media publicity and they are commonly seen as the beginning of forensic anthropology being used in judicial proceedings.

The underpinnings of any forensic science are important, and admissibility requirements demand that evidence presented in court is based on robust science. This was driven in the formative years by scientists such as Thomas Dwight (1843-1911), a professor in anatomy at Harvard who created a skeletal collection that would allow him to undertake research. Other pioneers, such as Mildred Trotter (1889-1991),

Thomas Wingate Todd (1895-1938), Thomas Dale Stewart (1901-97), Wilton Marion Krogman (1903-87), Clyde Snow (1910-67), John Lawrence Angel (1915-96), Thomas McKern (1920-74), and Ellis Kerley (1924-98), were to follow. The list is impressive and these individuals' work continues to form the basis of the specialism. (A full listing that acknowledges all of those who contributed to the field as we know and recognize it today is outwith the purview of this article.) Publications and single cases were to cement the growing reputation of the field in the early beginnings, but it was not until 1939 that the publication of Krogman's 'A guide to the identification of human skeletal material' was to mark the beginning of significant change in this area of practice – an era driven by subsequent events in Europe and across the world.

As has been the case for many areas of science, human conflict has propelled the development of the field of forensic anthropology. This has been due to the role that forensic anthropologists have played in the identification of those who have fallen as result of conflict, not only the military dead but also, in more recent conflicts, civilians and combatants whose death has been attributed to war crimes. Work during the Second World War and the Korean War underpinned the repatriation of military deceased, and this tradition has continued with forensic anthropologists continuing to pursue the identification and repatriation of military deceased from the Vietnam War and the First World War, both in the United States and in the United Kingdom. As time has progressed, this work has extended to conflicts in other countries, and forensic anthropologists have been a key part of the identification and information-gathering process in Kosovo and Bosnia, with much of their evidence being presented in the International Criminal Court. It is to be seen if this will be repeated once the events in Ukraine are finally over. In addition to responses to acute crises, today there are established teams that include forensic anthropologists working to locate, recover, and identify the missing in countries including Argentina, Guatemala, and Spain, to name a few. Many of these countries have lists of missing persons in the tens of thousands. The forensic anthropologist's role in the process of location and identification remains key to the return of the missing to their living relatives.

As well as long-running search, location, and identification programmes, forensic anthropologists assist with the identification of the victims of mass fatality events. Forensic anthropologists were involved, for example, in the recovery and identification of victims of the September 11 attacks in New York in 2001 and the Black Saturday bushfires in Victoria, Australia, in 2009. Their involvement is not restricted to these large-scale events, however, and today forensic anthropologists are increasingly involved in domestic cases in relation to both suspicious and non-suspicious deaths. This is predicated on their ability to identify human remains, even when damaged and subject to post-mortem changes such as thermal damage, as well as on their ability to begin to develop a biological profile of the remains, marking the beginning of the identification process.

Challenges to modern forensic anthropology

The field of forensic anthropology, as it appears today is not without its controversies, although some of these will and do spill over into neighbouring specialties such as archaeology and biological anthropology. Whilst based on anatomical variation, most of the methods that are undertaken in forensic anthropology rely on techniques developed and tested on skeletal collections, many of which were curated in the twentieth century

and, it can be argued, are no longer representative of diverse modern populations. As a result, many of the methods developed require re-testing to ensure that they remain applicable today. Forensic anthropologists are also questioning, quite rightly, the provenance and permissions that surround some of the skeletal collections that were curated in the past.

There is a relevant and ongoing debate within the forensic anthropology community about the use of terminology and attribution of population affinity to individuals through the assessment of skeletal variation. This debate is and continues to be, caused by the uncomfortable parallels with racism that existed in the past as well as the understanding that human variation is not linked with racial typologies. More recently, authors have argued that the move to change terminology from 'race' to 'ancestry' whilst still undertaking the same analyses has simply hidden the issue rather than improving or resolving it because the term 'ancestry' has been used as a proxy for social race despite this being scientifically invalidated. Others argue for a complete move away from thinking in terms of grouping for ancestry to the identification of population affinity, thus combining cultural factors with historical events, reflecting the realities of modern populations. Whilst the move towards this approach is slow, it is gaining momentum, creating analyses that are more reflective of populations in an increasingly complex world.

Forensic anthropology in the United Kingdom today

With an increasing focus on the standard of forensic science that is being used in the justice systems of the United Kingdom, there was a recognition that forensic anthropology needed to be subject to a process whereby it could ensure standards for end users whilst also providing a career path for those entering the profession. For nearly a decade, the RAI has overseen a certification process that divides practitioners into levels of competency, allowing end users, whether they are the judiciary, the police, or others wishing to engage the service of a forensic anthropologist, to confirm the level of experience and knowledge of the practitioner. The three levels of competency are summarized below:

- Chartered Forensic Anthropologist (ChFA): The highest level of certification. These are highly experienced practitioners with courtroom experience.
- Forensic Anthropologist II (Cert. FA-II): This level includes practitioners who have evidenced competence in both their practical and theoretical knowledge of forensic anthropology. They may not yet have given evidence in a courtroom, but they will be mentored by a ChFA to assist them in this regard.
- Forensic Anthropologist III (Cert. FA-III): The practitioners at this level have evidenced that they have some experience and knowledge in the field of forensic anthropology. They may not have had real field experience with a case, but they will be mentored by either a ChFA or a Cert. FA-II. Cert. FA-III practitioners are not sufficiently experienced to give evidence in court.

All practitioners can progress through the varying levels, providing evidence of continuous professional development, training, and gained experience throughout the period of their certification. Additionally, the RAI, in conjunction with the Forensic Regulator of England and Wales, produced a code of practice for forensic anthropology (Royal Anthropological Institute & Forensic Science Regulator 2018) and

more recently, the Royal Society, in partnership with the Royal Society of Edinburgh, was involved in the production of a judicial primer in forensic anthropology (Hackman, Delabarde, Roberts & de Boerr 2022) which is now available to judges in all UK courts.

The future of forensic anthropology

There is an increasing recognition of the skills which a forensic anthropologist can bring to an investigation, whether domestically or in a large-scale mass fatality event. This does require that the profession ensures that the methods used are relevant to modern populations and make the best use of modern techniques that are available to them. The increased use of imaging techniques such as computed tomography (CT) to examine and assess human remains is a perfect example of this.

The articles in this supplement are reflective of the modern profile of forensic anthropology, reflecting the level of interdisciplinarity that it has reached, as well as the various fields in which forensic anthropologists work. The articles include the introduction to a novel method for undertaking literature reviews, incorporating a freely available, newly developed R code to assist with the analysis of publications (Panci & Hackman). A further novel technique that is undertaken by forensic anthropologists is reflected in our article which outlines the validation and rationale for assisting the police with the investigation of perpetrators where the only evidence of who they might be is found in images of their hands (Hackman & Black).

The article by Rose introduces the ideology behind the new move to certify social anthropologists who undertake work for the justice process, whether on the criminal or the civil side. The RAI is working with social anthropologists internationally to ensure that they have a certifying body that will assist them with support and provide professionally supported mentoring as they gain experience within court processes, a truly exciting and ground-breaking approach that will provide support and enhance the career path for these practitioners.

The other articles reflect the overlaps that exist between social and forensic anthropology and how in reality, whether work is being undertaken within a mass fatality scenario (Easthope), in a more traditional examination of buried remains (Drew & Madden), or to understand how lifestyle impacts osteology (Merritt), these two areas of study interlink and support and enhance each other. The supplement concludes with reviews of three books in the field.

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