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Forensic Anthropology Population Data

Critical issues in the historical and contemporary development of forensic anthropology in Australia: An international comparison

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ABSTRACT

The aim of this brief critical qualitative analysis is to examine the development of forensic anthropology in Australia, at a time of significant change in the discipline. It will briefly summarise its historical establishment, making comparative reference to other regions—particularly the United Kingdom and United States, and the influence of the Bali Bombings of 2002, Indian Ocean earthquake and tsunami of 2004 and Black Saturday Bushfires of 2009. The analysis goes on to consider key factors in research in forensic anthropology in the United States, and the development of standards and regulation in the US and UK. The significance of research in post-mortem diagenesis in Brazil—a country sharing aspects of climate, soil types and demography with Australia—is also considered, as well as the significance of patterns of casework encountered in Australia compared with those of other jurisdictions. While forensic anthropology as a discipline has grown remarkably in recent years, this analysis suggests that research and training tailored to the specific pattern of casework encountered in Australia is now essential to support the development of national standards in science, education, and professional regulation. The significance of the establishment of the first taphonomy research facility outside of the US—the Australian Facility for Taphonomic Experimental Research—is briefly considered with reference to what this facility may offer to the development of forensic anthropology in Australia.

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1. Introduction

Forensic anthropology (FA) is open to a range of definitions [1–5]. While forensic anthropology could—in the broadest sense—encompass the application of all anthropological knowledge in the interests of the courts [1], it refers in practice to the application of physical anthropology, either generally to 'problems of medico-legal significance' [2,3] or specifically to 'the analysis of human remains to legally establish identity' [4]—or, more frequently in contemporary practice, to provide investigative evidence leading to identification legally established by other means—such as DNA profiling [1,5].

While both the European and American roots of forensic anthropology have been widely acknowledged [2,3], attention given to other regions and smaller jurisdictions has been relatively sparse and sporadic [6–9]. The aim of this analysis is to very briefly describe the historical development of forensic anthropology in

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Australia, with reference to European and American influences, and to undertake a brief qualitative assessment of critical issues affecting development in Australia by comparison with the UK and US, and also with Brazil; a country which shares similarities in size and climate—and, to a relative extent, population density—with Australia. The analysis concludes with some cautious recommendations for future priorities in education and training, research, and professional practice.

2. Historical development of forensic anthropology in Australia

Donlon's reviews [10,11] of forensic anthropology and casework in Australia provide many insights into the origins of the discipline. Practice has essentially grown out of anatomy and archaeology—as it has in the UK [4,12]—with most practitioners reaching the destination of forensic anthropology having first studied one or both of these disciplines. It was anatomists who, originally, were called upon by police when—typically—skeletal remains presented that required the expertise of someone with extensive osteological knowledge. These early anatomists then trained others, some of whom broadened their areas of research and training to include soft



tissue, trauma analysis and time since death estimation, and began working more regularly with the police as experts in forensic human identification rather than as anatomical scientists [10]. The first true international acknowledgement of forensic anthropology in Australia as a discipline in its own right came through a presentation by two American forensic anthropologists, Bill Bass-of the University of Tennessee, Knoxville Forensic Anthropology Centreand Diane France-a world-renowned forensic anthropologist with a sub-speciality in differentiating human from non-human material [13–16] —, who gave the joint keynote address at a conference held by the Australian and New Zealand Forensic Science Society in Sydney in 1996. As Donlon [10] notes, the development of forensic anthropology in Australia could be seen as being held back relative to that of the United States as, prior to the Vietnam War, it was not the Australian practice to repatriate-and hence identify-war dead as it was in the US. After this event, however, development advanced rapidly as individuals and groups working at different Universities and forensic centres continued to develop research and casework activitieswhich grew noticeably in number after 1996 [10]. In the 2000s, however, a whole series of events of national and international significance were to influence the development of Australian forensic anthropology: These included terrorist attacks on tourist areas in Bali in 2002 and on the Australian Embassy in Jakarta in 2004 [17]. The latter incident led to nine fatalities and the former to 202– of whom 88 were Australian. Boxing Day 2004 saw the biggest natural disaster of recent times, the Indian Ocean earthquake and subsequent tsunami led to the deaths of 226,000-including 26 Australians [18]. The ever-present problem of bushfires during the hotter months due to Australia's hot, dry climate precipitated a fire in February 2009, an event that has become known as Black Saturday. This fire caused the deaths of 169 people, all of whom were identified via the Disaster Victim Identification (DVI) process [19].

Although much was learnt from each of these incidents, research and subsequent academic publications regarding the establishment of time death interval to help identify deceased individuals had to rely on case-based evidence to develop Australian standards, as until 2016 there was no forensic facility that allowed the systematic study of human decomposition under controlled conditions in an Australian context.

3. Contemporary development of forensic anthropology in Australia

Taken together, these events have led cumulatively to a range of developments in forensic anthropology and in the allied disciplines of forensic archaeology, pathology and odontology, each of which have contributed to the investigations concerned [19–22]. The events have also led to a clear recognition of the role of forensic anthropology in mass atrocity and mass disaster victim identification—as they have in other regions [9,23–25]—as well as in routine casework. Thus, a number of core functions of the forensic anthropologist are now recognised that allow the discipline to aid the judicial process. These include the identification of human remains—both in single death cases as well as mass fatality incidents—and search and recovery of human remains with understanding of the mechanism of disposal, in association with allied disciplines such as forensic ecology¹ [26] and forensic

archaeology, and the estimation of time since death, again in collaboration with other disciplines, notably forensic entomology.

Over the past five years research, training, and teaching in forensic anthropology have advanced considerably in Australia-in ways that both mirror and differ from developments elsewhere. In Australia, the terrorist attacks in Bali in 2002 and 2004 Boxing Day tsunami increased awareness amongst forensic practitioners and police forces of the need for the greater inclusion of medical sciences (including forensic anthropology) in the DVI process. Similarly, following the Indian Ocean earthquake and tsunami in 2004, forensic practitioners and police in the UK realised that Britain too did not have enough trained police officers to manage such a large and complex recovery effort and to identify and repatriate British citizens as quickly as possible [27,28]. A representation was made to the British Government, led by forensic anthropologist Professor Sue Black of the Centre for Anatomy and Human Identification, University of Dundee, Scotland, which initiated momentum for a national training program in DVI [29]. As a consequence, the Home Office funded training for 500 police officers in all aspects of mass fatality management and emergency mortuary procedures, including basic forensic practices, to ensure each officer understood the requirements of all the disciplines involved in the process, and to ensure that when-not, sadly, if-another mass fatality involving British citizens occurred, Britain would be ready to respond to the highest standards [30].

In Australia there are a number of centres producing the bulk of forensic anthropology research, and as a result of the size of the country, it makes sense to discuss these on a State-by-State basis (although the discussion here offers examples only, and is not intended to summarise all of the research currently taking place in Australia). In the west, the University of Western Australia has a Forensic Anthropology Group, whose research focuses on the development of morphometric tools and standards for application to Australian remains, and the development of a 'Human Identification Package' for use in Australian casework and DVI deployments, which includes the formulation of population-specific anthropological standards [31]. The majority of recent research undertaken has focussed on living individuals, using advanced technologies to improve our understanding of age and sex estimation [32–36].

In Victoria, the Victorian Institute of Forensic Medicine (VIFM) [37] is one of the leading forensic medicine facilities in Australia, if not worldwide. As with many forensic disciplines, the casework tends to dictate the research priorities, and estimation of time since death is always a key factor when trying to identify unknown human remains, or interpret a crime scene and unravel the order of events that have taken place surrounding a fatality. The VIFM employs two forensic anthropologists, who have in the past 10 years published research on the requirements for missing persons' data, and the specific problems associated the Australian context-including the fact that each of Australia's states and territories operates its own Missing Persons Unit, with distinct state and territory legislation [38]. More recently, research published by the VIFM has focused on DVI, a specialized area of forensic anthropology that requires highly skilled forensic practitioners able to distinguish and identify admixed, fragmented, or highly decomposed individuals from some of the most complex forensic scenes. Case-based research has examined the use of advanced imagining techniques and their application to identification in multiple fatality incidents [21,39], and the forensic anthropologist's role in identifying burnt remains using the 2009 Black Saturday bushfires in the state of Victoria as a case study [24].

New South Wales has a number of individuals undertaking research, teaching, and casework, with the University of Sydney, the University of Western Sydney, the University of Wollongong,

¹ Or 'forensic botany' as it is also known, can be defined as the examination of plants and plant matter to determine species and origin. In some cases suspects or victims may leave behind plant parts, spores, seeds or pollen that have adhered to their clothing, skin, hair, etc., or weapons or other items of interest. If the plant species in question is found only in limited areas, its presence may indicate where an item or individual has been, or where a suspect/victim lives. Forensic botanists also analyse stomach contents, wheel arches of cars, etc., to collect botanical evidence that may be relevant in linking suspects, victims, and scenes.

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