Barra O'Donnabhain
Maria Cecilia Lozada *Editors*

Archaeological Human Remains

Legacies of Imperialism, Communism and Colonialism

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About the Editors

Barra O'Donnabhain, who holds a Ph.D. degree in Anthropology from the University of Chicago, is an Irish bioarchaeologist who has been conducting archaeological research in Ireland and other parts of the world over the last three decades. His publications cover a wide temporal span as well as a broad range of themes but are characterized by an integrative approach in their reconstructions of past lives. This is exemplified by recent papers dealing with the political use of the ritualized violence of public executions and the role of the quotidian use of material culture in the construction of identity in Viking Age Dublin. O'Donnabhain has directed and collaborated archaeological projects in a number of world areas. Since 2012, he has been conducting excavations at the nineteenth century prison at Spike Island in Ireland. He is coauthor of the 2016 volume *Too Beautiful for Thieves and Pickpockets: A History of the Victorian Convict Prison on Spike Island*. He is currently on the faculty of the Department of Archaeology at University College Cork and is on the Board of Directors of the Los Angeles-based Institute for Field Research.

María Cecilia Lozada is a Peruvian bioarchaeologist who has been conducting archaeological research in the South Central Andes for the last 20 years, and holds a Ph.D. degree in Anthropology from the University of Chicago. She uses a multidisciplinary approach to study the past, combining archaeology, human osteology, and ethnohistory, which is exemplified in her book *El Señorío de Chiribaya en la Costa Sur del Perú* (2002) and multiple publications that showcase her integrated social and biological reconstructions of past Andean societies. In 2013, she co-edited the volume *The Dead Tell Tales* that was published by the Cotsen Institute of Archaeology Press at UCLA. Along with Vera Tiesler, she is co-editor of the book *Social Skins of the Head. Body Beliefs and Ritual in Ancient Mesoamerica and the Andes,* University of New Mexico Press (2018). For the past 11 years, Lozada has been the main field archaeologist and human osteologist for several multidisciplinary and collaborative projects in northern Chile co-sponsored by the Cotsen Institute of Archaeology at UCLA and La Universidad de Chile. In 2009, she

initiated a new archaeological project in the Vitor valley in southern Peru. As the Principal Investigator of the Vitor Archaeological Project, Lozada leads a multinational team that includes Peruvian investigators as well as numerous American students and researchers from institutions such as UCLA, the Field Museum of Natural History in Chicago, and the University of Chicago. She is currently a Research Associate in the Department of Anthropology at the University of Chicago and has been actively working to promote collaborations between local universities in Peru and the United States through her projects.

Chapter 1
Contested Bones: Archaeological Human Remains and Legacies of Power

Barra O'Donnabhain and María Cecilia Lozada

This book is a companion to the 2014 volume *Archaeological Human Remains: Global Perspectives* (O'Donnabhain and Lozada 2014) and the two should be read in tandem. In the 2014 volume, we profile 16 countries on 6 continents, many of which are post-colonial societies. In this companion volume, we present 10 more country profiles. Our aim in these two books is to examine past, current and future trends in studies of archaeological human remains and to address the influences that different geopolitical contexts have on the study of this category of archaeological material and how such remains are used to address broader anthropological issues. Unlike other compendia that have tended to chart the historiography of the aspects of the study of archaeological human remains in different areas, one of the strengths of these two books lies in the manner in which the contributing authors have situated the development of the discipline within broader sociopolitical and theoretical contexts. In each of the two collections, the contributors were asked to outline the origins and subsequent development of studies of archaeological human remains in their country. They were also asked to consider if these origins were an indigenous phenomenon or if they were linked to schools of researchers from elsewhere as well as if the origins of studies of human remains in their country were linked to the development of national identities. As well as documenting the past, the contributors were asked to consider current trends in the study of archaeological human remains and outline the directions that such studies may take in the future.

While the Americas were very well represented in the 2014 volume (Argentina, Brazil, Canada, Mexico, Peru, the USA, Venezuela), we are delighted to include a paper on the situation in Chile in this collection (Chap. 2) as it presents a different

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scenario. In common with the trajectory seen in many other countries, the disciplines in which archaeological human remains were studied were fostered by the state in the nineteenth century as a means of creating a sense of unity among peoples with a diversity of identities and backgrounds. In the twentieth century, the study of human remains in Chile was strongly influenced by two physicians who trained in the USA, the Chilean, Juan Munizaga, and the American, Marvin Allison. Munizaga established a strong skeleton-based research programme that had a significant archaeological orientation and a lasting academic legacy. While Allison also conducted research on skeletal material, his main contribution was to the study of mummies and their palaeopathology. The political changes brought about by the military coup of the early 1970s affected all aspects of academic life in Chile, including research into human remains. These studies resurfaced after the return to democracy with a new vigour and with forensic anthropology playing a critical role in restoring civil society in the post-Pinochet era. The vigour of bioarchaeological research in Chile is further augmented by strong government funding that has resulted in most projects being conducted by locals rather than by foreign research teams, unlike the situation in many neighbouring countries.

China (Chap. 3) presents a fascinating example of a long scholarly tradition that is largely unknown in the West. When anthropology appeared in China in the late nineteenth century through contact with the West and Japan, it had a strong biological orientation, while archaeology remained with the humanities. While this can be seen as following a European model, it also conforms with a much more ancient local approach that linked the study of human variation with anatomy. This tradition was also linked with a rich fossil record. Like many other countries in the nineteenth and early twentieth centuries, racial typologies were developed in China as a means of understanding past population dynamics and migrations. In dealing with human variation, Chinese scholars draw a critical distinction between their understanding of the concept of race and that which emerged in the West. Reflecting the influence of communist ideology, the stated aim of Chinese research on race was and remains to establish the equality of human groups with variability being understood to relate to environment and population history. Chinese scholars are not unique in adopting this approach as is apparent in the chapter dealing with Russia (Chap. 9 in this volume). While collaborations with researchers from other parts of the world have become common in China since the 1980s, local scholars lead these efforts as can be seen in the publication record.

Some of the earliest investigations of archaeological human remains were in Egypt (Chap. 4), and the allure of ancient Egyptian bodies persists, not least at the level of popular culture. The fascination with mummies has tended to eclipse other human remains from the Egyptian past, and it is only recently that ancient skeletal remains have received attention. Egypt presents a really interesting inversion of the typical colonial manipulation of the past, as detailed in many of the papers in both the 2014 publication and this one. In most other colonial settings, past populations were construed as primitive with the implication that this continued to the present. In contrast, Western Europeans have lionised the Egyptian past since the time of Napoleon. In parallel to the physical looting of Egyptian antiquities to fill European

and other museum collections, archaeological narratives of hyperdiffusion from a single source in Egypt led to the pharaonic past being poached by European empires to form part of their imagined national genealogies (in the twentieth century, post-independence African nations also linked their ancestries to Egypt: see Chap. 10 of the current volume). Despite this exaltation of the Egyptian past by European powers, the nineteenth- and early twentieth-century population of Egypt was conceptualised and treated in a manner similar to colonial subjects elsewhere. The lack of indigenous training programmes that persists to this day can partly be understood as a product of the more recent history of Egypt but can also be understood in terms of a legacy of colonialism.

With a scholarly tradition stretching back to the beginning of the Early Modern Period, a rich fossil record and contributions from such figures as Lamarck, Cuvier and Broca, biological anthropology in France (Chap. 5) rests on deep foundations. In their contribution, Knüsel and Maureille chart the development of the discipline and its close links with prehistory and palaeontology. Many of the chapters in both the 2014 volume and this book highlight the impact of colonialism on countries that were colonial subjects. In this chapter, we see the reverse: the effects of the colonial experience on shaping academic traditions at the imperial centre. Differing understandings and approaches to the issue of race led to a period of alienation between Francophone and Anglophone approaches to human variation after World War II. More recent trends have seen a reconvergence and the emergence of French schools of human osteoarchaeology and bioarchaeology. These have a strong local flavour, incorporating more recent indigenous approaches such as archaeothanatology. France is unique for many reasons, not least the strong pro-science stance fostered by the state since the nineteenth century and the depth of public engagement that results. In terms of archaeological human skeletal material, this goodwill contributes to general popular support for the excavation and long-term curation of such remains.

Chapter 6 deals with Germany where Blumenbach's seminal contribution to the discourse on human variation in the eighteenth century was followed in the nineteenth by numerous German missions to different world areas. These facilitated the prodigious contribution of the anatomist Rudolf Virchow who played a pivotal role in the development of skeletal studies in such diverse locations as Armenia, Brazil, Greece, Turkey and Venezuela (all profiled in the 2014 volume). Virchow and some of his contemporaries left a monumental legacy with some late nineteenth–/early twentieth-century German physical anthropologists noting the fallacy of racial and typological approaches. Despite the emergence of such narratives, Grupe and Wahl chart the catastrophic impact of the rise of National Socialism on academia in general and anthropology in particular when even the most renowned academics were not immune from political pressure. The methodological focus of German physical anthropology post-World War II mirrors the systematic data recording and reluctance to theorise that was seen in German archaeology in the same period (Härke 2000). The divergence of approaches that emerged between East and West Germany is an interesting reflection in the manner in which academic praxis can be driven by political ideologies. In recent decades, physical anthropology is no longer seen as

an ancillary discipline to archaeology, and a more integrative approach has emerged. This has allowed facilities such as the Max Planck Institute to establish themselves as a global leader, in this instance in the field of ancient DNA.

In New Zealand (Chap. 7), the indigenous voice is much stronger than in many of the other post-colonial societies profiled in these two volumes. Colonisation in the nineteenth century was accompanied by a significant trade in human remains of the local population. With this background, it is hardly surprising that many New Zealand-based researchers today work outside the country, mostly in the Asia-Pacific region. However, research is also carried out locally, and Buckley and Petchey outline the development of culturally sensitive legislation and procedures around the excavation and curation of archaeological human remains. They also provide two case studies, one on a Maori site and the other associated with European settlers, where significant community engagement was an important factor. This collaborative approach bodes well for the future of bioarchaeology in New Zealand and provides a positive role model.

Portugal (Chap. 8) presents an interesting case study where both nationalism and imperialism played important roles in the nineteenth-century origins of studies of a distinctive school of the study of archaeological and other skeletal remains. Through an examination of the collections extant in Portuguese institutions, the chapter looks at the motivations behind the collecting process. Portuguese scholars were part of a wider European and international confraternity who traded in crania. In the forging of national identity, these crania were used to explore ancient migrations and to 'demonstrate' that the historical presence of Moors and African slaves had not diluted the essentially European nature of the Portuguese population. In common with other colonial powers, physical anthropology was used as a tool in Portuguese colonialism and the development of narratives of race, difference and subordination that legitimised and sustained these enterprises. The latter process was facilitated partly by ensuring that colonial subjects internalised the world view of the coloniser, including the subordinate status of the colonised and their bodies (Fanon 1967). In a poignant illustration of this process, Santos presents the story of Manjak people from Guinea-Bissau, whose canines had been sharpened earlier in their lives, having these teeth pulled to avoid the embarrassment of being considered 'uncivilised'. For local cultural reasons, Portugal remains unique in its holding large collections of modern remains of known biography. These collections are being made available for study, and their potential contribution, particularly in terms of methodological research, is very significant. Similarly, collections of colonial origins are now being used to further methodological approaches to the study of ancestry in forensic anthropology.

Russia (Chap. 9) has much in common with some of its European neighbours in that it was growing as an imperial power during the period that saw the birth of anthropology. Unlike its neighbours however, Russia's empire was contiguous with its metropolitan core, and this may have contributed to the development of narratives of race that differed from those fostered by Western European imperial projects. Moiseyev, Buzhilova and Murphy argue that the Russian conceptualisation of race was less hierarchical than that which developed in other imperial contexts and

that a more egalitarian view of human variation was promoted by the Soviet Union after 1917, not unlike the narrative that has been promoted in China (Chap. 3). And yet the Soviet regime's interest in understanding the variation in its subject peoples remained high as many research projects that examined non-Russian populations of the USSR were undertaken in the decades after the October Revolution. Prior to the collapse of the Soviet Union, contacts between Russian scientists and those in the West were discouraged, and the discipline developed a strong local flavour. This has changed since 1991, and, after a period of profound change with the fragmentation of the USSR and its scientific community, the twenty-first century has witnessed the engagement of Russian scholars with the global scientific community.

The final chapter in this volume deals with Senegal (Chap. 10) where early scholarly work on human variation and with archaeological skeletal remains developed in the context of French control of much of West Africa and the use of science to legitimise the colonial enterprise. Tensions between scientists and colonial administrators arose when the excavation of burials associated with impressive archaeological remains challenged ahistorical views of the region and its population as culturally and technologically stagnant. After independence in 1960, such Eurocentric fantasies were further challenged by local scholars who developed narratives linking the region's history with the cultural achievements of the Nile Valley (see also Chap. 4 of this volume). While these have not stood the test of time, population history has been a central element of research in the region which relates to the diversity in the modern population, comprised as it is of several distinct ethnic and linguistic groups. More recent research has sought to situate the archaeology of the Senegambia region of recent centuries in the broader context of the Atlantic Slave Trade.

In common with the 2014 volume *Archaeological Human Remains: Global Perspectives*, the themes of race and colonialism appear in every paper we present here. In the *Global Perspectives* collection, with the exception of Britain (and perhaps the USA, despite its colonial past), all of the case studies presented could be termed post-colonial societies. In this companion volume, we profile China, France, Germany, Portugal and Russia, all of which had histories as imperial powers. It is clear from the profiles presented here that both the imperial power and the imperial subject were transformed by the colonial relationship, albeit in different ways. Science played an active role in this process both as a means of legitimising subordination and as a manifestation of power (it should be noted that the current dominant narratives in communist China and post-communist Russia – which some might contest – was that studies of variation there were carried out in a spirit of egalitarianism). In the 2014 volume we noted the role of institutions in the development of research into archaeological human bone and the influence of the state over those institutions. In this companion volume, we also chart the role of elites in the advancement of science or more accurately their capturing and weaponising of science. It is fitting then that the final chapter in this collection calls on the archaeological community in general and bioarchaeology in particular to engage in a more meaningful way with local communities as a means of decolonising archaeological and bioarchaeological practice. Understanding the varied histories of our discipline is essential if this engagement is to be meaningful, and it is our hope that these two volumes contribute to this process.

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Chapter 2
Bioarchaeology in Chile: What It Is, Where We Are, and Where We Want to Go

Rodrigo Retamal, Aryel Pacheco, and Mauricio Uribe

> *No hay en otras partes del continente que tengan las condiciones geográficas de preservación de restos prehispánicos tan intactos como en esta región del nitrato. Restos de similar antigüedad pueden existir…en otras áreas del continente. Pero los efectos del clima…han borrado generalmente sus trazas…El Indio Americano primitivo puede ser mejor estudiado aquí que en cualquier otra parte del continente. (Max Uhle to the Chilean Ministry of Education, 1916).*[1]

Throughout its history, Chilean bioarchaeology has been shaped by the idiosyncrasies of the country's political and ideological circumstances. In this chapter, we present and explore sociohistorical landmarks that have given rise to the origin and development of bioarchaeological research in Chile. Furthermore, we discuss the controversies concerning the study of human remains and point out the new directions currently being developed within the field of bioarchaeology across the country.

[1] "*There are no other parts of the continent that possess the geographic conditions for the preservation of pre-Hispanic remains so intact as this region's nitrate. Remains of similar antiquity may exist in other areas of the continent. But the climate effects generally have generally erased any traces. The primitive American Indian may be better studied here than in any other part of the continent*" (Our translation).

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Beginnings of Skeletal Studies

Chilean anthropology, archaeology, and bioarchaeology share a common origin. Fostered by the Chilean state, early anthropological research had commenced by the end of the nineteenth and beginnings of the twentieth century as part of a project of national history and identity, which allowed the unification of ethnic diversity, particularly in recently occupied territories (Tarapacá and Antofagasta regions in northern Chile, the Araucanía region in south-central Chile, and Easter Island in Polynesia) (Gundermann and González 2009; Bengoa 2014). Pioneering descriptions of human remains and race-based studies were carried out by foreign professionals and self-taught scholars such as Alejandro Cañas Pinochet, Francisco Cornely, Francisco Fonck, Carlos Henckel, Ricardo Latcham, José T. Medina, and Max Uhle, among others (Munizaga 1960; Orellana 1996; Rothhammer and Aspillaga 2004). Additionally, several somatological studies of living indigenous populations were performed (see Henckel 1950), among which stand out the Fueguian population studies of Martín Gusinde (1922a, b, c, 1924, 1926, 1939). The evolutionist and diffusionist criteria, classifications, and conceptualizations of these studies affected the perception of the genesis of Chilean populations and of native communities. Archaeologists and historians discussed whether past Chilean inhabitants had culture (Orellana 1996), while living native communities were considered as relics or living fossils, who were left out from the course of history, destined to be assimilated into the Chilean state (Orellana 1996; Gundermann and González 2009; O'Donnabhain and Lozada 2014). Subsequently, scholars assumed the task of rescuing the traditions and culture of those groups perceived as being close to extinction (Bengoa 2014).

During the first half of the twentieth century, the methodological advances and discoveries of the German Max Uhle (1856–1944) and the Englishman Ricardo Latcham (1869–1943) decisively influenced Chilean anthropology and archaeology. The work of Uhle is considered as a landmark in the history of Chilean archaeology (Latcham 1928; Orellana 1996; Erhardt 1998). Hired by the Chilean government and the Universidad de Chile, Uhle was named Director of the *Museo de Etnología y Antropología* (1912–1916). Uhle excavated cemeteries from northern (Arica, Pisagua, Calama, Antofagasta, Atacama, and Taltal) and central Chile (Constitución). Following a cultural-historic approach, he developed the first Chilean archaeological chronology, distinguishing archaic cultures, Tiwanaku influences, and the Inka presence in the country. In addition, he extensively described the Atacameño culture. Latcham, in turn, was a relevant figure in the three branches of Chilean anthropology (social-cultural anthropology, archaeology, and physical anthropology) (Mostny 1939; Orellana 1996; González 2014) and can be considered as the first social scientist whose works employed a holistic approach. Latcham was appointed by the Universidad de Chile as chairman of the *Facultad de Artes* in 1927 and chairman of the *Departamento de Historia* in 1936. He was the Director of the *Museo Nacional de Historia Natural* (MNHN) from 1928 until his death in 1943. Latcham excavated cemeteries in Antofagasta, Cobija, Paposo, Chiuchiu, Tchecar, Taltal, Caldera, La Serena, Tongoy, and Tirúa. He also studied the cranial morphology of the Chango, Atacameño, and Mapuche ethnic groups (Latcham 1904, 1910, 1938)

and of Chilean mixed populations (Latcham 1903). Following approaches and methodologies utilized by Uhle and Latcham, Chilean archaeologists continued excavating pre-Columbian cemeteries during the mid-twentieth century, aiming to recover complete archaeological artifacts to elaborate upon existing cultural-historical sequences (Orellana 1996). Most archaeological research during this time was carried out in northern Chile, as the extreme aridity provides exceptional conditions for preservation. Human remains recovered from pre-Columbian cemeteries were firstly stored at the MNHN and at the *Museo de Etnología y Antropología* (today, *Museo Histórico Nacional*), located in Santiago, and later were transferred to regional museums across Chile.

Institutionalization of Chilean Bioarchaeology

Most of skeletal and mummy collections stored in museums remained unanalyzed for decades, in part due to the lack of researchers specializing in the study of human remains in Chile. Prior to 1960, scientific studies were comprised of isolated efforts by self-taught scholars focusing primarily on the study of craniometrics of pre-Columbian populations. However, starting in the 1960s, bioarchaeological studies in Chile acquired a new character and purpose, thanks to the development of academic institutions, more specifically, due to the work of two scholars: Juan Munizaga (1934–1996) and Marvin J. Allison (1921–2015).

The institutionalization of Chilean bioarchaeology begun with Munizaga in 1954, when he and other scholars founded the *Centro de Estudios Antropológicos* (CEA) at the Universidad de Chile (Rothhammer and Aspillaga 2004). Munizaga was a medical student who left his studies to dedicate himself to physical anthropology. After years of self-taught studies, a Guggenheim Fellowship facilitated his training under T. Dale Stewart at the Smithsonian Institute between 1962 and 1963 and again between 1973 and 1974. Both stays at the Smithsonian Institute profoundly influenced his scientific perspective (Aspillaga 1995), and it can be stated that Munizaga was the first scholar who brought the North American tradition of physical anthropology to Chile. The prolific research of Munizaga covered different bioarchaeological topics, including cranial deformation in Chile and the Americas (Munizaga 1964, 1969, 1974b, 1976a, 1987; Allison et al. 1981a, b), paleopathology (Munizaga 1974a; Munizaga et al. 1975, 1978a, b), skeletal evolution (Bittman and Munizaga 1984), and the study of human remains at specific archaeological sites (Munizaga 1965, 1966a, 1966b/67, 1976b, 1977; Kaltwasser et al. 1980). He also studied the serology and genetics of pre-Columbian populations (Allison et al. 1976, 1978). Munizaga was professor at the *Departamento de Antropología* of the Universidad de Chile (former CEA) between 1970 and 1990, where he founded the *Laboratorio de Antropología Física*. Starting in the 1980s, this laboratory was the first training and research facility specifically dedicated to the study of human remains in Chile. Additionally, Munizaga amassed a large collection of contemporary human skeletons from Santiago with medically documented age, sex, date of birth, and cause of death, which has been a valuable resource for forensic and

bioanthropological research purposes (Paredes et al. 1993; Urzúa et al. 2009; Retamal and Ubelaker 2011; Ross and Manneschi 2011; Garrido et al. 2014; Herrera and Retamal 2017).

Allison was a microbiologist from the Medical College of Virginia, USA. Beginning in the mid-1970s, Allison, Munizaga, and Enrique Gerszten collaborated on studies of the paleopathology of southern Peru and northern Chile. Allison studied Chinchorro and other pre-Columbian mummies which he autopsied in order to identify cause of death and soft tissue pathology. Allison was a pioneer in discovering that infectious diseases such as tuberculosis, treponematoses, and pneumonia (Allison et al. 1973, 1982; Fontana et al. 1983), parasitic infections (Allison et al. 1974), and other pathologies affected pre-Columbian populations (Munizaga et al. 1978a, b; Standen et al. 1984; Allison 1979; Rothhammer et al. 1986). Allison also studied other bioarchaeological topics such as serology (Allison et al. 1976, 1978), cranial deformation (Allison et al. 1981b), tattoo and body paintings (Allison et al. 1981a), as well as mummification techniques (Allison et al. 1984). As an academic of the Universidad de Tarapacá (Arica), he fostered the creation of graduate programs and created the *Laboratorio de Antropología Física* at the *Museo Arqueológico San Miguel de Azapa* (MASMA), where he led a research team (Arriaza et al. 2015a, b).

At the end of the 1960s and beginning of the 1970s, Chilean anthropology underwent a boom period. Theoretical streams from the USA and Europe as well as the Latin American *Indigenismo* significantly impacted and expanded Chilean anthropological and archaeological thought (Bengoa 2014). The social sciences in general adopted Marxist structuralism (Garretón 2005), while anthropology was influenced by important scholars such as Alejandro Lipschutz and Carlos Munizaga. After the reforms of third-level educations carried out between 1967 and 1973, all universities promoted autonomy, co-government, and deep transformations of the institutional structure. The Anthopology major was developed at the Universidad de Chile, Universidad de Concepción, and Universidad de Temuco (Castro 2014), while the Archaeology major was created at the Universidad de Chile in 1969 (Orellana 1996) and at the Universidad Católica del Norte in 1972 (Bengoa 2014; Hidalgo 2015). In the Universidad de Chile, bioarchaeology was integrated to the Archaeology program, and as such, the first Chilean professionals with technical skills to study human remains were archaeologists. Therefore, bioarchaeologists always have been in constant dialogue with archaeologists as well as other anthropologists at the different Chilean universities where anthropology was taught.

This boom in the field ceased after the military coup d'état and subsequent dictatorship in Chile (1973–1990). All areas of academia lived through a period of dramatic shrinkage and repression, while scholars and students suffered ideological persecution. The neoliberal doctrine was taught in the schools of economics, while other branches of social sciences were severely controlled or employed as a tool serving marketing purposes (Garretón 2005). The Universidad de Concepción and the Universidad de Temuco closed their Anthropology programs, while the *Departamento de Antropología* at the Universidad de Chile suffered forced relocation, which resulted in damage to their skeletal collections. Additionally, the

research carried out by Munizaga and collaborators aiming to validate sex and age estimation methods on Chilean populations was cancelled in 1979 after finding remains of the first *Detenidos Desaparecidos* (disappeared-detainees) in Lonquén, Central Chile (Aspillaga and Arriaza 2011).

In spite of the reduction of scientific work during the military regime, bioarchaeological research in Chile continued its development. Studies oriented toward investigating the health and physical conditions of past Chilean populations pioneered by Munizaga were continued by Eugenio Aspillaga, Claudio Paredes (1951–2016), and Silvia Quevedo, while Bernardo Arriaza and Vivien Standen continued the tradition pioneered by Allison in Arica. These scholars have contributed toward diversifying the study of human remains in Chile, and except for Paredes, all of them are still currently active. Quevedo has studied the skeletal biology, paleopathology, and paleodemography of the archaic cemetery of Punta Teatinos (Quevedo 1976, 1998, 2000; Quevedo et al. 2000) and frozen mummies from Inca sanctuaries (Horne and Quevedo 1984; Quevedo and Durán 1993). Her prolific research comprises studies of biodistance, metric and nonmetric cranial microevolution, and paleopathology of several past populations from northern Chile (Morro de Arica, Camarones, Pisagua, Caleta Huelen, and San Pedro de Atacama, among others). One of her major contributions was the creation of the *Laboratorio de Bioantropología* at the MNHN in 1978, which gave way to the institutionalization of bioarchaeology in state museums. Aspillaga has developed his career at the Universidad de Chile, where he has principally focused on the study of peopling, evolution, and lifestyle of central and southern Chilean populations (Linossier et al. 1988; García et al. 2004; Aspillaga 2006; García et al. 2006; Falabella and Aspillaga 2007; Jackson et al. 2012; Méndez and Aspillaga 2012). Paredes is considered the first Chilean forensic anthropologist due to his participation in different forensic cases of *Detenidos Desaparecidos* and other cases associated with Pinochet's dictatorship. Paredes and colleagues were the first scholars to assess the applicability of age estimation methods in Chilean skeletal remains (Paredes et al. 1993). Arriaza and Standen have focused their research on northern Chilean populations of Arica and Azapa, from which they developed the study of skeletal and mummy biology, paleopathology, paleoepidemiology, mummification practices, paleodemography, paleodiet, and population genetics, among other topics. The research carried out by these scholars has mainly concentrated on the bioarchaeology of the Chinchorro culture, which has enormously contributed to its worldwide recognition.

The Return to Democracy: Professionalization, Internationalization, and New Perspectives

At the beginning of 1990, the military regime came to an end. With the overthrow of Augusto Pinochet via a democratic vote, Chile terminated 17 years of military abuses, ideological persecutions, and forced disappearances. However, the economic model and certain authoritarian enclaves would prevail almost unchanged

until today, which have shaped the present-day Chilean society. By the beginning of the democratic period, the social sciences experienced a period of redefinition of their disciplines. Public universities, now freed of repression, began attracting scholars working at independent academic centers. At the same time, private institutions, universities, and consulting firms also began attracting social scientists (Garretón 2005). Several factors have marked the development of studies focusing on human skeletal remains during this period, such as the institutionalization of forensic anthropology, the professionalization of bioarchaeology, the emergence of contract archaeology, and the opening of new perspectives and methodologies from Chile and abroad.

By the beginning of the 1990s, the possibility of searching for graves of *Detenidos Desaparecidos* across Chile gave rise to the institutionalization of forensic anthropology. In 1989, a visit by members of the *Agrupación de Familiares de Detenidos Desaparecidos* (Association of Families of the Disappeared) and Clyde Snow to the *Colegio de Antropólogos de Chile* promoted the creation of the *Grupo Chileno de Anthropología Forense* (GAF). This group composed of archaeologists, dentists, and social anthropologists aimed to recover and identify the remains of *Detenidos Desaparecidos* (Padilla and Reveco 2004). After their participation in some high-profile cases, such as *Patio 29* (graveyard 29), some members of GAF were integrated into the *Servicio Médico Legal* (SML). In 2006, the misidentification of some cases provoked a crisis and restructuration of the SML, which created a new division commissioned by international professionals to establish new protocols of identification, train the staff, and audit identifications (DeVisser et al. 2014). Nowadays, the SML Identification Division continues their work in identifying *Detenidos Desaparecidos*, as well as other forensic cases utilizing a multidisciplinary approach based on modern identification techniques. The need for biological anthropologists in Chile, reinforced as a result of the commotion caused by the finding of victims across the country, fostered the professionalization of the field during the first decade of the new millennium.

Since the 1970s biological anthropology lectures were given at the Universidad de Chile by Munizaga and later by Aspillaga and Paredes, as part of the Archaeology major program. Therefore, scholars dedicated to the study of human remains came mainly from archaeology. Chilean archaeologists that stand out for their contribution in the study of human remains are Marta Alfonso, Florence Constantinescu, Mario Henríquez, and Omar Reyes, among others. On the other hand, scholars of the Universidad de Chile with formation in biology and genetics, such as Mauricio Moraga and Francisco Rothhammer, focused their study on the peopling and genomic evolution of the Americas. Thus, the professionalization of Chilean bioarchaeology was fostered in this context of multiple academic centers studying bioarchaeological topics at the University of Chile, together with the need for forensic anthropologists that take charge of the identification of *Detenidos Desaparecidos*. For this reason, Aspillaga, Mario Castro, and Paredes prompted the creation of a Physical Anthropology major at the *Departamento de Antropología* at the Universidad de Chile in 2002. Five years later, Jorge Rojas prompted the creation of the Physical Anthropology major at the *Departamento de Sociología* at the Universidad de Concepción. Both programs have enabled students to take part in

bioarchaeological and forensic research, along with other areas of biological anthropology. The establishment of a Ph.D. degree in anthropology at the Universidad Católica del Norte and the Universidad de Tarapacá in 2006 also has contributed toward the national formalization of the field of human skeletal studies in Chile.

The creation of degree concentrations in physical anthropology across several Chilean universities was an important landmark for the scientific study of human remains in the country since it enabled the professionalization of bioarchaeology in Chile and has prompted the creation of several lines of original research. Additionally, the development of physical anthropology and archaeology has been possible thanks to funding from the Chilean state to promote scientific development and heritage projects. The most important funding institution is the *Comisión Nacional de Ciencia y Tecnología* (CONICYT) which supports archaeological and bioarchaeological projects of 2 or 4 years designed by scholars from public and private institutions. Additionally, the *Ministerio de las Culturas, las Artes y el Patrimonio* runs a scheme that supports small research projects by domestic institutions and Chilean individuals. Additionally, the institution Fondos de Cultura supports small research from institutions and natural persons. Chilean universities such as the Universidad de Tarapacá, Universidad Católica del Norte, Universidad de Chile, Pontificia Universidad Católica de Chile, and Universidad de Concepción have funds for research. Finally, contract archaeology funds archaeological and bioarchaeological research in order to accomplish the minimum requirements stablished by law (Ley 17.288; Ministerio de Educación 2015).

Chilean biological anthropologists and archaeologists have also begun going abroad for further bioarchaeological and forensic training overseas in order to learn the latest methods and theoretical perspectives for the study of human remains. This drive has in turn increased national research potential and international cooperation (Barceló et al. 2011; Sáez-Sepúlveda 2011; de la Fuente et al. 2013; Andrade et al. 2014, 2016; Irurita et al. 2014; Gómez and Pacheco 2015; Irurita et al. 2015; Santana-Sagredo et al. 2015a, b; Pacheco et al. 2016), as well as fostered the representation and participation of Chilean scholarship at international congresses, such as those organized by the American Association of Physical Anthropologists (de la Fuente et al. 2012; Santana-Sagredo et al. 2016a), the Paleopathology Association Meeting in South America (Arriaza et al. 2015a, b; Gomes et al. 2015; Llagostera-Leyton 2015; Morano et al. 2015; Pacheco 2015; Pacheco et al. 2015a, b; Standen et al. 2015), the Society for American Archaeology (Retamal et al. 2016; Santana-Sagredo et al. 2016b), and the Theoretical Archaeology Group (Pacheco and Retamal 2014), among others. Additionally, the globalization of Chilean bioarchaeology is reflected in the publications by foreign scholars working on Chilean human remains (Neves and Costa 1998; Costa-Junqueira et al. 2004; Torres-Rouff et al. 2005; Lessa and Mendoça de Souza 2006; Knudson 2007; Prikhodko et al. 2007; Varela et al. 2008; Ross and Manneschi 2011; Hubbe et al. 2012; Pomeroy and Stock 2012; Pomeroy 2013; Kakoulli et al. 2014, just to mention a few). The professionalization and internationalization of Chilean bioarchaeology has also increased the use of new theoretical and methodological approaches. Theoretical advances include the closer relation between bioarchaeology and funerary archaeology (Pacheco et al. 2016), the use of the concept of the body as material

culture (Andrade et al. 2014), and the elaboration of research questions based on main anthropological research topics (e.g., gender, identity, inequality, migration, violence, among others). Methodological advances have included radiocarbon (Santana-Sagredo et al. 2017) and stable isotopes analysis (Gómez and Pacheco 2016; Pacheco et al. 2015a, b; Santana-Sagredo et al. 2015a, b, 2016a, b; Uribe et al. 2016), morphometric geometrics (Retamal and Manríquez 2007; Manríquez et al. 2011; Salazar et al. 2014; Bucchi et al. 2015), genetics (García et al. 2004, 2006; Llop et al. 2006; de la Fuente et al. 2012, 2013, 2015; Manríquez et al. 2011; Rothhammer et al. 2009), and paleodemography (Pestle et al. 2015, Clarot and Moraga 2016; Smith et al. 2017).

On the other hand, in the context of the Chilean neoliberal system, contract archaeology also became an active field since the 1990s due to two principal factors spurring its development and widespread need. Firstly, the modification of the Law 17.288 of National Monuments in 1991 (1970) and the promulgation of the Law 19.300 of Environmental Bases, which included regulations regarding archaeological and paleontological survey and excavations, ensured the participation of archaeologists in environmental impact studies. Hence, any project that involved moving earth must include an archaeological impact certificate entailing the possibility of potential cultural finds, so that actions may be taken toward preserving the national patrimony. Secondly, any activity aimed at detecting and recovering archaeological remains must be funded by the company or institution in charge of the earth movement project. The neoliberal economic system inherited from the military regime and consolidated by subsequent governments allowed open markets, privatization, and foreign investment. National and international mining, road building, and real estate development companies commonly request archaeological services in order to carry out explorations and salvage work in areas where infrastructure projects are due to take place. As consequence, a significant number of Chilean archaeologists have provided survey and excavation services to environmental impact studies, via consulting firms or as independent professionals. Similarly, bioarchaeologists have participated in archaeological excavations and laboratory analysis of human remains recovered from cemeteries impacted by such infrastructure projects. As a result, contract archaeology has become one of the most important sectors for the employment of bioarchaeologists in Chile within the last three decades. Additionally, contract archaeology has allowed the participation of bioarchaeologists in governmental heritage institutions, such as the *Consejo de Monumentos Nacionales* (CMN).

Controversies and New Perspectives Concerning the Study of Human Remains

At present, the indigenous issue is one important factor affecting a shift in the thinking of Chilean society. In the early 1990s, the political recognition of Chilean ethnic groups through the enactment of the Native Act or *Ley Indígena* (Law 19.253) changed their condition from folkloric and historic subjects of study toward active

social subjects (Bengoa 2014). As with other heritage resources, pre-Columbian human remains are part of the ethnic realm, and therefore their recovery and study are a matter of concern for Chilean ethnic groups. While the emergence of the ethnic issue and its relationship with ethics within biological anthropology is an international phenomenon (Walker 2000; Larsen and Walker 2005; O'Donnabhain and Lozada 2014), particularities of this issue in each country are important to understand in order to elucidate the future of human remains studies. This section gives some examples related to the relationship between different Chilean ethnic groups and bioarchaeological practice and how they have been resolved according to historical, social, or political circumstances.

Soon after arriving at San Pedro de Atacama in 1955, the Belgian priest Gustavo Le Paige (1903–1980) began explorations and excavations of pre-Columbian cemeteries. After 20 years, Le Paige registered 300 archaeological sites, excavated 4885 human graves, and recovered 378 complete mummies and approximately 5000 human skulls (Le Paige 1974). While the mummy collection was part of the museum exhibition for decades, the vast number of skulls collected by Le Paige was due to his interest in craniometric research (Le Paige 1961). While the Le Paige skeletal and mummy collection has undeniably contributed toward elucidating the past of Atacameño culture (Costa 1988; Neves et al. 1999; Costa-Junqueira et al. 2004; Torres-Rouff et al. 2005; Knudson 2007; Varela et al. 2008; Hubbe et al. 2012; Pomeroy and Stock 2012; López-Barrales et al. 2015; Santana-Sagredo et al. 2015a; Uribe et al. 2016, just to name a few), his archaeological and curation methods have been criticized by archaeologists, academics, and the Atacameño community (Núñez 1995; Cárdenas 2001; Ayala 2007, 2008; Pávez 2012). Particularly, the current Atacameño communities have considered Le Paige's excavations and mummy exhibition as a lack of respect to their local traditions and beliefs. However, these communities did not openly criticize Le Paige work during his life, possibly due to his authoritarian figure of priest, along with a contradictory perception of being indigenous, still prevailing until the late 1980s (Ayala 2007; Pávez 2012). By the beginning of the 1990s, the Atacameño communities had begun a period of re-ethnification and empowerment to take back their archaeological heritage. At present, Atacameño communities demand the management of their heritage, to be kept informed of any archaeological activity, and the prohibition of any exhibition and excavation of human remains in its territory for archaeological purposes. The reburial of human remains is also demanded in case of non-archaeological excavations, as occurred in 2011, when human remains were found during the construction of a public park in San Pedro de Atacama (*Parque Tumisa*). Archaeological projects nowadays have focused on habitation sites, the study of museum collections, and include ethnographic studies, with the aim of sharing their findings and interpretations with the Atacameño communities (Varela 1992; Adán 1996; Uribe 1996; Mercado et al. 1997; Villaseca 2000, among others). Similarly, the Rapanui ethnic community from Easter Island has created the non-governmental organization *Ka Haka Hoki Mai Te Mana Tupuna* with the aim of repatriating all their heritage curated in different museums worldwide. This organization claims the repatriation of their heritage based on the historical injustice in the contradiction of prohibitions

on the excavation of "white" cemeteries while granting permission to excavate indigenous cemeteries.

A different scenario has been observed in relation to Aymara communities in Tarapacá (northern Chile), who have requested the archaeological rescue of human remains exposed after earthquakes (Huarasiña), as a result of road building and other constructions (e.g., Troncales at Camiña, Carora, and Mamiña), or systematic looting of pre-Columbian cemeteries (Quillagua) (García et al. 2012). Specifically, the recovery of human remains from Quillagua showed the respect and value of the Aymara community toward the scientific work of archaeologists, bioarchaeologists, and curators. Additionally, it showed the concern of the Aymara people toward preserving the remains of their ancestors and their traditions. These experiences were recorded in a documentary film (http://www.vimeo.com/7288497). A similar interest and respect toward bioarchaeological work was observed by one of the authors of this chapter (RR), when he was invited to Easter Island by the *Corporación Nacional Forestal* (CONAF) to study human remains of the *ahu* (ceremonial platforms) *Tepeu*, as a part of the project *Apa'o Te Ivi Tupuna*. On the other hand, human remains have also served to reinforce local nonindigenous identities, as it can be seen in the case of Chinchorro (Arica and Parinacota) (Arriaza 2016) and Cuchipuy in San Vicente de Tagua Tagua (Central Chile) (Eugenio Aspillaga, personal communication).

As these last paragraphs suggest, relationships between Chilean ethnic communities and bioarchaeologists have been diverse and complex, as well as principally dictated by the historical and political climate. The sustained denial of local values and the belated and incomplete recognition of the autonomy and opinion of ethnic communities by the Chilean state have left a negative imprint within these groups. Ethnic communities are currently still struggling against the state to maintain control of their autonomy and for the recognition of their cultural values and heritage. In this vein, it is understandable that archaeological activity may be seen by them as an attempt to strip their heritage and threaten their community. Therefore, bioarchaeologists have worked to initiate and maintain dialogues with ethnic communities in order to obtain their views and opinions regarding bioarchaeological work and to forge mutual agreements, joint involvement, and productive collaboration. In the 13th Congress of the *Asociación Latinoamericana de Antropología Biológica* (ALAB), held in Santiago in 2014, the symposium titled "Ethnic Dimension in Biological Anthropology" marked a historic landmark in the relationship between ethnic communities and bioarchaeology practitioners. It was the first time in which representatives of different ethnic communities and bioarchaeologists met to undertake an open dialogue. Additionally, the *Sociedad Chilena de Antropología Biológica* (SOCHIAB) presented a proposed protocol for the treatment of cultural heritage and human remains to ethnic representatives. This protocol can be summarized in three points: (1) human remains must be treated with dignity, (2) descendants have the right of disposal of their ancestors' remains, and (3) national right to find out the legacy of bioarchaeological heritage. One important topic in the discussion about the ownership and treatment of the bioarchaeological heritage is the mixed background shared by both ethnic communities and the Chilean nonindigenous population, as suggested by genetic studies (Pinto-Cisternas et al. 1971; Pinto et al.

1980; Cohn 1983; Valenzuela and Harb 1987; Valenzuela et al. 1987; Rocco et al. 2002; also visit www.chilegenomico.cl). Therefore, since practically all Chileans are descendants of pre-Columbian populations, they would now have the same rights of disposal of their ancestors' remains as ethnic communities. Thus, a discussion about the ownership and treatment of the bioarchaeological heritage should be primarily driven by the respect for differing views of all entities involved, as well as by the multidimensional approach of the concept of "descendant."

Conclusions

After a century of research involving human remains in Chile, academic and methodological approaches have undergone important developments in the context of the twentieth century's national project, contemporary research streams, and the acknowledgement of multiculturalism. It is mostly during the last three decades that the field of bioarchaeology has expanded and diversified, as consequence of its professionalization and an expansion of the contract archaeology sector. However, while methodological developments have made great strides in different areas of bioarchaeological research, theoretical developments have been comparatively slower and have not yet shown an explicit and critical stance according to contemporary social circumstances. As consequence of the indigenous issue, bioarchaeologists are beginning to reflect upon the importance and value of their work for Chilean society at large. In our view, Chilean bioarchaeology should cooperate toward a shift of public opinion concerning national identity and heritage, taking into consideration the remarkable ethnic and local diversity of the country. Moreover, we advocate for more attention toward ethnic and other and new communities in order to contribute to their participation and empowerment, while more education and communication of scientific studies should be adapted to accommodate the general public and other nonacademic audiences. Along with this drive for public outreach and ethnic inclusion, we believe that Chilean bioarchaeology must continue to develop its own character, not only by being open to outside influence but also by generating a critical thought in the academia regarding its principal objectives, theoretical approaches, and political stance. The Chile of today is easily led on by global intolerance and the rejection of diversity, leading to the treatment of its own indigenous people and new immigrants with African or indigenous traits as criminals and terrorists. In this context of generalized intolerance and the prevalent idea of homogeneous Chilean race, the task of creating a critical yet promising future direction for the field of our bioarchaeology is both challenging and, at the same time, necessary.

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Chapter 3
Bioarchaeology of China: Bridging Biological and Archaeological Inquiries

Elizabeth Berger and Kate Pechenkina

In China, anthropology (人类学 *renleixue,* literally "study of humanity") is primarily used to refer to physical anthropology. Biological or physical anthropology is firmly situated within the biological disciplines, whereas archaeology is traditionally hosted by history departments. Consequent differences in research interests and approaches between archaeologists and biological anthropologists have influenced the development of the field.

Research on archaeological human skeletons, and anthropology as a whole, in China can be divided into three historical phases: (1) the late 1800s to 1949, the formative period, when anthropology in China was practiced as a holistic discipline and biological anthropology research was dominated by comparative morphometrics, population history, and paleoanthropology; (2) 1949 to the early 1980s, when "anthropology" referred almost exclusively to physical anthropology, and morphometrics and paleoanthropology were independent of archaeology; and (3) the 1980s until today, when cultural anthropology has experienced a renewal and bioarchaeology has come to integrate the skeletal and archaeological records (Zhang 2012; Zhu 2004; Hu 2006; Guldin 1994).

In its early years (before 1949), Chinese anthropology was in close communication with American, British, and European scholarship. However, it also draws from a long tradition of Chinese historiography, antiquarianism, and medical studies and has undergone more than 100 years of development within China to become a discipline with its own research foci and disciplinary boundaries (Guldin 1994; Hu 2006).

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Pre-1949

A number of ancient Chinese texts contain writings related to physical anthropology. For instance, the ancient Chinese philosopher Xunzi (313–238 BCE) observed the physical similarities between humans and monkeys (Zichun Wang 1984). As in the West, ancient Chinese texts also contain descriptions of physical differences between human groups. Such texts include the *Zhouli*, *Shiji*, *Huangdi Neijing*, *Guanzi*, *Lingshu Jing*, *Shanhai Jing*, and *Lüshi Chunqiu*, which span from the third century BCE to around the twelfth century CE (Zhang 2012; Zichun Wang 1984; Wang 1996). The *Huangdi Neijing* could be said to be the world's oldest physical anthropology monograph, and contains information on anatomy and measurements of human bodies. From the *Shiji (Records of the Grand Historian)* onward, most historical texts from China contain some account of the physical aspects of frontier ethnic groups and minorities (Wang 1996).

These early sources, however, had limited influence on anthropology as practiced in the twentieth and twenty-first centuries. In the late nineteenth and early twentieth centuries, anthropology arrived in China through contact with the West and Japan (Guldin 1994; Zhu 2004). This arrival took two main forms: foreign scientists conducting research in China, and Chinese scholars and students going abroad to learn the research methods and theoretical underpinnings of the field and returning home to conduct their own work.

Foreign anthropological research in China began after the first Opium War (1839–1842), during a period of rapid modernization and opening, when missionaries and explorers began recording folk traditions and other anthropological data (Du 2008). British Army officer Thomas Blakiston was one of the earliest, traveling up the Yangzi River in 1860 and reporting not only ethnographic details of the people he encountered but also their physical characteristics (Wang 1996). In the early twentieth century, many foreign anthropology texts were translated, and foreign scholars came to do fieldwork, including Japanese anthropologist Torii Ryuzo between 1895 and 1928, Russian anthropologist S. M. Shirokogoroff in the 1910s and 1920s, and German anthropologist H. Stubel in the 1930s (Wang 1996; Du 2008). These early anthropologists' research consisted mainly of field surveys that included ethnography, physical anthropology, linguistics, and even some archaeology, supported in the 1920s and 1930s by the Academia Sinica (Du 2008; Zhang 2012; Wang 1996).

A major force in Chinese anthropology in the first half of the twentieth century was the movement of Chinese students abroad (Guldin 1994; Du 2008). In 1907, Cai Yuanpei went to study in Germany, and in 1916 returned to China to serve as the president of Peking University (1917–1927). During this time, he promoted the study of anthropology, and is considered a founder of both ethnology and physical anthropology in China. In 1914, Ding Wenjiang returned from studying in England and was the earliest to do scientific measurements of Chinese people, in the form of a survey of minority peoples in Yunnan and Sichuan (Du 2008; Zhang 2012).

During this time, ethnographic, anthropometric, and archaeological research began to flourish in China. Scientific archaeology was adopted and rapidly developed by scholars such as Li Ji, Xia Nai, and Su Bingqi, who worked to reconstruct the sequence of ancient cultures that gave rise to Chinese civilization (Liu and Chen 2012). The development of an indigenous tradition of biological anthropology, on the other hand, is tightly linked with the name of Wu Dingliang (earlier transliterated as Woo Ting Liang) (Wang 1996; Hu 2006). Wu studied at Columbia University during the 1920s. He later trained in statistics under Karl Pearson in London, and his work was strongly influenced by Sir Arthur Keith and Ernest Hooton (Guldin 1994). During his early research, Wu devised mathematical schemes for classifying human groups based on measurements of both archaeological human remains and living people (Woo and Morant 1932, 1934; Wu and Mo 1932; Woo 1937), and his measure of facial flatness became standard in craniometric programs in the Soviet Union (Alekseev and Debets 1964). In 1935, Wu became a full-time researcher and division director at the Institute of History and Anthropology of the Academia Sinica (Wu 2005; Zhang 2012; Du 2008) and continued to study morphological variation in human crania and living populations (Wu 1940, 1957a, b, 1960; Dingliang Wu 1956; Woo 1941, 1942). Beginning in 1946, Wu directed the Physical Anthropology Group at Zhejiang University and the next year became the chair of the newly formed Department of Anthropology (Du 2008; Guldin 1994).

Before World War II, a number of Chinese universities had established anthropology departments, museums, or sections, including Qinghua, Jinan, Zhejiang, Xiamen, Zhongshan, and Yunnan Universities, as well as the Academia Sinica (Du 2008; Guldin 1994; Zhang 2012; Wang 1996). The war had a profound impact on Chinese academia, as most universities relocated to the west and southwest for the duration of the war. The indigenous peoples in these regions therefore became the object of study for much anthropological work in China between 1937 and 1945.

Though Chinese anthropology was relatively holistic before 1949, physical anthropology remained a fairly marginal part of the field. With a few exceptions (e.g., the program administered by Wu Dingliang at Zhejiang University), anthropology degree programs included little instruction in physical anthropology. Rather, physical anthropology was mostly located within the study of biology and paleoanthropology, as well as among researchers interested in the relationships between the morphology of archaeological and modern peoples (Guldin 1994).

Throughout this time, a question of great interest to the international scholarly community was reconstructing the movement of human populations across East Asia and their genetic contribution to populations in other parts of the world (e.g., Schetelig 1869; Brinton 1888). Before advances in ancient DNA technology, interest in population history and movements developed into a focus on comparative craniometry, among both Chinese and foreign scholars (e.g. Black 1928; Arthur Keith 1929; Wu 1940; Yan et al. 1960; Han and Pan 1979, 1987; Pan 1986, 1975; Zhu 1991; Shao et al. 1988). The legacy of this research includes substantial collections of crania curated at Jilin University, the Banpo Museum in Xi'an, the Institute for Vertebrate Paleontology and Paleoanthropology (IVPP) of the Chinese Academy

of Sciences, and the Archaeology Institute of the Chinese Academy of Social Sciences in Beijing.

A similar focus on comparative craniometry can be seen in biological anthropology studies conducted in other parts of the world (e.g., Howells 1973). However, there are three factors that make the Chinese craniometric studies particularly interesting. First, China has a uniquely wealthy paleontological record. The relation of early *Homo* in China to later human populations in China and elsewhere has been a focus of paleontological debate since Franz Weidenreich proposed the multiregional continuity model (Weidenreich 1943, 1947), still highly influential in Chinese paleoanthropology (Rukang Wu 1956; Zhang 1998; Wu 1998, 2006; Liu and Yang 1999; Zhu 1996). Second, because of its geographic location, early populations of China likely contributed to the indigenous populations of Taiwan and Oceania (Schetelig 1869; Turner 1990), the Japanese archipelago (Pietrusewsky 2013; Nakahashi et al. 2002), and the Americas (ten Kate 1888; Brinton 1888; Turner 1985). Third, the tumultuous history of interactions between the steppe populations and the farmers of China, as well as the ethnic politics of imperial China, resulted in complex population movements (Yao et al. 2002; Yao and Zhang 2002; Haijing Wang et al. 2007; Ge et al. 1997), making biological distances between populations of great interpretive interest to archaeologists and historians of the region (Dashtseveg 2013). These early craniometric studies remain salient today, though research techniques have evolved. Following the 1980s, metric and nonmetric approaches to studying dental and postcranial morphology were adopted (Turner 1990; Matsumura 1994; Lee 2013), and eventually, aDNA techniques permitted the testing of older models of population history (Oota et al. 1999; Wang et al. 2000; Xie et al. 2005; Gao et al. 2015; Yuan et al. 2013).

Some early physical anthropology in China did integrate skeletal and archaeological data. Among the earliest to do this was the Canadian palaeoanthropologist Davidson Black (1928), who identified significant morphological differences between crania from the Yangshao site in Henan and those from later Chinese sites, and proposed that large-scale population replacement had occurred in northern China sometime following the Neolithic. He also taught at Beijing Union Medical College and analyzed skulls from several Chinese provinces, including a group from prehistoric Gansu in western China, whom he identified as having "Oriental" features and which he therefore labeled "Proto-Chinese" (Zhu 1996). A year later, Sir Arthur Keith published his observations on skulls from the seventh and eighth centuries that were recovered by Sir Aurel Stein in the Tarim Basin during his expedition of 1913–1915 (Keith 1929), including both detailed morphometric descriptions and an individual biography for each skull based on cranial and oral pathology.

It should be noted that Chinese researchers draw an explicit distinction between the racial typological studies of the West in the early days of anthropology and their own research on race. The aim of Chinese racial research is stated as being not to establish the superiority of one group over another or the behavioral correlates of race, but to establish the equality of all groups, the effects of their interaction with their environment, their origins and migrations, etc. (Wang 1996, 2011;

Pechenkina 2012). In that sense, the term "race" (*renzhong*) in Chinese carries different connotations than in English and has been defined differently almost from the beginning of the field.

1949–1980

After the Chinese Communist Party rose to power in 1949, it reorganized the academy and certain disciplines fell out of favor. Among these was anthropology, which was considered irredeemably linked to imperialism. After 1949, a number of anthropologists fled mainland China with the Nationalist Party to Taiwan, where they established new academic departments and research programs (Du 2008; Guldin 1994). In the mainland, anthropology departments were disbanded, and the work of linguistics and cultural anthropology only continued under the rubric of "nationalities research" (the study of minority groups for the purpose of helping their development). On the other hand, archaeology continued to flourish. Physical anthropology also continued, mainly emphasizing paleoanthropology, anatomy, and morphometrics, but was relocated to other departments. Due to these changes, many physical anthropologists who stayed in the mainland switched their focus to biology, archaeology, or geology (Du 2008). In the 1950s, China began to follow the Soviet convention wherein "anthropology" referred solely to physical anthropology (Du 2008; Guldin 1994; Zhang 2012; Zhu 2004; Hu 2006).

In 1952, Wu Dingliang and his Oxford-trained colleague Liu Xian moved from Zhejiang University to the biology department of Fudan University, where Wu was made director of the new anthropology research and teaching group (Guldin 1994; Du 2008). Here he trained Wu Rukang, Han Kangxin, and other influential physical anthropologists of the mid-twentieth century, many of whom went on to work at the IVPP. This anthropology section was for a time the only place in Chinese academia where anthropology was explicitly taught under that label, and the program ended with the beginning of the Cultural Revolution in 1966 (Guldin 1994).

The influence of Soviet scientists and experts was felt in many areas after 1949. However, archaeologists in China had their own rich academic tradition to draw on in this area, so the influence of Soviet science on archaeology, as well as on paleoanthropology, was small. The overall influence of the USSR declined after the Sino-Soviet split of the 1960s, after which China charted its own course following Mao Zedong thought (Guldin 1994). Until the 1980s, anthropologists in China had limited contact with the international scholarly community.

By the 1950s through the 1970s, physical anthropology in China was represented by only a few institutions, among them the anthropology research teams of the Beijing and Shanghai Natural History Museums, the aforementioned research group in the biology department of Fudan University, and the Anthropology Museum at Xiamen University (Zhang 2012). The IVPP, which took on its current name in 1960, was the largest and most important institution in the field during these years (Guldin 1994).

An influential anthropologist of this time was Yan Yan, who was a medical doctor before he became an anthropologist. Yan Yan, along with his student Pan Qifeng and Wu Dingliang's student Han Kangxin, was very influential in the study of archaeological human remains from the 1960s onward. This includes the approach, still predominant in the field today, that uses studies of biological ancestry and ancient migrations to shed light on the origins and development of material culture complexes.

During this time, though research in certain areas was somewhat curtailed, archaeological and paleontological excavation continued, and the resultant accumulation of skeletal collections and data laid the groundwork for the syntheses and regional, systematic studies that would be conducted beginning in the 1990s (Wang 2011).

Paleopathology research was sporadic during this time and somewhat anecdotal. For instance, the presence of trauma on a Paleolithic cranium from Zhoukoudian was described in the 1951 report by Jia Lanpo. Wu Rukang diagnosed an alveolar abscess in a maxilla from the Paleolithic Ziyang locality in a report from 1957, and carious lesions were described in the 1973 brief report on the Neolithic site of Jiangzhai (Huifang Wang 1984; Jia 1951; Pei and Wu 1957; Xi'an and Lintong 1973). This began to change in the 1980s and 1990s, with the integration of anthropological and archaeological work.

Post-1980

The sense of "anthropology" as referring only to physical anthropology persists into the present in China (Zhu 2004), but after the Reform and Opening policy of 1979, there were calls from within the social sciences in China to bring back cultural anthropology as a recognized field (Guldin 1994). Anthropology departments and degree programs were revived: Zhongshan University established an anthropology department in 1981, Xiamen University formed a department and museum in 1984, and Yunnan University offered a major from 1988 with a department following in 1997. Ethnography and physical anthropology are both emphasized in these departments, while archaeology continues in its own departments, some of which maintain physical anthropology programs as well (Zhang 2012). Importantly, the China Anthropological Association was formed in 1981, putting the discipline on solid footing for future developments (Zhu 1996).

Research that integrates skeletal and archaeological data has flourished in China over the last four decades. The turning point seems to have been the founding of *Acta Anthropologica Sinica* (*Renleixue Xuebao*) in 1982 by the IVPP. Until 1982, skeletal analyses were often published as appendices in archaeological reports or as monographs. Such publication formats favored detailed descriptions of excavated bones, but limited opportunities for comparative analyses, particularly the testing of hypotheses related to human biology. From the date of the journal's founding, there was a surge in hypothesis-driven studies of the human skeleton (Zhang 2012).

Multiple papers published in this journal during the 1980s and 1990s introduced and refined methods of skeletal age and sex assessment for East Asian populations (Zhang 1986, 1982; Zhang and Ji 1988; Zhang and Han 1994; Zhang et al. 1996), as well as paleopathology research (Zhang 1993, 1994, 1995). Older periodicals, including *Kaogu* and *Acta Archaeologica Sinica* (*Kaogu Xuebao*), also began publishing comparative physical anthropology studies, including Han Kangxin's analyses of cranial modification (Han and Pan 1980), tooth ablation (Han and Pan 1981), and trephination (Han and Chen 1999). In subsequent years, studies of human behavior, health, and diet using archaeological skeletons increased dramatically (Li 2004; Zhang 2003; Smith 2005; Han et al. 2005; Eng 2007; Chen 2000; Li 2006; Shang and Han 2001; Liu et al. 2006; Zhang and Zhu 2006).

Changes in the political climate since Reform and Opening have allowed a livelier exchange of ideas and an increase in collaboration between Chinese and foreign scholars. As a consequence, both the IVPP and the Research Center for Chinese Frontier Archaeology (RCCFA) at Jilin University have become centers for international cooperative research. For instance, since 2014, Jilin University and Simon Fraser University in Canada have run a Joint Centre for Bioarchaeology, which includes the regular exchange of faculty and students and an occasional undergraduate summer training program held at Jilin. The archaeology departments of Jilin, Renmin University, and others have hired foreign professors for short- or long-term appointments. In addition, a number of North American and European bioarchaeologists have completed doctoral dissertations and other research at Jilin University, Northwest University in Xi'an, Shandong University, the IVPP, Archaeology Institute field stations, and provincial institutes in Henan, Gansu, and elsewhere (e.g., Pechenkina et al. 2002, 2005, 2007, 2013a; Berger and Wang 2017; Dong et al. 2017; Lee 2013; Lee and Zhang 2013; Zhang et al. 2016a, b; Joseph 2016; Hernandez 2014; Eng and Zhang 2013; Eng 2016; Gresky et al. 2016; Wagner et al. 2011).

In population history research, regional and comparative analyses, rather than studies of individual sites, have become more common since the 1980s. This includes studies of the relationship between peoples of the Eurasian grassland and Xinjiang and those of central China, and of the archaeological correlates of groups attested in the historical record (Wang 2011). The aim of this research continues to be the integration of the archaeological and biological records, though in an increasingly systematic way that takes advantage of the latest analytical techniques (e.g., computer technology, aDNA) and contributes to their development (Chunxiang Li et al. 2010; Cui et al. 2009; Wang et al. 2012; Zhao et al. 2015).

Since the 1990s, paleopathology has also increasingly moved from descriptive to comparative work (Chen 2000; Li 2002; Pechenkina et al. 2002; Liu et al. 2006; Zhang 2003; Shang and Han 2001; Zhang and Zhu 2006; Smith and Lee 2008; Eng and Zhang 2013; Eng 2016; Meng 2011; Merrett et al. 2016; Zhang et al. 2016a; Wei et al. 2012). Oral pathology has received particular attention, as it touches on the health, economy, diet, and environment of ancient groups. Occlusal wear has long been used for skeletal age estimation in China (Zhu 2004). Studies of metric and nonmetric traits of the teeth, and the morphology of the masticatory apparatus,

are common in Chinese paleontology and, beginning in the 1980s, were joined by studies of oral pathology in archaeological skeletons. Some studies have focused on masticatory stress, parafunctional use of the teeth, and cultural modification (Li 2012; Pechenkina et al. 2002; Zeng et al. 1986; Wei et al. 2009; Sun 2011; Liu et al. 2010). Most oral health research, though, is concerned with dietary reconstruction through direct or indirect means, especially comparative studies between subsistence systems, regions, time periods, or age and sex groups (Li et al. 1991; Liu et al. 2005, 2010; Okazaki et al. 2013, 2016; Wei et al. 2013; Quanchao Zhang 2010; He 2007; Pechenkina et al. 2007, 2013b; Yuan and Zhu 2012; Zhang 2003; Meng et al. 2007; Linhu Zhang 2010; Mingqi Li et al. 2010; Chen and Li 2013; Sun 2011; Wei Wang et al. 2007; Meng et al. 2011; Zhang et al. 2016b; Zhao et al. 2014; Zhu and Lu 1997; Merrett et al. 2016).

Most dissertations produced in Chinese archaeology graduate programs that focus on physical anthropology now include some attention to paleopathology. Some of this research is still done by scholars with medical rather than anthropological training (Wang 2011), e.g., students of dental medical researcher Shao Jinling at the Fourth Military Medical University in Xi'an (Bu 2012; Jiang 2007; Li 2008; Meng 2008, 2011; Han 2005). The RCCFA of Jilin University has also produced many physical anthropology graduate theses, recently under the direction of Zhu Hong, who trained at Jilin University in the 1980s (Li 2004; Sun 2013; Zhang et al. 2010; Chen 2009; Zhang 2008, 2015; Zhou 2014; Xiao 2014; Linhu Zhang 2010).

Molecular archaeology has become widespread in China, especially the use of stable isotope analysis for dietary reconstruction and aDNA for studying population history. Stable isotope research in China is aided by the natural and historical division in Chinese agriculture, namely, the divide between millet, wheat, and barley in northern China and wet-land rice in southern China (Fang et al. 1998). Serendipitously, the staple cereals of Neolithic northern China were two species of millets, *Setaria italica* and *Panicum miliaceum*, drought-resistant plants that utilize the C4 pathway of photosynthesis. C4 plants incorporate a greater proportion of ^{13}C—the heavier stable isotope of carbon—into plant tissues, and their isotopic values are distinct from those of C3 plants (Pechenkina et al. 2005; An et al. 2010; van der Merwe 1982; Schoeninger and Moore 1992; Ambrose 1993). Since C3 plants dominate the wild vegetation of northern China, the dietary contribution of millets can be assessed using carbon stable isotope values of bone samples. However, rice is a C3 plant, so it is impossible to assess its dietary contribution using the same method.

The earliest stable isotope research in China was carried out in 1984 (Cai and Qiu 1984) and concluded that carbon isotopic values of human samples indicated a strong contribution of millet to the human diet during the middle and late Neolithic. Despite the considerable interest of these findings, very few stable isotope studies were published on Chinese materials until the early twenty-first century (Wang 2011). Now, with the development of technology making stable isotope analysis more accessible, Chinese anthropologists have begun to deploy this technique intensively for dietary reconstruction (Pechenkina et al. 2005; Hu et al. 2006, 2007,

2008; Barton et al. 2009; Atahan et al. 2011; Guo et al. 2011; Dong et al. 2015, 2017; Zhang 2006; Ma et al. 2013; Zhang et al. 2003, 2010, 2011, 2015).

The first use of genetic data in archaeology in China took place in 1981, when scholars isolated and identified nucleic acids from the mummy found in the Mawangdui Tomb in Changsha, Hunan (Wang and Lu 1981). Modern aDNA research began relatively early in China and was conducted throughout the 1990s, with systematic and regional research beginning in the early 2000s. This work has focused both on human origins (e.g., Fu et al. 2013) and on the origins of archaeological and modern populations, especially in the so-called border regions of China (Wang 2011).

Finally, China represents a key territory for understanding global paleoepidemiology. Pathogens that followed human populations into Southeast Asia, Japan, Oceania, Australia, and the Americas must have passed through East Asia (Buckley and Oxenham 2016; Suzuki 2013). Nevertheless, paleoepidemiology of this region remains sketchy, with only a few isolated skeletally documented cases of chronic infectious diseases, such as treponematosis, leprosy, and tuberculosis (Hunan 1980; Fusegawa et al. 2003; Suzuki et al. 2005; Zhang 1994; Pechenkina et al. 2007).

Conclusions

Through much of the twentieth century, craniometric reconstruction of population histories was the principal shared interest of scholars in archaeology and physical anthropology. A second shared interest arose from reconstructing early subsistence strategies (Yuan and Flad 2002; Lee et al. 2007; Zhao and He 2006; Zhao and Piperno 2000; Chen et al. 1995). Here, biological anthropology became recognized as indispensable for providing direct evidence of changes in human diet and health. Recent work by young scholars is consequently more holistic, contributing to communication among anthropological subfields within China and to greater discourse between Chinese bioarchaeology and the international field.

As Han Kangxin and Pan Qifeng wrote in 1984: “In the last three decades, with the development of archaeological undertakings in China, many ancient human fossils and unearthed remains have been protected and collected, and a number of valuable research results have been published. But in general, research in this area is still focused on the accumulation of materials and filling in temporal gaps.” More than 30 years later, many areas of bioarchaeology in China have begun undertaking systematic and comparative research using advanced analytical techniques (Wang 2011).

The growing pace of bioarchaeological training and research in China and the greater contact between Chinese and foreign scholars (through multilingual publications, educational exchanges, and attendance at international conferences) will be important for bioarchaeology as a global field in the twenty-first century. The vast archaeological and skeletal record of China will no doubt play a critical role as we continually refine our understanding of human health and behavior in the past and

develop new techniques to carry out this research. The models developed in other places should be tested on Chinese data within Chinese archaeological contexts, in collaboration with Chinese researchers, who will continue to make critical contributions to the development of the field.

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Chapter 4
An Overview of the History of the Excavation and Treatment of Ancient Human Remains in Egypt

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Egypt has an extremely rich and varied past, encompassing millennia of human history, and, as a result, is a huge repository of human remains. These remains take two main forms: skeletons and mummies. Skeletonized remains tend to belong to early Egyptians who were buried prior to the invention of mummification, and to poorer individuals who were not mummified, and whose artefact-poor cemeteries were less the focus of archaeological investigation by museums, collectors, and plunderers. Some skeletons are the result of poor mummification. In the early days of Egyptian archaeology, these were of less interest than mummies.

A mummy is the artificially preserved and wrapped body of a human being (or animal). Mummies have been virtually synonymous with ancient Egypt and historically have attracted more attention than excavated skeletal remains. Mummies have had a long and chequered history beyond that of archaeological artefacts, being viewed as oddities collected by the curious, or objects to be robbed of their amulets and jewels. Due to the misidentification of the black substance that covered Egyptian mummies as bitumen or *mûm* in Arabic (which was the basis for the word 'mummy'), a component of many medicines, twelfth-century AD Arab physicians used ground-up mummy as part of their *materia medica* as a cure against paralysis, hemicrania, epilepsy, and abscesses, among other diseases. Western physicians followed suit with enthusiasm and pulverised mummies to use in medicines well into the eighteenth century if not beyond (Ikram and Dodson 1998: 64–8). In addition to being ground up for medicine, the powder has been used as a component of paint (mummy brown); mummies have been burned as fuel and their wrappings used to make brown paper (Ikram and Dodson 1998: 64–9; Wolfe and Singerman 2009). Thus, vast numbers of mummies that were potential sources of information have been lost over the centuries.

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Initial Mummy and Skeletal Studies

A few scholars who wanted to learn about the ancient Egyptian art of embalming, to look upon the faces of the ancients, or to study the anatomy of the ancient Egyptians, unwrapped and examined mummies, with varying amounts of scientific rigour. Some were antiquarians, while others were medical men with different degrees of training, depending on the era in which they lived, as well as their own limitations. The earliest published mummy unwrappings occurred in 1698 under the direction of the antiquarian Benoit de Maillet (De Maillet and Le Mascrier 1735: 277–85), but the focus was more on the mummy as an object rather than a human being, with attention concentrated on the quality of linens and any artefacts found within the wrappings—some removed from the body by brute force. Only a handful of unwrappings were more scientifically oriented, with a desire to analyse the body as well as the embalming methods used on it (Ikram and Dodson 1998: 64–72; Ikram 2015/2016; Ikram 2011). It should be noted that often, anonymous mummies were treated differently from named individuals with grave goods; as with the latter, there was a greater interest in the life history of the deceased, as understood from his or her physical remains and funerary equipment, and thus more care and attention were taken during the process.

Scientific unwrappings truly took hold in the nineteenth century, with the physician Thomas Pettigrew (1791–1865, also known as 'Mummy Pettigrew') leading the way in mummy studies (Pettigrew 1834) and other doctors, such as Augustus Bozzi Granville (1825), who was the first to report a cystic ovarian tumour he discovered in a mummy's abdomen, following close behind. Historically, the royal mummies were one of the more significant groups of mummies to be studied and were examined by Egyptologists and medical doctors from the 1880s onward (Maspero 1889). A definitive work on these individuals (and mummification in general) was carried out by Grafton Elliot Smith (1871–1937), Professor of Anatomy at Cairo School of Medicine (Smith 1912; Smith and Dawson 1924), which also involved the first radiograph of a mummy to be carried out in Cairo. Elliot Smith conveyed, by a horse-drawn cab, King Tuthmosis IV (reigned c. 1398–1388 BC) to a private nursing home in Cairo, where Dr. Khayat x-rayed the king, making him the first royal mummy to be thus examined. From the 1960s onward, radiography of different sorts has been commonly employed in the study of both royal and nonroyal individuals.

Until the early years of the twentieth century, scholars largely ignored skeletonized remains as a source to elucidate the history, culture, lives, and health of the ancient Egyptians. However, some did study them for questions of race, ethnicity, brain capacity, and other variables, some of which helped legitimise colonial domination and racial stereotyping. For example, the physician (anatomist) and anthropologist S. G. Morton (1799–1851) subjected three ancient Egyptian mummies to craniometric analysis in an effort to identify their race (1844), using a system of measurement popular with anthropologists of that time. Morton believed that multiple races were created separately, each with distinct characteristics, feeding into a narrative of biological dominance/subservience. He thought that intellectual ability

was linked to skull capacity, with size being the determining factor. By his methodology (criticised by Gould 1981 and re-evaluated in support of Morton's methodology, if not content, by Lewis et al. 2011) Caucasoids were the most intelligent and Negroids the least. According to him, ancient Egyptians were Caucasians. W. M. F. Petrie, the doyen of Egyptian archaeology, also graphed cranial measurements in order to establish racial superiority (Petrie 1902); interestingly, the Egyptians remained in the highest category of intelligent beings, and Petrie posited that an early migration from Europe contributed to the population of Egypt (this did nothing to serve colonial domination of Egypt but was symptomatic of anthropological studies of the time). Petrie's results in identifying Egyptians solely as Caucasians were challenged by his colleagues (Brunton 1925; No Author 1926, but see reference to Caton-Thompson). Interestingly, he was an advocate for encouraging in his own day the immigration of other races to England as a source of vigour that would continue to help make Britain great (Challice 2013).

Although some of the earliest and most intense study of Egyptian skeletal material was indeed linked to race, much of it was focussed on what is now standard physical anthropology: the determination of age, sex, disease, and mortality rates in populations. These, together with the archaeological context, also informed ideas about gender, age, and socio-economic status.

G. E. Smith, who studied the royal mummies, also supported the idea that skull capacity and brain dexterity were related (some of his ideas of brain evolution, particularly with regard to primates, are still relevant today) and used his knowledge of ancient Egyptian culture together with observations of their cranial measurements to support his idea of hyperdiffusion. He believed that cultural innovations occur once and are spread from this single source. Thus, he based the origins of many aspects of culture, tradition, and technology to the ancient Egyptians (Smith 1929, 1931). Leaving the hyperdiffusion aside, Smith remained at core an anatomist and a rigorous medical man, having been trained in Britain and holding a position as anatomist in the medical school at Cairo. When the first Nubian dam was being constructed in 1898, threatening to flood vast areas, he became the official advisor on the study of physical anthropology/human remains to the Archaeological Survey of Nubia. He participated in the Archaeological Survey of Nubia, excavating cemeteries and, together with his colleagues, examining some 6000 bodies using what is now considered a standard physical anthropology approach, involving the recording of age, sex, disease, and population studies (Smith and Wood-Jones 1910). Virtuall all those who worked on human remains in Egypt, both in terms of mummies and skeletons, were medically trained, most with specialisations in anatomy, for example, Frederic Wood-Jones (1879–1954), who later went on to become the first Professor of Human and Comparative Anatomy at the Royal College of Surgeons in 1945, after a distinguished medical career. Similarly, Douglas Derry (1874–1961), working with Smith as Assistant Professor of Anatomy at the Government School of Medicine, Cairo, was a medical man who also served as an archaeologist. In 1923 he was the first person to examine the mummy of Tutankhamun, with the report being published posthumously. He, more than anyone else, was responsible for the training of scholars in the study of human remains and together with his student,

Ahmed Mahmud el-Batrawi (see below), increased the archaeological anatomical collections (both skeletal and mummies) of the medical school, as well as being largely responsible for the anatomy collection and museum.

Excavating and Examining Human Remains in the Twentieth Century and Beyond

The Nubian campaign, with large-scale cemetery studies, marked a watershed in the study of human remains. In archaeological expeditions, increasing attention was given to the study of both mummified and skeletonised remains as a matter of course. The emphasis was to extract a bio-history of the individual as well as to better understand populations, diseases, and familial relationships, although craniometric studies persisted in parallel for some time. The analyses of the remains generally were carried out by medical practitioners, rather than by physical anthropologists. This bias toward medical professionals continued with the advent of palaeopathology, when tissue samples taken from mummies were analysed to identify organs as well as to isolate diseases (Ruffer 1911, 1921). The majority of scholars working on the Egyptian remains were western, although, with time, some of the recently trained non-western doctors participated in the analyses (the first medical school in Egypt was founded in by the Frenchman Clot Bey in 1827, by decree of Muhammad Ali Pasha, and was associated with the military; fully trained Egyptian professors were only common after the 1880s (Abugideiri 2016; El Dib 2015; Mahfouz 1935)). One of the most prominent of the Egyptian anatomists to work on archaeological material was Ahmed Mahmud el-Batrawi (1902–1964). He studied medicine at Cairo University's Medical Faculty and, after graduation, worked with Derry (see above) as his assistant at the Anatomical Institute of Cairo University. He too collaborated with archaeologists, working on and publishing the results of excavations in Nubia. Subsequently he carried out postgraduate work in London in anatomy and then became one of the first Egyptian anatomists to obtain a Ph.D. in anthropology. Upon his return to Egypt, he became a professor of anatomy and maintained close ties with archaeologists, both from the Egyptian Antiquities Service, as well as foreign excavators.

Cemeteries and graves that were excavated tended to be ancient Egyptian or Coptic, with some Islamic interments also being examined, if they were of sufficient antiquity. Due to religious sentiment, Coptic and Islamic cemeteries that were in use, regardless of their antiquity, were never a source for studying the past. All scholarly work was carried out under the auspices of the Antiquities Service, in its various forms, most recently the Ministry of State for Antiquities. In addition to the Antiquities Service's own excavations, foreign museums and universities, as well as private individuals, excavated throughout Egypt, after obtaining the necessary permits. Most of these groups did not bring in their own experts on human remains but depended on those working in conjunction with the Antiquities Organisation, such

as Derry and Batrawi and others trained in the Cairo medical school, especially since those people had considerable experience in dealing with mummies and skeletons and could carry out any necessary tests/analyses locally. Even after the revolution of 1952, with the expulsion of the British and the end of the Egyptian monarchy, when the traditionally French director of the Antiquities Service had been replaced by an Egyptian, this construct continued, with the Cairo and Alexandria medical schools providing specialists on human remains to work with all archaeological groups. Some of the non-Egyptian specialists who had operated during the Egyptian monarchy and the era of the British protectorate stayed in Egypt and continued working on human remains, with Egyptian doctors also participating in the work. However, with a decrease in local interest and expertise in the late 1960s and early 1970s, because of the retirement and death of many of those working on human remains in Egypt, and possibly because there was an increase in the number of expeditions working on cemeteries, more and more expeditions started to bring in their own anatomists/physical anthropologists to augment those who were locally available. These scientists reflected the education and mores of their home countries and training, as is seen in their publications, with theoretical approaches and ideas differing between the various European and American scholars.

In 1956 the National Research Centre of Egypt was founded to carry out scientific research, focussing on industry, agriculture, public health, and other sectors relating to the national economy. In time, a few of the scholars involved in medical and anatomical research extended their interest to archaeological remains and intermittently started to collaborate with archaeologists, particularly from the late 1970s onward. Their laboratories were also used by the Antiquities Service.

The Antiquities Service (renamed the Egyptian Antiquities Organisation in 1971, then the Supreme Council of Antiquities in 1994, and most recently the Ministry of State for Antiquities in 2011) did not have a separate branch dealing with human remains. However, their research and conservation branch was involved with mummy conservation from 1971 onward, with notables such as Zaki Iskander (who was working on mummy conservation even before 1946), Nasry Iskander, and Samia Merghani. They worked on establishing protocols (which continue to evolve) for the care of human remains, based on the practicalities present in Egypt (both in museums and the field), as well as building on their experiences in Egypt and abroad, and discussions with international colleagues. They also established laboratories that could perform ancillary analyses. Merghani, unusually, was trained in conservation as well as physical anthropology (the latter in Russia) and thus also worked on excavations in the latter capacity, founding the Anthropological Studies Laboratory within the Centre of Research and Conservation of Antiquities in 1994. It was perhaps due to her training and the increasing recognition by the Antiquities Organisation for the need for permanent qualified personnel and for establishing protocols to deal with human remains that human remains and organics became a growing concern, coupled with an increased interest in the subject by foreign missions working in Egypt. Thus, a branch of the research and conservation department of the Antiquities Organisation concentrated on microbiology, pest control (particularly in dealing with organic remains), mummy maintenance, and, to a lesser

degree, anthropological studies. Regrettably, the majority of people working in these laboratories came from a conservation background, as even today there are no full degrees granted in physical anthropology in Egypt; interested individuals obtain training in anatomy and biology (at many national universities), and some attend courses on bioarchaeology at the American University in Cairo, and Alexandria University.

Over the last 15 years, a concentrated push has been made to send people abroad to study, more anatomists have been encouraged to engage with archaeologists, and foreign institutes, archaeological missions, and universities have offered scholarships, as well as held intensive training programmes in Egypt to encourage the study of human remains, with an increase in the use of radiology, both on-site and in museums (see Aufderheide 2003 for how mummies are studied). Since 2014, the American University in Cairo, the University of Zurich, and the Institute of Bioarchaeology have hosted training programmes in bioarchaeology, in cooperation with the Ministry of Antiquities, the National Research Centre, and UNESCO. In addition to standard physical anthropology, the training has included different types of imaging, palaeopathology, histology, chemical analyses of mummification materials, ethics, and aDNA work. The American University in Cairo, in conjunction with the Institute of Bioarchaeology (an international body), and the American Research Center in Egypt have hosted two major international conferences on human remains and bioarchaeology in Egypt in Cairo, with a third one planned for 2019. All of this activity has given birth to a small core of professionals, and in 2017, the Ministry of State for Antiquities has founded a unit for the scientific study of human remains, headed by one of these professionals.

Although at this point there is no academic programme dedicated to the study of ancient remains, those who are interested follow the track of anatomy and anthropology in the national universities, augmented by special courses (including work in the field) offered at the American University in Cairo, by the different archaeological institutes (French, American, German) or excavations. As international standards of dealing with human remains have become increasingly standardised, there is a marked increase in collaboration between professionals from all the different countries working in Egypt and their Egyptian colleagues.

Trends in the Study of Human Remains

Although in the sixteenth to the eighteenth centuries antiquarians, archaeologists, and anatomists were more interested in studying Egyptian mummies rather than skeletal material, both have been and continue to be studied in Egypt. Indeed, the study of skeletal material is far more straightforward than the study of wrapped remains. Mummies, however, still get more public attention, possibly based on their curiosity value and the way in which they continue to be portrayed in films. For scholars, however, they also sometimes prove to be more engaging than skeletal remains as they are often the bodies of the elite, coming from tombs that contain autobiographies (albeit written for the public), genealogies, and grave goods, all of

which flesh out the deceased and also provide textual and physical checks on what the body reveals, thereby creating more complete biographies of the dead. For individual burials, particularly those without a tomb assemblage, interest often focuses on the basic issues: sex, age, and disease. However, since the end of the nineteenth century and the start of the twentieth century, when large-scale cemeteries have been systematically studied, larger population histories have been a focus. Increasingly, in addition to demographic and palaeopathological studies, large-scale studies on diet, migration, weaning histories, and ethnicity are standard (see, e.g. Dupras et al. 2001; Wheeler 2010; Tocheri et al. 2005; Ikram et al. 2015; Dabbs and Schaffer 2008). Currently, nonelite cemeteries are being sought out actively, such as at Amarna,[1] to obtain a better understanding of the life histories of workers, peasants, and the nonelite in general.

Ancient DNA studies are also being carried out in Egypt and abroad. Former Minister of Antiquities, Zahi Hawass, with an international team, worked on the DNA of the royal mummies (2010, 2012) in Egypt in order to establish family relationships and to identify some anonymous individuals. These, like many other DNA studies, came under criticism (e.g. see letters by various people in the *Journal of the American Medical Association,* 2010*,* 303.24: 2471–2475, and for an overview, see Marchant 2011). Since then, no other aDNA studies have been carried out in Egypt as there has been limited access to the laboratories. However, DNA analyses on Egyptian remains have been done abroad, with one recent study on origins of an Egyptian population yielding some positive results (Schuenemann et al. 2017). Of course, it is possible that these studies, too, will come under scientific criticism as is so frequently the case. The results of DNA studies, though, are not always welcome in Egypt due to nationalist and political issues (see, e.g. Marchant 2014; El Aref 2017; Hawass 2017), which have historic roots, sometimes based on misunderstandings (Hamdy 2000).

Laws and Attitudes Toward the Study and Display of Human Remains

The study of human remains in Egypt has largely been the purview of western-trained physicians and anatomists, as well as physical anthropologists and, indeed, mainly of westerners (Ikram 2015/2016). To some extent this might have its roots in a religious avoidance of disinterring, defleshing, and studying the dead, as well as a greater need for Egyptian physicians to ply their craft on the living. Physical anthropology did not exist as a discipline in Egypt until relatively recently, with no degrees being awarded in it even today, mainly due to insufficient demand. It is only recently (see above) that there is an increased interest in the study of human remains. It is hoped that soon this might lead to the establishment of university degrees in the field, both in national and private universities.

[1] See http://www.amarnaproject.com for a list of publications as well as online publications of the material.

Permission to study human remains, and how to do this, traditionally lies with the Antiquities Service/Ministry, with foreign missions' requests being vetted by a committee. The degree of interest and control over the study of human remains increased in the 1990s, linked to the founding of the Anthropological Studies Laboratory. Realistically, however, the number of trained personnel to oversee or work with foreign experts and expeditions was severely limited, so actual collaboration and results were limited to non-existent. This has changed in the last 5 years and will no doubt change even more after the 2017 foundation of the human remains unit. Ideally, collaborative work should be supported and urged, although a nationalistic wave might increasingly limit work on human remains to Egyptian scientists. Indeed, published results of studies of Egyptian human remains often elicit nationalistic rather than scientific responses (e.g. the furore on the internet/social media created by the Schuenemann et al. 2017 article on Egyptian DNA and the origins of the ancient Egyptians), underlining the continuing political and sensitive nature of the study of human remains.

A further complication in the study of human remains is the fact that permissions for excavations and the study of remains must go through not only the Ministry of State for Antiquities, which has an understanding of the information that might be obtained about the ancient Egyptians through the study of their physical remains, but also the National Security forces, who are less aware of the scientific worth of such analyses. Although sampling of different sorts is often permitted, the export of samples is generally denied, regardless if the request is made by an Egyptian national or by a foreign scholar. Until Egypt has the necessary technologies to carry out all the tests needed to study human remains in all their guises (aDNA, gas chromatography mass spectrometry, C-14, isotope analysis), or the export of samples is permitted, advances in the study of human remains in Egypt will suffer.

The debate about the study of human remains has recently (after the 2011 uprising) become more topical, partially due to the looting of archaeological sites, primarily cemeteries (Ikram and Hanna 2013; Hanna and Ikram 2013). Considerable metaphoric ink has been spilled on social media debating the pros and cons of digging up human remains and displaying them. More religious people (both Christian and Muslim) are often against digging up and displaying human remains (regardless of whether they are skeletons or mummies), but public opinion regarding this question does not follow any socio-economic or even religious lines, as evidenced by the people commenting on the subject in social media as well as based on the results of informal surveys carried out as part of theses discussing whether human remains should be studied and/or displayed (see below). Interestingly, although there are demands for repatriation of artefacts, there has not been a huge outcry for the return of human remains.

The ethics of displaying human remains, particularly mummies, has been the subject of discussion for well over a hundred years. This is most clearly seen with the history of the royal mummies, which have been put on display or removed from it, depending not only the decorum of the time but also on the political and economic agendas and viewpoints of the last 60-plus years (Ikram 2017). Currently, the ethics of studying and displaying mummies is also widely debated in social media

and has been the subject of MA theses in Egyptian institutions of higher learning. As yet there are no laws defining how human remains are studied or displayed, although decisions about these are made by governmental agencies, be they the Ministry of State for Antiquities or the State Security. It is increasingly clear, however, that concentrated and rigorous study of human remains is crucial, and thus, more than ever before, bioarchaeology is working in tandem with archaeology in order to obtain a better understanding of the culture, ethnicity, diet, disease, belief systems, age, gender, and socio-economic status of the ancient inhabitants of Egypt.

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Chapter 5
Archaeological Approaches to Human Remains: France

Christopher Knüsel and Bruno Maureille

Origins of Skeletal Studies in France

The French scholarly landscape of human skeletal studies does not lend itself easily to general overviews due to separation of related disciplines, regionalism, and, most importantly, deep historical origins. Due to separate developmental trajectories, there is no unified discipline of "anthropology" in France, a situation that is similar to the academic organization of other European countries, including Germany and the United Kingdom. When "anthropologists," either biological or sociocultural, interact in joint projects, a development that is encouraged but not formalized, this is considered part of an interdisciplinary approach. This situation is not unique to France, but is likely an outcome of colonization of, especially, parts of Africa, which fostered the development of *ethnobiologie* as part of ethnology (*ethnologie*) that includes ethnography, a subject that developed alongside but separately from physical anthropology in the early decades of the twentieth century in France (see Conklin 2013).

Paul Broca, a medical specialist in neuroanatomy, is considered the "father of physical anthropology" in France (see below). Thus biological anthropology (also *l'anthropologie biologique*, *bioanthropologie*, or *anthropobiologie*), formerly physical anthropology (*l'anthropologie physique*), has a longer association with medicine and with paleontology and prehistory (i.e., Paleolithic to Neolithic periods) – stretching well back into the nineteenth century – than with archaeology (i.e., protohistoric and historic periods). In France, prehistory sprang from paleontology (*contra* Cleuziou et al. 1991, who cite an origin from physical anthropology); philosophy, with its inheritance from the *siècle des lumières* (the "Enlightenment"); and geology, a science that deals with the "natural history of mankind." With its diverse origins, the interdisciplinary ambition of such studies today is aptly summarized on

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the plaque outside the entrance to the recently reopened (17 October 2015) Musée de l'Homme in Paris, after a period of refurbishment. Found next to the central entrance, it reads in translation as follows:

> One hundred and fifty researchers work here to understand the origins of Mankind in all its dimensions, whether biological, social, or cultural, in the full expanse of time, from their origins into the future. Studies in primatology, prehistory, biological and social anthropology undertaken at the Musée de l'Homme contribute to tracing the history of Humankind in its natural and social environment.[1]

The link between human remains and prehistory being older, terms such as *paléobiologie* (paleobiology), *paléoanthropologie* (paleoanthropology), and *paléontologie humaine* (human paleontology) are often employed to distinguish this type of research from the study of Holocene archaeological human remains, which is a more recent development referred to by the terms *archéoanthropologie* (archaeo-anthropology) or *bioarchéologie* (bioarchaeology), which can be loosely equated to human osteoarchaeology and bioarchaeology (including faunal and plant remains, following the earliest definition of this term – see Knüsel 2010), respectively. The multiple terms used to describe the study of human remains reflect the organic and continuing development of the subject, to which scholars trained in a variety of disciplines have contributed, often on an ad hoc basis as an adjunct to or development from their main area of training and interest.

Among the most well-known early French prehistorians were priests, such as l'abbé Henri Breuil, who contributed much early work on parietal art; Pierre Teilhard de Chardin, who became involved in the Piltdown Man hoax and underlined the importance of the Neolithic for the development of human consciousness in *The Phenomenon of Man* (1955); and Jean and Amédée Bouyssonie, excavators of the La Chapelle-aux-Saints (Corrèze) site. Others were lawyers, such as Édouard Lartet, who published early works on fossil apes such as *Dryopithecus* and was the father of Louis Lartet, who discovered the Upper Paleolithic Cro-Magnon (Dordogne) specimens; customs officials, such as Jacques Boucher de Perthes, responsible for demonstrating the antiquity of humans by associating them with Acheulian stone tools; and medical doctors, such as Louis Capitan, who participated in excavations at St. Acheul (Somme) and a number of sites in the Dordogne region with Denis Peyrony, a school teacher.

Up to the present day, the study of human remains in France is normally undertaken after the completion of a first-degree course of study in another discipline, for example, biology, geology, history, sociocultural anthropology, history of art and archaeology, or medicine, among others.

[1] "Cent cinquante chercheurs travaillent à la connaissance de l'Homme dans toute ses dimensions, qu'elles soient biologiques, sociales ou culturelles, et dans toute l'épaisseur du temps, des origines de l'Homme à son devenir. La primatologie, la préhistoire, l'Anthropologie biologique et culturelle pratiquées au Musée de l'Homme contribuent à retracer l'histoire de l'Homme dans son environnement naturel et sociale." (translation by the first author)

Link to National Identities

As intimated in the Musée de l'Homme statement, above, it is the origins and development of *Homo sapiens sapiens* that defines French early prehistory. The focus of the subject predates by millennia the rise of the French nation-state, although the study of the "races of mankind," an early focus of both disciplines, contributed – unwittingly perhaps – to a biologically defined national identity (see below). Archaeology, much more than biological anthropology, has been influenced by and fostered the rise of national identities, drawing on various periods of the past as analogous to the more recent troubled history of the twentieth century (see Dietler 1994).

Napoleon I Bonaparte founded the *Académie Celtique* in 1804, the same year marking the foundation of the First Empire. In this, the Emperor underlined the descent of the French from Gallic peoples in opposition to a "Germanic" French royalty and aristocracy, who saw themselves as descendants of Frankish peoples who had migrated into the eastern part of the country in late antiquity from an origin to the east of the Rhine River and, more specifically, of the fifth-century Frankish (and first Christian) King Clovis I (see Dietler 1994). Political figures of the past two centuries have carried on this tradition of Gallic identity. The Emperor Napoleon III (1808–1873), Field Marshal Philippe Pétain (1856–1951), General and President Charles de Gaulle (1890–1970), President François Mitterrand (1916–1996), and politicians to the present day have made reference to "nos ancêtres les Gaulois" ("our ancestors the Gauls") as an allusion to national origins as an independent Gaul ("la Gaule indépendante"), terms used by archaeologists to describe the region prior to the Roman conquest, as in Jean-Louis Brunaux's (1996) *Les Religions Gauloises: Rituels Celtiques de la Gaule Indépendante*. The occupation of the country by Roman invaders thus became analogous to the resilience of the French nation and endurance of French culture under occupation during the Second World War Vichy government (see Amalvi 1984).

Key Institutions

A number of institutions act very much to define French identity and reflect its strongly philosophically humanist orientation. In the second part of the nineteenth century, physical anthropology as a domain of scientific enquiry was formalized in France, perhaps the first country in the world to see this development. Paul Broca (1824–1880) figures prominently in the initial developments of the discipline.

In 1859 Broca and colleagues founded *La Société d'Anthropologie de Paris* (The Anthropological Society of Paris). The first and oldest society of its kind, the SAP as it is known, recently convened for its 1842nd meeting in January 2017. Early on the Society met many times a year, but in the 1990s its gatherings became annual meetings. Its journal, the *Bulletins et Mémoires de la Société d'Anthropologie de Paris* (BMSAP) was founded at the same time and, as a consequence, is the oldest

journal in the world devoted to the study of the natural history of humankind as a part of the natural sciences. It remains one of the main publication venues for French biological anthropologists. Further formalization of the discipline came in 1875 when The Anthropological Society of Paris founded the School and Laboratory of Anthropology, at the instigation of Broca and colleagues Jean-Louis Bertillon, a medical doctor, statistician, and demographer, and Jean-Louis Armand de Quatrefages, who became the first Professor of Anthropology and Ethnology at the Natural History Museum (Muséum d'Histoire Naturelle) in Paris in 1855, the first person to hold such a position in the world (Bocquet-Appel 1996). Broca became the first head of the Laboratory. Broca also served as the first director of what became the Broca Laboratory at the École Pratique des Hautes Études (EPHE, School for Advanced Studies) in Paris, which was established in 1867 (Ferembach 1980) in order to foster practical instruction in the life and earth sciences, historical and religious sciences, and philology.[2] In 2017, the Society of Anthropology's laboratory was fused with that of the École Pratique des Hautes Études, and as a part of a scientific reorganization to form part of a GRET (*Groupement de Recherche et d'Enseignement Thématiques*) (*Thematic Research and Teaching Group*), which encompasses evolutionary, morphological, anthropological, and genomic areas of interest.

Paul Broca's capacity to organize and create has been felt internationally, even after his death in 1880, causing Denise Ferembach (1980: 17) to note that almost all international scholars who came to work in Broca's laboratories established similar facilities in their country of origin or wherever they established themselves. For example, Aleš Hrdlička established a laboratory at the Smithsonian Institution in 1903, a journal, the *American Journal of Physical Anthropology* (AJPA), in 1918, and a society, the American Association of Physical Anthropologists (AAPA), in 1919, after leaving his native Czechoslovakia and spending part of his early career in Paris.

The Muséum d'Histoire Naturelle (MNHN), founded originally as a royal garden dedicated to medicinal plants and teaching in 1635, has been a focal point for research and teaching in the natural sciences for over four centuries. It is a multisite, interdisciplinary museum, with botanical gardens and green houses, a zoological park, as well as museum galleries. It adopted its present name in 1793 and now includes 12 sites in France. Jean-Baptiste de Lamarck, Georges Cuvier, Étienne Geoffrey Saint-Hilaire, and Georges-Louis Leclerc de Buffon number among the early naturalists who taught there.[3] It remains a focus for anthropological research on human remains through the Musée de l'Homme (the Museum of Mankind), one of its branches.

Inaugurated in 1938 and reflecting the political atmosphere on the eve of the Second World War, the idea behind the creation of the Musée de l'Homme was, following its founder and first director Paul Rivet, to consider that "l'humanité est un tout indivisible, non seulement dans l'espace mais aussi dans le temps" ("humanity

[2] https://www.ephe.fr/ecole/histoire-et-personnalites

[3] http://www.museedelhomme.fr/fr/musee/histoire-musee-homme/creation-musee-homme-1937

is an indivisible whole, not only in space but also in time").[4] As noted in the introduction, above, this ethos guides the museum to the present day. It serves as a repository for all vestiges of the human past to intimately link government-funded research with public display. The major theme of the permanent exhibition focuses on the social, cultural, and biological diversity found among humans in the past to the present day.

The former Royal College (*Collège Royal*), founded by King Francis I in 1530 and now known as the Collège de France, is a non-degree-granting institution that offers instruction free of charge in the disciplines of science, literature, and the arts.[5] Professor Yves Coppens, one of those responsible for the discovery of Lucy (AL-288), a member of the species *Australopithecus afarensis* in 1974, held the Chair of Paleontology and Prehistory at the Collège de France from 1983 to 2005, having previously served as assistant professor at the MNHN (1969) and as the Director of the Musée de l'Homme (1980). Today, Professor Jean-Jacques Hublin holds the Chair in Paleoanthropology at the Collège de France as a three-year invited professorship and, since 2004, has also served as the head of the Department of Human Evolution at the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany.

The *Institut de Paléontologie Humaine* (Institute of Human Paleontology) was founded by Prince Albert I of Monaco in 1910 with the aim to "progress of science on any issue regarding the origin and history of fossil Man."[6] It is responsible for managing the extensive prehistoric excavations in France that have contributed so prominently to understanding of early prehistory and the evolution of the *Homo* lineage. The Institute is unique as the oldest dedicated solely to the study of world prehistory.

The CNRS, Centre National de la Recherche Scientifique (National Centre for Scientific Research), founded in 1939, forms a network of research-focused state (i.e., national) employees that populate the terrain of French academia in biological anthropology, prehistory, archaeology, and many other fields of enquiry, from physics to oceanography and history to sociology. The CNRS operates as a government body under the aegis of the Ministère de l'Éducation Nationale, de l'Enseignement Supérieur et de la Recherche (Ministry of National Education for Higher Education and Research), employing 32,000 people as researchers and technicians across all disciplines. The CNRS is thus the backbone of research in France, and the majority of CNRS researchers are partnered with higher education or other research establishments, where they can also contribute to teaching and administration. To date with some 100 collaborative agreements with private enterprises, the CNRS has generated 1026 innovative enterprises (spin-off companies) and 6629 patents.[7] Since 2009, the CNRS has offered seven to nine permanent research positions a

[4] https://www.mnhn.fr/fr

[5] https://fr.wikipedia.org/wiki/Collège_de_France

[6] http://www.fondationiph.org/spip.php?article67

[7] http://www.cnrs.fr/fr/organisme/presentation.htm

year for young scholars in fields related to the evolutionary interaction of humans with their natural and cultural environments.[8]

Historical Events Affecting the Discipline

Despite the early foundations of this panoply of institutions and many disciplinary firsts, the influence and acceptance of Georges Cuvier's catastrophism, whereby new species came into being after cataclysmic events and not through slow evolutionary change, coupled with the earlier appearance of Lamarckian transformism that argued for the transformation of animals by acquired characteristics in response to changes in their natural environment, delayed the acceptance of Darwinian evolution in France (Spencer 1984: 25). These theoretical currents also played a role in Henri Victor Vallois' early championing of a pre-sapiens phase in the human evolutionary lineage, in which Neandertals were excluded as an ancestral species to modern humans due to the number of anatomical specializations (i.e., autapomorphies) present among these hominins (see Spencer 1984: 34). The "less than human status of Neandertals" held by many in the past and still today, albeit among a reducing minority of researchers, still affects perceptions of Neandertals and their contemporaries in Asia and Africa (Giacobini and Maureille 2007).

Although the origins of French prehistory in the nineteenth century predate the earliest fossil human discoveries, the discipline's development was greatly accelerated by the repeated discoveries of substantial remains of Neandertals (such as those from Malarnaud, 1888; Bau de l'Aubesier, 1903; Petit Puymoyen, 1907; Le Moustier, 1908; La Chapelle-aux-Saints, 1908; La Ferrassie, 1909, 1910, 1912; La Quina, 1911), their Lower and Middle Paleolithic predecessors, and anatomically modern successors (Cro-Magnon in 1868) and their respective cultural assemblages, including parietal and mobiliary art, structures, and material culture. These discoveries, their subsequent descriptions, and continuing study have defined the discipline on a global scale. The numerous fossil remains from France have stimulated the search for the remains of ancestral human populations across Eurasia and Africa and maintained a vibrant research orientation targeted to explain the appearance and the eventual disappearance of the Neandertals and the appearance of modern humans.

Research on the mechanisms of this transition and their biosocial behavioral implications continue to the present time, with renewed impetus from the discovery of Neandertal-derived genetic sequences in modern Eurasian populations (Green et al. 2010). As a consequence, these studies now focus on the appearance of key sociocultural behaviors, such as burial and symbolically charged uses of material culture, including ornamentation and colorants (Zilhão 2007; Zilhão et al. 2010). The earliest evidence for funerary behavior is of critical importance for understanding the development of human cognition and consciousness, and thus much debate

[8] http://www.cnrs.fr/comitenational/sections/section.php?sec=31

surrounds the interpretation of the earliest evidence for intentional burial in the Middle Paleolithic (see Gargett 1989, 1999; Dibble et al. 2015; Rendu et al. 2014, 2016). As a consequence, find locations receive fine-grained analysis as much as do the human remains. Detailed recording of features and taphonomic studies of the archaeological context increasingly employs GIS (Geographic Information Systems) and 3D Geomorphometrics. These and the application of new dating techniques (Maureille et al. 2016) have become highly visible hallmarks of recent French paleoanthropological research.

In the early twentieth century, the discipline of human paleontology was essentially divided along the lines of scientific (physical) anthropology and prehistory, which remains to this day, with the exception of the University of Bordeaux, where the two subjects are joined in research and teaching, a comparatively recent development (see below). This division is reflected in the editorship of the major journal *L'Anthropologie*, first published in 1890 and devoted to the prehistoric sciences and paleoanthropology.[9] The founders and first editors-in-chief of the journal were the paleontologist Marcellin Boule, Professor of Paleontology at the Natural History Museum in Paris and the first to study the La Chapelle-aux-Saints (Corrèze) Neandertal, who was responsible for prehistoric archaeology (archéologie préhistorique), and René Verneau, who was Professor of Anthropological Science or Physical Anthropology also at the Natural History Museum, with interests in the population history of the Canary Islands. This original pairing was replaced in 1930 by Henri Victor Vallois, who took up the role once occupied by Marcellin Boule, and Raymond Vaufrey, a student of Boule's with interests in the prehistory of North Africa, who succeeded René Verneau (Bocquet-Appel 1996). Despite this division between physical anthropology and prehistoric archaeology, the close relationship between these subjects is also clear in Boule's much heralded 1921 seminal volume *Les Hommes fossiles: Eléments de Paléontologie humaine*, which provided a synthetic treatment of geology and paleontology (Piveteau 1989). A similar synthesis can be found in Vallois and Movius (1953) *Traité sur les Hommes fossiles*, a forerunner to the British Museum Catalogues of Fossil Hominids (Oakley et al. 1967; Oakley et al. 1975, 1977) and Michael Day's (1986) *Guide to Fossil Man.*

While Paul Broca's early success in establishing the framework for the study of biological anthropology grew out of the anticlerical and pro-science atmosphere of the founding of the Third Republic in 1870 (Conklin 2013: 28), the development of biological anthropology was greatly influenced by the two World Wars and the overt racism and bigotry of the National Socialists. In an interview by Jean-Pierre Bocquet-Appel (1996), Henri Victor Vallois identified the "Modern Synthesis" of genetics and Darwinian evolutionary theory in the 1930s and the postwar period as marking a turning point in relations between French biological anthropology and that in the Anglophone world, especially as practiced in the United States. Although clearly not himself a racist, the concentration on human races, a topic that Vallois had explored for much of his career, as an analytical category, rather than a subject of research, was clearly influential, and its subsequent history influenced by the

[9] https://www.journals.elsevier.com/lanthropologie

notion of human races. After the war, with the exception of the Eastern Bloc countries, France continued scientific exchanges with countries worldwide, including Germany, but the fundamental change to population approaches in North America, and the abandonment of the concept of race as a biologically meaningful category (see Washburn 1951; Marks 1996), may be largely responsible for this split in traditions after the Second World War.

A similar argument applies to the notion of cultures as defined on the basis of regional artifact distributions. These have more often been used as an analytical category than as a subject of research. Despite the powerful legacy among French scholars of André Leroi-Gourhan and his "systèmes techniques" (technical systems) and "chaîne opératoire" (operational sequences) from the 1950s for lithic tool manufacture (see Soressi and Geneste 2011) – which represented a break with established tradition to develop the typological heritage of the abbé Henri Breuil – the notion of cultures endures. Unfortunately, a number of Leroi-Gourhan's major works have not, or not until very recently, been translated into English, so they have not had the same impact as that contributed by François Bordes, whose work came to the fore in the Bordes-Binford debate of the 1960s and 1970s. This series of debates, which pitted Bordes' notion of cultures to explain lithic assemblage variability of Mousterian *facies* against Binford's functional interpretations of the same variability, reflects varied and profound differences in approach (see papers in Dibble and Mellars 1992).

The University of Bordeaux: A Case Study

The University of Bordeaux provides an insightful example to help to trace the more recent relationships between prehistory and biological anthropology – and archaeology – in French academia. Prehistory has been taught at the University of Bordeaux since the middle of the 1950s, where it grew out of geology, and thus its subject matter, separate from archaeology, is considered part of the Faculty of Earth and Ocean Sciences (Faculté des Science de la Terre et de l'environnement). Within this framework, prehistorians investigate the interaction of early humans and the natural environment, its lithic resources, and its animals specifically. The first Professor of Prehistory at Bordeaux was Georges Malvesin-Fabre, who was named to the position in 1954. He created an advanced study certificate in anthropology and prehistory and also established and was the first director of the Higher Education Institute for Prehistory (l'Institut Pratique de Préhistoire) at les Eyzies-de Tayac (Dordogne), which is part of the University of Bordeaux to this day. In 1956, François Bordes succeeded Malvesin-Fabre, becoming the second Professor of Prehistory, while also assuming the directorship of the Institute of Prehistory. Although engaged in teaching biological anthropology from 1956, in 1959 Bordes abandoned teaching the subject, creating a certificate in prehistory, with the Institute becoming the Laboratory for Quaternary Geology and Prehistory (*Laboratoire de Géologie du Quaternaire et Préhistoire*).

In 1969, Bordes supported the creation of a teaching position for Raymond Riquet, a specialist on Neolithic human settlement who became assistant professor of biological anthropology in 1973 and then professor in 1977. From that time, biological anthropology was a part of the Faculty of Biological Sciences (where it remains to the present day). Arriving in 1983 from the University of Pierre and Marie Curie (Paris VI), Bernard Vandermeersch, with the support of the CNRS, had the opportunity to create a scientific and teaching laboratory in biological anthropology separate from prehistory, geology, and paleoenvironmental studies. Vandermeersch thus became the second Professor of Biological Anthropology at the University, serving in that role from 1983 to 2001. Prehistory and biological anthropology were thus not only separate disciplines but found themselves in separate faculties at this time, as they continue to be, in general, in French universities today.

In 2004, the University Bordeaux 1, as it was then known, and the CNRS merged the two laboratories, prehistory and biological anthropology, to create a unique *Unité Mixte de Recherche* (Mixed Research Unit, abbreviated UMR), France lacking academic departments per se. Today, this is known by its acronym PACEA, which stands for *De la Préhistoire à l'Actuel: Culture, Environnement, et Anthropologi*e.[10] Its academic complement includes teaching-researchers (*enseignants-chercheurs*), comprised of "maître de conférences" (equivalent to lecturers and professors of various grades in Anglophone universities) and "professeurs d'université" (full professors), and a substantially more numerous complement of CNRS researchers and technicians (*ingénieurs*) associated with either teaching or research. Anne Delagnes, a CNRS researcher specializing in the Paleolithic of East Africa, is the current head of PACEA, having succeeded the second author in this post in 2015 after the now statutory 5 years of service from 2011. The first author presently serves as Professor of Biological Anthropology, and Jacques Jaubert is the current Professor of Prehistory at the University of Bordeaux.

In Bordeaux's academic landscape, then, archaeology remains separate from prehistory and biological anthropology, the latter two being uniquely joined at the now federated University of Bordeaux (formerly University of Bordeaux I, II, and IV), and these fields of enquiry are separate from social anthropology and ethnology (Anthropologie Sociale et Ethnologie), a separate faculty at the University. Due to a political split in 2014, archaeology and archaeological sciences are now taught with history and art history at the neighboring University of Bordeaux Montaigne, the former University Michel-de-Montaigne-Bordeaux III.

The Role of Studies of Human Remains in Society

The first law applied in France to legislate on the relationship between the excavation of archaeological remains, including human remains, and property owners dates to the 1941 Vichy government, which reinvigorated a law of 1913 that

[10] http://www.pacea.u-bordeaux1.fr/Presentation-generale.html?lang=fr

stipulated that human remains could not be sold, as had by that time become the practice by some to finance their excavations. After several documented cases involving the destruction of archaeological sites as a result of highway and housing construction projects, a new law came into effect in 1973 creating the AFAN (l'Association pour les Fouilles Archéologiques Nationales) that governed both research and rescue excavations and shared the associated costs among the AFAN, the landowner, and the State via the Ministry of Culture. After a period of time, this law was reinvigorated by the creation of the Inrap (l'Institut National de Recherches Archéologiques Preventives, The National Institute for Rescue or Salvage Archaeology) founded on the principles of the European Convention for the Protection of Archaeological Heritage signed into law as part of the Treaty of Malta, 16 January 1992. The Convention created the means by which to finance the survey and excavation of cultural heritage. The law was promulgated in France on 17 January 2001 and the Inrap put in place on 1 February 2002.[11]

Today, the Inrap employs many archaeo-anthropologists (see page 2) in excavations of human remains and is a major source of professional employment for both this group and archaeologists in general. By 2012, the Inrap had become the largest archaeological research organization in Europe, with more than 2000 employees and a budget of 170 million euros supporting thousands of archaeological surveys, many thousands of excavation days, and more than 20,000 research days that contributed to some 5000 public presentation days over 10 years. In the past 10 years, Inrap archaeologists have undertaken 2500 excavations within France and its overseas territories. The monopoly exerted by Inrap over public archaeology surveys has recently contributed to legal wrangles between it and other privately operated public archaeology enterprises.

Popularization of research for the purposes of education and entertainment is a key outcome of research through permanent, annually occurring, and temporary public exhibitions. Visitors to museums and their shops in France will find many books intended for the general public, such as *Les Ancêtres de l'Homme* by Priscilla Bayle and Anne Delagnes (2014) and the Musée de Préhistoire, Les Eyzies-de-Tayac's multi-authored exposition catalogue *Première Humanité: Gestes Funeraires des Néandertaliens* (Vandermeersch 2008). Although accompanied by an increased emphasis on English-language journal publication, a major source of dissemination of research continues to be published as roundtable ("tables rondes"), many deriving from national and international workshops and conferences ("ateliers et congrès"), as well as "belles oeuvres," popular books with an emphasis on pictorial content such as Clottes and Lewis-Williams' (1996) *Les Chamanes de la Préhistoire: Transe et Magie dans les Grottes Ornées*, Randall White's (2003) *L'Art Préhistorique dans le Monde*, and Norbert Aujoulat's (2013) *Lascaux – le Geste, l'Espace et le Temps*, all of which are dedicated to the Upper Paleolithic.

A growing interest in medico-legal investigations among the general public has also spawned popular works on this subject. Philippe Charlier has authored a number of books on subjects in medicine, medical history, and paleopathology, termed

[11] http://www.inrap.fr/de-l-archeologie-de-sauvetage-l-archeologie-preventive-9724

"Pathographie" (a type of osteobiography of the deaths of historical figures), and medico-legal science. His recent (2014) book, *Quand la Science Explore l'Histoire: Médicine légale et Anthropologie*, has recently been translated into English as *When Science Sheds Light on History: Forensic Science and Anthropology.*

Disciplinary Contributions

Although fossil human studies have dominated biological anthropology in France, researchers have also had lasting influences on other subjects germane to the discipline. Paleopathology and paleodemography have a long history of professional research and public interest, while that in medico-legal anthropology (forensic anthropology and archaeology) is comparatively recent.

Paleopathology

Because Neandertals were considered to have suffered from pathological conditions to explain their physical appearance (see Straus and Cave 1957), paleopathological considerations of fossil specimens in France had an early origin. Although early on these conditions were not the subject of detailed study in themselves, a number of studies since have demonstrated that members of these early populations did suffer from pathological conditions (see, e.g., Trinkaus 1985). As in many other areas of biological anthropology, Paul Broca (1876) provided an early initiation into the subject when he demonstrated that holes in crania were cranial trepanations, the earliest surgical interventions performed in prehistory. In the early twentieth century, Marc Armand Ruffer popularized the term "paleopathology" in his study of Egyptian mummified remains (Aufderheide and Rodríquez-Martín 1998). The present Director of Studies at the École Pratique des Hautes Études, Olivier Dutour, who also teaches at the University of Bordeaux, specializes in the paleopathology of infectious disease, especially tuberculosis (Baker et al. 2015). He has co-authored a review chapter on the development of paleopathology in France (Blondiaux et al. 2012) and produced an edited introductory text on the subject, *La Paléopathologie* (2011).

Paleodemography

In 1982, Bocquet-Appel and Masset's seminal article, entitled "Farewell to paleodemography," exposed the influence of the age structure of the reference population on age-at-death estimates in paleodemographic analysis (Bocquet-Appel and Massett 1982). Since this time, research focus has been on two specific types of question: the effective population size, globally, in a region or on a site in the past from the

study of attritional mortality profiles of skeletal remains and the demographic effects of disease in past populations. Both types of study are founded on estimates of age-at-death determinations from skeletal remains but take a different approach to overcoming the insidious problem of estimating the age at death of adults based on skeletal changes associated with senescence or "growing old" that are highly variable from one individual to another. Both types of study also rely on use of model life tables of pre-Jennerian (i.e., pre-vaccination) populations. In the first case, in order to compare the entire populations, researchers employ a Bayesian approach to estimate ages at death (Bocquet-Appel 2008) to study the effects of socioeconomic transitions on populations, such as that associated with food production (Bocquet-Appel 2002, 2011).

For the second type of question, researchers employ mortality data from known outbreaks of acute disease (i.e., those that kill their hosts before affecting skeletal change) and compare the mortality profiles from birth to young adulthood, from 0 to 19 years of age at death, those ages that can be more accurately estimated from growth-related skeletal changes. These demographic and skeletal sample mortality profiles are then compared to model attritional mortality profiles of pre-Jennerian populations, such as those of Ledermann (1969) or Coale and Demeny (1966). In this way, anomalies in mortality can be identified from departures from the model profiles. Due to distinctive pathogenicity, certain diseases can be identified by the way they affect population mortality, as with the indiscriminate mortality of plague, as posited by historical sources and confirmed more recently by the identification of the disease-causing pathogen, *Yersinia pestis*, by ancient DNA analysis (Castex and Kacki 2016).

Forensic Anthropology

Although the term is now in current use in France as "*l'anthropologie forensique*" (a direct translation of "forensic anthropology"), definitions and acceptance of the term differ greatly among French scholars. Whatever the personal viewpoint, the subject does not exist as a stand-alone area of study. The subject, if not necessarily the term, is considered to be part of medico-legal studies, a branch of medicine. In their thorough review article published in 1999, entitled "Medicolegal anthropology in France," Işcan and Quatrehomme characterized a system in which the forensic pathologist/physician (*médecin légiste*) played the dominant role as part of the French legal system, with very little input from forensic anthropology per se. They note that forensic physicians have often lacked skills in the field recovery of skeletonized remains, a repeated deficit in regions and countries that do not integrate forensic anthropologists and archaeologists in their legal systems.

Despite an early origin of medico-legal studies developed to address demographic aspects of skeletonized remains in the first half of the twentieth century, Işcan and Quatrehomme characterize the second half of the twentieth century as a largely dormant one for research in human skeletal biology. They emphasize the

lack of modern French skeletal reference collections that means that collections from other regions of the world are used in the context of French medico-legal investigations. This situation has not been remedied more recently; such collections are still rare, with one such collection being curated at the University of Aix-Marseille (see below) and another being the Georges Olivier Collection at the *Musée de l'Homme* in Paris, Georges Olivier having established the biological anthropology laboratory of the *Université de Paris 7* (Campus Jussieu) (Demoulin 1996) and author of the book *Pratique Anthropologique*, published in the 1960s in both French (1960) and English (1969). This is also reflected in the fact that medico-legal physicians receive training in forensic anthropology/skeletal biology only as a supplementary part of professional development, which often takes the form of a relevant doctoral thesis.

Courses to train students in forensic anthropological techniques have only very recently been created, and these are designed to attract students from biology, health sciences, and letters and arts.[12] Recruitment of forensic physicians has been very sporadic. At the University of Aix-Marseille, course units in medico-legal anthropology and human osteology and general anatomy are taught as part of Master's course in "*Pathologie humaine*" (Human Pathology), part of a program in biological anthropology. In Bordeaux, a longer-running course in biological anthropology and prehistory, the Master's in Biogéosciences, now with three pathways, biological anthropology, archaeothanatology, and prehistory that includes geoarchaeology and zooarchaeology, also provides training in evolutionary and skeletal biology, including analysis of demographic aspects of skeletonized remains (age-at-death, sex, stature and body proportions, discrete anatomical variations, etc.).[13] The University of Toulouse Paul Sabatier UMR 5288, *Anthropologie Moléculaire et Imagerie de Synthèse* (AMIS), directed by Eric Crubézy, offers training in molecular anthropology.[14]

In a separate development, but one still to receive recognition from the *Académie de Médecine*, the *Département of Anthropologie-Thanatologie-Odontologie* (ATO) of the l'IRCGN (*l'Institut de Recherche Criminelle de la Gendarmerie Nationale*), the branch of the police force that that oversees criminal investigations, now offers two diplomas in partnership with the University Paris-Descartes, one in "Criminalistics" and a second in the "Coordination of Criminalistic Operations" (Ducrettet et al. 2013). As Ducrettet et al. (2013) point out, although forensic archaeology and forensic anthropology are viewed as separate disciplines, they are inextricably linked in practice.

In essence, it seems that forensic anthropology, a term which did not make its appearance until the early part of the twenty-first century in France applied in the context of medico-legal science, is developing in a manner very similar to that in the United Kingdom in the 1990s. Forensic anthropological interests there grew out of

[12] http://formations.univ-amu.fr/ME5APH-PRAPH4D0.html

[13] https://www.u-bordeaux.fr/formation/2017/PRMA_28/bio-geosciences

[14] http://www.univ-tlse3.fr/anthropologie-moleculaire-et-imagerie-de-synthese-451429.kjsp?RH=rub03

initiatives in archaeology departments, with contributions from osteoarchaeologists and anatomically, dentally, or medically trained scholars on an initially ad hoc research-focused basis (see Hunter et al. 1996).

In France, as in other parts of Europe, forensic anthropology has roots not only in biological anthropology and archaeology but also in medicine. This is reflected in Schmitt, Cunha, and Pinheiro's (2006) *Forensic Anthropology and Medicine: Complementary Sciences from Recovery to Cause of Death*. In its desire to highlight shared interests and the value of collaborative working between broadly medico-legal and subjects akin to biological anthropology and archaeology, this volume focuses on what the Hunter et al. (1996) volume did for archaeology, archaeological science, and biological anthropology in the United Kingdom. The majority of researchers in medico-legal medicine in France pursue their vocations in faculties of medicine, for example, Gérald Quatrehomme, who is a member of the Faculty of Medicine of the University of Nice Sophia Antipolis. Most recently forensic archaeologists and anthropologists have begun to work within the Gendarmerie through the IRCGN. In 2010, an accord reached between the Inrap and the IRCGN fosters joint work and the training of forensic archaeologists (Georges et al. pers. comm.).

The "Bordeaux Approach" to the Analysis of Large Skeletal Populations

One very prominent response to Işcan and Quatrehomme's (1999) call for population-based analysis directed at age-at-death estimations and determination of sex for use in medico-legal studies has come from biological anthropologists at the University of Bordeaux. Bruzek's (2002) initial novel assessment of sex from morphognostic traits of the *os coxae* was logically followed by the metric assessment of the same element based on a worldwide survey of known sex individuals (Murail et al. 2005). The measurements employed developed from a synthesis of those previously used on a one-off basis by a number of researchers over the years, but never applied together previously. A unique contribution of this project is a web-based spreadsheet and statistical analysis package with confidence intervals that can be downloaded from the PACEA website.[15] For those individuals not preserving *ossa coxae* in large skeletal assemblages, "secondary sex assessment" is carried out through the application of discriminant function analysis of infra-cranial bone measurements developed from those individuals for whom sex could be determined from at least one *os coxae*. The approach is an extremely robust method, but, unfortunately, has not been widely adopted outside of France to date.

Another method developed at Bordeaux through the doctoral research of Aurore Schmitt (2005), now a CNRS researcher at ADES (Anthropologie Bio-culturelle, Droit, Éthique et Santé) UMR 7268 at the University of Aix-Marseille, whose

[15] http://projets.pacea.u-bordeaux.fr/logiciel/?id=2#

method for age-at-death determination employs a similar statistical probability ("probabilistic") technique to that of Murail et al. (2005) to age-at-death determinations from the adult auricular surface. This approach is based on taking the original general descriptions of the Lovejoy et al. (1985) method and defining scores on particular features of the auricular surface to arrive at a composite score that is then used to obtain an age-at-death determination from a table of estimates based on a population of known-age individuals with a life expectancy at birth of 30 years or, alternatively, one with a uniform age distribution. In inspiration this approach is similar to that taken by Buckberry and Chamberlain (2002), but their method uses a greater number of character states, with some based on the estimated percentage of the surface affected by a particular morphological change and seven age stages based on composite scores, while Schmitt's relies on attaining an 80% probability of belonging within a particular age range based on composite scores. Both place individuals into broad age groupings to account for underlying imprecisions of estimates, especially of older individuals.

A source of contention derives from the fact that the Bordeaux method does not incorporate Phenice's (1969) criteria, which have become a standard among many Anglophone workers for both sex and age-at-death determinations. The reason for this is historical. Phenice's criteria were not included in the European standards published by Ferembach et al. (1980). As the Phenice method lacks a statistical approach, French scholars have seen it as being "unreliable" and dependent on the experience and acuity of individual researchers. This situation has been remedied in the work of Klales et al. (2012), who have generated a discriminant function for the Phenice traits and thus placed them on a more rigorous statistical footing, although the method is still based on the nonparametric "grades" that are too subject to interobserver interpretation in the eyes of some.

The Archaeological Context of Human Remains: Archaeothanatology

With origins in geology and paleontology, biological anthropology, like prehistory, is strongly influenced by the natural sciences, as opposed to sociocultural anthropology, with archaeology having grown from roots in classics and history. As a consequence, the theories that permeate these disciplines owe much to Lamarck and, latterly, to Charles Lyell's uniformitarianism and Darwin's theory of natural selection, as opposed to the French "sociological school" of Émile Durkheim, Marcel Mauss (author of *The Gift)*, and others, centered around the journal *L'Année Sociologique*, and their predecessors, Arnold van Gennep (*The Rites of Passage*) and Robert Hertz (*Death and the Right Hand*). Once part of a unified approach to ethnology as envisioned in joint working between Marcel Mauss and Paul Rivet, the first director of the Musée de l'Homme, in the late 1920s and 1930s (Conklin 2013), closer links are again emerging. The work of these earlier scholars is now being

increasingly integrated due to the presence and increasing emphasis on funerary archaeology within biological anthropology. Archaeothanatology (Boulestin and Duday 2005, 2006) thus grew out of biological anthropology and not archaeology in order to aid archaeological excavation of human remains and, thanks to the research and teaching activities of Henri Duday, is now well-integrated in field projects in France, Italy, Poland, the Near East, the French West Indies, South Africa, the Nile Valley, and French Polynesia.

Anthropologie de terrain (field anthropology), as pioneered by Duday (Duday et al. 1990; Duday 2006), places human remains at the center of archaeological research (Duday and Massett 1987). As a consequence, osteologists are today routinely employed in excavations of human remains in France and in most French excavations. A new subdiscipline, archaeothanatology, employs detailed observations of the disposition of human remains in the field in order to reconstruct funerary treatments of both inhumations and cremations. The major tenet of archaeothanatology is that the disposition in which skeletonized human remains are found does not reflect the original position of the corpse when it was deposited in the past, but rather is a product of postdepositional transformations of the original placement. Archaeothanatology emphasizes a close connection between human remains, their archaeological context, and the behaviors of the living groups with respect to the dead to create what has become known as a "chaîne opératoire funéraire" (Sellier 2016; Valentin et al. 2014, 2016).

Although recognized and employed to great benefit in French-language publications and field programs since the 1980s, archaeothanatology has not had the same impact outside of France. In part, this can be explained because the earliest literature was solely in French but also because the benefits of this approach for distinguishing intentional funerary practices from the effects of natural decomposition address an incompletely conceptualized disciplinary problem (see Knüsel and Robb 2016). Through recent translations (Duday 2006, 2011) and applications (Bocquentin and Garrard 2016; Nilsson Stutz 2003; Nilsson Stutz and Larsson 2016; Rottier 2016) this type of study is now beginning to make its presence felt in English-language publications. Key work on defining what constitutes an intentional burial and intentional funerary treatments, specifically for the Paleolithic, from Leclerc (1990) to more recent works (Henry-Gambier 2008; Tillier 2011; Tillier and Meignen 2016) continues to be a major focus of this research.

The International Role of Studies

French Paleolithic sites have played a major – if not the most significant – role in studies of early human populations for the latter part of the hominin lineage and historically for the development of the discipline due to the number of finds made in the country from the nineteenth century onward. Prior to the numerous discoveries in Africa of the earlier part of this lineage more recently, much of what was known about early prehistory came from France, and this is heavily dominated by the

discoveries made among the sandstone and limestone caves and rock shelters found along the Dordogne and Charente river valleys and their tributaries in southwest France. The area has often been referred to as the "cradle of European civilization," a sobriquet that reflects the predominance of this region in studies of the biological and cultural diversity of early European human populations. The location of the Musée National de Préhistoire in Les Eyzies-de-Tayac, Dordogne, provides a showcase of what reads like a "who's who" for Paleolithic research for the Vézère river valley, a tributary of the Dordogne, that runs through it and is now a UNESCO world heritage site. Founded in 1913 by Denis Peyrony, upon his purchase of the ruins of the sixteenth-century chateau, in 2004 the Museum was expanded and completely refurbished to create an exhibition space measuring some 1500 m^2 for the display of 18,000 objects.[16]

French scholars have long participated in overseas research collaborations, especially in the natural sciences, and the country has long attracted overseas scholars due to the richness of its archaeological heritage, such as Harvard archaeologist Hallam Movius, who excavated at the rock shelter of Abri Pataud in Les Eyzies (Dordogne) from 1958 to 1964 (Stringer et al. 1984). More recently, Harold Dibble and his collaborators, Shannon J.P. McPherron and Dennis Sandgathe, have excavated many sites over the past 20 years in association with French colleagues, such as Combe-Capelle Bas (Michel Lenoir), Fontéchevade (André Debenath), and Pech-de-l'Azé IV, Roc-de-Marsal, and La Ferrassie (Alain Turq). From 2002 to 2012, one of us (BM) with Alan E. Mann ran a summer course for Princeton University students at the University of Bordeaux. It was unique for combining lectures and training with the excavation of the Middle Paleolithic site of Les Pradelles, Marillac-le-Franc, near La Rochefoucauld. Another fundamental example comes from a Franco-Israeli collaboration between Bernard Vandermeersch and Ofer Bar-Yosef of Harvard University that established the presence and early date of early anatomically modern humans in the Levant and clarified the relationships between these populations and Neandertals (Bar-Yosef and Vandermeersch 1991; Bar-Yosef et al. 1992).

The Impact of Globalization

At the present time, France is undergoing greater globalization or "opening up" of its academic landscape than ever before. One measure of this includes increasing numbers of English-language publications by French and France-based scholars, many of whom originate from outside of the country. Of these, Italian, Spanish, Portuguese, and Belgian researchers predominate, with fewer North Americans and others from elsewhere in Europe due to the predominance of the French language. At present, these individuals are more likely to be found at postgraduate and postdoctoral levels. The CNRS has for some time maintained overseas connections.

[16] http://musee-prehistoire-eyzies.fr/lhistoire-du-musee

It maintains a strong presence in the Middle East through the IfPO (Institut français du Proche-Orient) with a history of research in Lebanon, Jordan, Syria, Iraq, and the Palestinian Territories,[17] in East Africa with the Centre français des Études Ethiopiennes, and in South Africa with the Institut français d'Afrique du Sud. The CNRS and New York University collaborate in a joint research center, the CIRHUS (Center for International Research in the Humanities and Social Sciences), UMI (Unité Mixte Internationale) 3199,[18] where fellows studying subjects germane to biological anthropology and prehistory have been supported recently: cementochronology (i.e., use of dental cementum annulations to determine age at death in humans and animals) (Naji et al. 2016) and Neandertal cultural diversity (Rendu et al. 2014, 2016). Collaborations are likely to increase in coming years.

Public Perceptions of Human Remains

In France, there is no particular difficulty with the excavation and study of historic or protohistoric human remains, nor in their storage and curation in archaeological repositories such as museums. One exception concerns the remains of soldiers from the First World War; these are exhumed within the framework of the military graves administration service. After excavation and laboratory study, these remains are systematically re-inhumed in military cemeteries. These may be in the form of an individual grave for identified individuals or collective graves if personal identities remain unknown. Re-inhumation is also undertaken for all remains of identified individuals or for whom descendants are known. It is rare that the community – whether religious group, village, or city – where assemblages of human remains are excavated request or remonstrate with authorities for the re-inhumation of human remains coming from within their environs. Often these community-based excavations become the subject of exhibitions of various types.

In the nineteenth century, more ancient human remains, such as those from the Paleolithic, were the first to be treated as commodities. For example, in 1910 in Périgord Noir, the antiquarian Otto Hauser sold the skeleton remains from Le Moustier 1 and Combe–Capelle (Dordogne) to the Museum of Ethnology in Berlin for the equivalent of 200 years of a teacher's salary of the period (Maureille and Turq 2005). More recently, the owners of the land on which the Neandertal remains from Regourdou 1 and Saint Césaire 1 were found sold them to museums. These rare remains were considered to be "exceptional objects." The commercial exploitation of material from excavated sites precipitated reflection on the protection of archaeological remains of heritage significance excavated on French territory. As a result a new law on the *Liberté de la Création, Architecture et Patrimoine* ("Freedom of Creation, Architecture, and Heritage"), for the protection of artworks, historic architecture, and cultural heritage, promulgated on 7 July 2016, gives the French

[17] http://www.ifporient.org/node/1

[18] http://cirhus.as.nyu.edu/page/home

state proprietary rights to all archaeological remains from both research and rescue excavations. Human remains now have a status that does not permit them to be treated as material that can be bought and sold.

Conclusion

The study of human remains as part of biological anthropology, like its sister discipline, prehistory, has deep roots in the intellectual tradition of French scholarly life and popular culture. Due to the enormity of its contributions and long history, it has a tremendous legacy dating back to the beginnings of the early modern period. Due to the primacy of the French language, if not philosophy and approach, this development can be seen as paralleling developments in the Anglophone world, but it is older and is better integrated with popular culture through its well-developed network of museums, public-oriented displays, and accompanying publications and through close links between these and researchers in museums, universities, and the CNRS. This is a unique blend that has often fallen into disfavor to justify budget tightening in other nation-states. If maintained as it has been through the economically and politically cataclysmic events of the twentieth century and those of the early years of the twenty-first century, it augurs well for the continuing health and contributions to the discipline from France-based scholars and those working with them worldwide, as well as the global academic community and general public.

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Chapter 6
Changing Perceptions of Archaeological Human Remains in Germany

Gisela Grupe and Joachim Wahl

From Pre-Darwinian Times Until the End of the First World War

Before evolutionary theory revolutionized the biological sciences, the study of natural history focussed on the discovery, description and comparison of the variability of plants and animal species, including humans. Following what was essentially a typological conceptualization of variability, efforts were taken to classify the diversity of living beings. Homo sapiens is a polytypic species that does not permit the definition of a "type specimen". This applies not only to the phenotypic appearance of living people, but also to their skeletons and those of their ancestors. Even before, and naturally after the introduction and slow acceptance of evolutionary theory, there was a growing awareness of the fact that the variability of human skeletal finds through time could give clues to the history of mankind.

Johann Friedrich Blumenbach (1752–1840) is commonly labelled the "father of physical anthropology" in Germany. His dissertation (Blumenbach 1775) was an outstanding study for its time of the history of humankind as it was the first attempt ever to describe scientifically and to classify the highly variable appearance of the human body (Hoßfeld 2016: 72). Blumenbach became very famous for his anatomical investigation of human skulls and as a result is seen as the founder of craniology in Germany. Interest in the physical variability of humans was particularly high in

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pre-Darwinian times, and Blumenbach's extensive work is proof of the fact that this type of research included archaeological human remains from the outset.[1]

As early as 1861, a meeting of physical anthropologists was held in Göttingen that was largely dedicated to the development of a methodology for a standardized documentation of the human body including the skeleton (von Baer and Wagner 1861). The general interest in prehistoric human populations was emphasized, and the participants in the meeting agreed that archaeological skeletal remains can provide indispensable clues for the reconstruction of human populations in time and space (von Baer and Wagner 1861: 63–64). It was thanks to the efforts of the anatomist Alexander Ecker (1816–1887) that archaeological human skeletal remains became the subject of systematic investigation. The Alexander-Ecker-Collection of (mainly) human skulls that is today located at the University of Freiburg/Breisgau, the Blumenbach-Collection at the University of Göttingen, and the Rudolf-Virchow-Collection in Berlin belong to the most famous early scientific skeletal collections in Germany (Grupe et al. 2015a: 42–48).

It was without doubt the anatomist Rudolf Ludwig Carl Virchow (1821–1902) who exerted the greatest influence on the young subject of physical anthropology. In accordance with the spirit of the time in the second half of the nineteenth century, he was particularly interested in prehistory. In 1869, Virchow was one of the founders of the "Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte", an interdisciplinary scientific society that still exists today and is evidence for the tight connection between physical anthropology, ethnology, and prehistory. As a result of Virchow's influence, physical anthropology largely concentrated on human anatomy. The fact that even highly esteemed scientists such as Virchow could get things awfully wrong is demonstrated by his false interpretation of the eponymous Neanderthal find as a pathologically deformed skeleton (Goschler 2002). This not only indicates that the inclusion of humans in Darwin's scheme was still far from fully accepted,[2] but also had the effect of constraining scientific progress in the field of palaeoanthropology for many years.

The first academic chair in physical anthropology in Germany was established in 1886 at the University of Munich with Johannes Ranke (1836–1916) as the first professor (Ziegelmayer 2003). With this event, physical anthropology was finally institutionalized in Germany (Hoßfeld 2016: 185) and archaeological human skeletons became an accepted element of academic research. Ranke's private collection of prehistoric objects and human remains became the core of the modern Bavarian Collection of Anthropology and Palaeoanatomy. This and the osteological collection of the State Office for Cultural Heritage Management Baden-Württemberg,

[1] Interestingly, human cremations – today a rather neglected find category compared to uncremated archaeological skeletons – were recognized as empirical historical source even earlier by the British philosopher and poet Sir Thomas Browne (Browne 1658).

[2] In Germany, Ernst Haeckel (1834–1919) was the most vehement and successful advocate of the inclusion of the genesis of mankind into the theory of evolution. Although his work was most influential on human phylogeny, his contribution to physical anthropology has only recently been emphasized by Hoßfeld (2016: 147 ff).

both federal institutions (see below), are the two largest collections of human skeletal remains in Germany today. Part of Virchow's legacy was that scientific connections to the subjects of prehistory and ethnology remained particularly strong in German physical anthropology, but despite these links the discipline saw itself predominantly as a natural, biological science.

Textbooks from these early days of German physical anthropology illustrate the attempts to quantify and categorize the variability of the human skeleton through time and space. Ranke dedicated a complete volume to modern and prehistoric "human races" (Ranke 1887), using a term that was to dominate understandings of human variability. Ranke's student, Rudolf Martin, addressed the topics of craniometry and osteology in several chapters of an influential textbook published in 1914 (Martin 1914). It is noteworthy that Martin's volume included human phylogeny, thereby marking a first turning away from a typological approach towards an evolutionary perspective. He explicitly demanded the rescue and preservation of "dead material" (Hoßfeld 2016: 197, 302). Many of the so-called "Martin measurements" of the skeleton are still included in the standardized documentation of skeletons today, such as measurements for the estimation of stature and robusticity. Even the tools for the manual taking of measurements have hardly changed since then. The standardized skull measurements relied on the "Frankfurt Plane" (ear-eye plane) that was agreed upon on at a meeting of German anthropologists in Frankfurt in 1884. The Frankfurt (sometimes given as Frankfort) Plane remains a standard orientation in medicine today. Even by the middle of the twentieth century, about 500 pages of the seminal textbook by Martin and Saller (1957) were still dedicated to the human skeleton and its measurement in an attempt to introduce some classification into the high variability of features by a comparative scientific approach.

Today, the quantification of skeletal size and shape still requires some standardized measurements, though these are now largely restricted to parameters that are meaningful in terms of functional morphology and population biology. The impossibility of sorting skeletons by their size and shape into "varieties" or "races" was recognized at the turn of the twentieth century. As early as 1887, Ranke had mentioned in his textbook that all attempts for such a categorization could be provisional at best. Moreover, he explicitly emphasized that none of these numerous attempts was scientifically exact. This perception was commonly held among German anthropologists but became virtually extinct shortly after the end of the First World War (Lösch 1997a: 34). The growing racial hygienic movement in the post-war Weimar Republic together with the notion of a new German national community should have been responsible for this development.

Without doubt, typological attempts to categorize human skeletons into distinct groups by size and shape had failed, and physical anthropology was well aware of this. Nevertheless, archaeological human skeletal remains were recognized as valuable empirical historical sources. It should be emphasized that the later racial ideology of the Third Reich, that was highly influenced by social Darwinism and claimed that social and economic problems were biological crises instead, could not rely on scientific anthropological perceptions but rather had to re-invent itself.

The First Half of the Twentieth Century Until the End of the Second World War

The most influential scientist in the field of physical anthropology in Germany at the beginning of the twentieth century was the anatomist and anthropologist Eugen Fischer (1874–1967). Deeply impressed by the emerging field of human genetics, he tried to find evidence for a Mendelian heritability of human phenotypic features. His monograph on the "Rehoboth-Bastards", first published in the year 1913, was reprinted unchanged in 1961 although Fischer's genetic conclusions had been disproved. In the editor's preface, the book was labelled "a classical piece of anthropological literature" (Fischer 1961). Due to his overall scientific reputation, it came to no surprise that Fischer was made director of the newly founded "Kaiser-Wilhelm-Institut für Anthropologie, menschliche Erblehre und Eugenik"[3] that opened in September 1927 in Berlin. Only 6 years later, after Adolf Hitler came to power in 1933, the research topics of the institute were modified and made compatible with the anti-semitic racism (Teschler-Nicola and Grupe 2012). Osteological investigations of archaeological human skeletons were also impacted. Prior to the first World War, Germany's colonial enterprises (in Togo, Cameroon, German East-Africa (today Tanzania, Burundi and Rwanda), German South-West-Africa (today Namibia), later also Pacific countries and regions at the Chinese coast) had supplied the Natural History museums and collections with a plethora of skeletal material (Stoecker et al. 2013). After 1933, osteology served the political demands of a "scientific" distinction between superior and inferior "races", with the particular aim of unravelling the genealogy of the superior Nordic/Germanic race. Despite the failure of earlier typological approaches (see above), archaeological human remains were claimed to provide "scientific evidence" for racial features that were genetically preserved since prehistoric times.

At his Berlin institute, Eugen Fischer tried to establish a catalogue of all prehistoric skulls that were available in Germany. The anthropology curator at the institute was Hans Weinert, whose major concern from 1933 onwards focussed on the empirical reconstruction of the history of the superior "nordic and phalian race" based on archaeological skeletal finds (Lösch 1997a: 192 ff). Another example is the monograph by Gerhard Heberer (1943), where German Neolithic skeletons were already assigned to the "nordic race" (for a comprehensive report see Hoßfeld 2016).

The pressure imposed by the National Socialists on academics like Fischer to conform with politically desired narratives is demonstrated by his investigation of the skeletal remains of Henry the Lion (Heinrich der Löwe, Duke of Saxony) and his wife Mathilde who had been interred in Braunschweig Cathedral in the twelfth century. The National Socialists had identified Henry as a political ancestor and the crypts were opened for ideological purposes in 1935 (Adolf Hitler himself and other prominent representatives of the regime such as Hermann Göring had visited the

[3] "Emperor-Wilhelm-Institute for Anthropology, Human Genetics and Eugenics" – the Kaiser-Wilhelm scientific society was the precursor of today's Max-Planck Society.

burial site in person). The skeleton of Mathilde, who had suffered from a congenital hip dysplasia, was mis-identified as the Duke's remains, and the hip lesion was explained as the result of a riding accident. It is unlikely that somebody like Fischer would have been unable to distinguish between a male and female skeleton. It is more likely that a congenital handicap was at least "unwanted" in the Third Reich and it was therefore impossible that a member of a prominent historical family was afflicted with such a physical imperfection. It was not until 1974 that the mis-identification was made public by Schmidt (1974; see also Lösch 1997b).

The striking, and all too frequently deliberate, mistakes of the typological approaches towards a "racial science" compatible with social Darwinism were obvious and easily unmasked after the Second World War. However, the research foci of prehistoric studies were slow to change and it took a while before the obsolete typological concept (Wahl 1999) was substituted by the evolutionary based population concept. This was partly generational and reflected the only slowly changing personnel in post-war chairs of anthropology and/or human genetics in Germany (Spiegel-Rösing and Schwidetzky 1982; Lösch 1997a; Hoßfeld 2016). It also reflects differing perceptions of archaeological human skeletons in the two parts of divided Germany, the FRG and GDR.

The Second Half of the Twentieth Century: Federal Republic of Germany and German Democratic Republic

After the end of the Second World War and the collapse of the Third Reich, Germany was divided into the western Federal Republic (FRG) and the eastern Democratic Republic (GDR). The general scientific landscapes in the two parts of the country differed considerably, reflecting their differing political systems. Physical anthropologists working with archaeological human skeletons remained strongly connected with archaeological sciences in both polities.

Science in the GDR was organized in a centralistic way according to the Soviet paradigm. A strong networking with the national economy was explicitly demanded for any science that was expected to contribute to the state's productivity. Consequently, physical anthropology in the GDR largely focussed on living humans, in particular on auxological and medical topics. Although outstanding skeletal collections were available in the GDR, systematic research was largely restricted to the universities in Jena and in Berlin (Greil and Grupe 2013; Pittelkow and Hoßfeld 2015). Most anthropologists who had been active in the field during the National Socialist's regime lived in the FRG after the end of the war. The Allies had the power to remove from their post anyone suspected of National Socialist sympathies but after positive evaluations, many anthropologists regained leading academic positions (e.g. Wilhelm Gieseler, Tübingen; Egon Freiherr von Eickstedt, Mainz; among others, see Lösch 1997a). Unlike the situation in the GDR, in West Germany scientific investigation of past human populations by analysis of their physical

remains was strongly represented in the scientific community. Frequently, the terms "physical anthropology" and "osteology/prehistoric anthropology" were even used synonymously.

However, methodological and, more important, contextual innovations were only slowly introduced to the ongoing comparative analyses of archaeological human skeletal remains. Osteological data were entered into huge databases, whereby that at the University of Mainz would remain the most comprehensive one for decades (Schwidetzky 1984). Measurements were taken and subjected to multivariate-statistical analyses that gave clues to phenotypical similarities and/or differences at the population level through time. The persisting problem of how the phenotypes could be interpreted in terms of population biology and genetic distances, however, was far from being solved. This is due to the fact that multivariate analyses resulting in similarity measures (such as e.g. the Mahalanobis distance) still follow a typological approach, albeit on a more elaborate mathematical level. In terms of scientific theory, research still followed the inductive approach in an attempt to gather as much data as possible, in the hope that huge data sets would finally reveal distinct patterns. In terms of methodological approaches, recommendations for the morphological estimation of age and sex in archaeological skeletons were published by Ferembach et al. in 1979 and became standard in osteological research in both parts of Germany for decades.

The 1980s can be regarded as a turning point with regard to both the self-understanding of physical anthropologists, and the perception of skeletal remains as an empirical historical source. This was when cremated remains were first investigated systematically, generating fundamental insights into this special field of osteology. In 1983, Christian Vogel published his seminal paper on the current theory deficit in German physical anthropology. In the following year, archaeologists publicly complained that too few osteologists were available in Germany. Interestingly, osteological analyses were claimed part of archaeological research at that time (Blänkle 1984). This reflects the fact that relationships between archaeologists and anthropologists were not particularly easy. The anthropological contextual deficits, the political burden borne by the subject in the post-war era, and the continuity in their posts of many pre-war academics, especially in the FRG, played a role in this problematic set of relationships. In 1985, an inventory survey initiated by physical anthropologists on the nationwide cooperation between archaeologists and osteologists was presented at the annual meeting of physical anthropologists in Mainz. This came to the conclusion that the majority of archaeologists closely cooperated with anthropologists, but that fees were only infrequently paid because osteologists were "obliged to scientifically cooperate" with the archaeologies (Greil and Grupe 2013). In other words, physical anthropology was largely viewed as nothing more than an auxiliary science to archaeology. In fact, the typological concept was largely perpetuated by the latter, even up to most recent times (e.g. Junius and Wahl 2014). This perpetuation of typological approaches in archaeology was one of the reasons why the emancipation of physical anthropology as an independent science with its own scientific questions and methodologies proceeded so slowly, and why the categorization of human skeletons into "types" had such a long continuity.

In the late 1980s and early 1990s, new concepts and methods and explicitly contextual research on human skeletal remains were gradually introduced into the subject and started shaping research agendas (Greil and Grupe 2013). At the same time, physical anthropologists became more and more specialized with researchers tending to focus on particular topics such as palaeopathology, palaeodemography, or bioarchaeometry. This way, the subject as a whole gained many more facets, but its identity that was and still is based on skeletal remains was endangered.

After Unification: Perceptions of Archaeological Human Remains Since 1990

After the GDR joined the FRG on October 3, 1990, Germany was again unified. 2 years later, on September 12, 1992, the two scientific anthropological societies merged into the newly founded "Gesellschaft für Anthropologie" (GfA; www.gfanet.de), where prehistoric/historic anthropology provide the largest proportion of active reseachers (Greil and Grupe 2013). As a result, the subject of physical anthropology as such is frequently automatically related to archaeological skeletal discoveries. This perception holds both for the scientific community and the public.

Since the first successful analysis of preserved DNA from archaeological skeletons was published by Hagelberg et al. (1989), molecular biological and mineralogical analyses of the skeletal compounds (protein, mineral, fat, DNA) and non-invasive investigation by means of a variety of imaging methods have become routine and are performed on a regular basis by specialists, either at research institutions, or more and more by commercial companies. The growing relevance of biomolecular research in the field of physical anthropology is evidenced by the recent foundation of the Max-Planck-Institute for Evolutionary Anthropology in Leipzig (founded 1997) and the Max-Planck-Institute for the Science of Human History in Jena (founded 2014). Bioarchaeological research in Germany originated from physical anthropology and is meanwhile strongly demanded by the archaeologies. It is currently dominated by stable isotope analysis of skeletal remains (with regard to palaeodiet, early subsistence economies, palaeobiodiversity, migration and trade), and ancient DNA research (human origins, palaeopopulation genetics, epidemiology). Histological investigation that is indispensable for identification purposes and palaeopathology and therefore constitutes an integral part of osteological analyses had its heyday in the 1980s and 1990s. Regrettably, only few institutions are still specialized on skeletal microanatomy today.

The perception that the study of past populations goes beyond comparative morphology but rather gives clues to parameters such as living conditions, human/environment interactions and genetic/genealogical relationships through time and space has enabled both the independence of skeletal anthropology and new cooperation with the archaeologies. Today, it is widely accepted in Germany that archaeological research can no longer do without modern anthropological methodology as soon as

skeletal finds are involved. Equally important is the recognition that human skeletal remains are indispensable for any social science that is dedicated to the historical aspects of mankind. According to Preuß (2007), scientific analyses of human remains are of eminent value for the society as a whole and are of prime public interest. Physical anthropology and archaeology are thus strongly interrelated in Germany, evidenced by numerous national and international cooperations. The German Archaeological Institute (www.dainst.org), a federal agency in the business unit of the Federal Foreign Office, currently maintains about 350 projects on five continents. Wherever human skeletal remains are excavated, physical anthropology automatically comes into play. This way, research applications focusing on archaeological human remains are submitted by both anthropologists and archaeologists, no matter whether the respective research is carried out in Germany or abroad.

Despite this fortunate development, two fundamental problems persist. The first one is a more formal one and is related to the protection of the cultural heritage, the second one concerns the invasive nature of modern analytical methods and leads to the ethical dilemma of a decision between preservation and destruction. Every skeleton is the bodily relic of an individual that was/is unique and cannot be substituted by others. This implies that also reburial results in the irrevocable loss of material and hence information. Reburial is not an important issue in Germany yet as long as the finds are old enough to guarantee that no potential and identifiable descendants are still alive. Exceptions are mainly skeletal remains that were recovered from contexts of injustice such as the racial studies during the Third Reich.[4] Skeletons or their parts (mostly skulls) that were collected in colonial times are or will be repatriated (loss of documentation however often renders identification very difficult) (Deutscher Museumsbund 2013).

Whether archaeological human remains are protected by law in Germany is still not crystal clear although the European "Convention of Valetta" was ratified by the country in 2003. According to this treaty (Council of Europe, ETS No. 143, 1992), "all remains and objects and any other traces of mankind from past epochs" are subsumed under the Cultural Heritage and are protected for the scope of a common European memory. In Germany, Cultural Heritage laws are specific to each state and therefore not uniform at the federal level. In the majority of states, skeletons are indeed protected according to the Valletta document. But as mentioned above, the two federal skeletal collections in Germany are located in Baden-Württemberg and Bavaria where of all states making up the federal republic, the law is less clear. While skeletal remains may rather easily be subsumed under "things… that give clues to human living conditions in former times" according to the law in Baden-Württemberg (although the term "thing" appears rather materialistic in this particular context), the Bavarian Cultural Heritage law protects "monuments" that are explicitly defined as "man-made artifacts" (Sommer and Weski 2004). In reality, however, due to an intuitive understanding of the very nature of a human bodily relic, skeletons are usually protected as well.

[4] Today, areas where former Jewish burial sites are assumed are sacrosanct in respect of building measures and archaeological/anthropological investigation.

Germany houses several skeletal collections at different academic and museum institutions (Grupe et al. 2015a: 42–48). It is commonly accepted that any skeletal find or any skeletal series gains in scientific value the more analyses carried out on them and data are accumulated. A firm osteological analysis remains requisite for any further application of invasive methods. As long as a piece of bone is sacrificed that is of small or even no diagnostic value (e.g. a rib fragment without pathological lesion), no information will be lost. But several methods target skeletal parts that are of outstanding diagnostic value and the conflict between preservation and destruction arises. Tooth enamel for instance has a high feature density in a small space, but is also the preferred tissue for stable isotope analysis of the apatite. Another example is the petrous bone that carries a plethora of inner and superficial morphological features, and sometimes also pathologies, but the cochlear part came recently into the focus of DNA and stable isotope analysis, as well as the differentiation between taxa (anatomical modern humans vs. Neanderthals). Since modern technologies require smaller and smaller samples, this problem is likely to diminish in the future, but will never completely disappear.

More than 10 years ago, scientists curating the two federal German skeletal collections published recommendations for sampling, emphasizing the provision of a firm hypothesis and a modern research design requisite for permission (Grupe et al. 2004). For the evaluation of novel methods, undocumented or finds without context are usually available and may serve for to further methodological progress. However, a growing demand for invasive investigations of archaeological human remains and a rising competition among the researchers is evident, and not every application can be satisfied. The responsibilities of curators are particularly high with regard to the mandate of the cultural heritage institutions, that is preservation for future generations. At present, the handling of this "preservation versus sampling" dilemma has become increasingly bureaucratic. This is likely to lead into a dead-end because it is very hard if not impossible to agree on a general scheme that holds for every skeletal find or skeletal series. Experience teaches rather that a solution mostly needs to be found in a specific way, often a compromise that considers both the particularities of the skeletal material in question, and the prospects of the outcome of the method applied.

Today, physical anthropology is listed as a "small academic subject" at the "Arbeitsstelle Kleine Fächer" in Germany (Berwanger et al. 2012), a research institution that was founded in 2005 and works independent from university policies with the task of providing an overview of the state of the art and development of these subjects in the country. The definition of what a "small academic subject" is all about includes representation at only few German universities, limited staff and financial resources, and a circumscribed field of research that depends on a specific scientific competence (Grupe et al. 2015b). Although the subject is still dominated by skeletal anthropology including archaeometry, academic positions in Germany are increasingly dedicated to human molecular biology, genomics, and neurosciences. This way, the "traditional osteology" is no longer taught and practiced at many anthropological academic institutions despite the continuing demand by the archaeologies. As a result, academic skeletal anthropology has become an

"endangered species", something that will affect both research and academic teaching. The current institutional developments have a strong tendency to the re-incorporation of osteology into archaeology, leaving skeletal archaeometry to specialists in the fields of molecular biology, geosciences, and mineralogy. Together with the growing bureaucracy in the application of advanced natural scientific methodology to skeletal finds, another change in the perception of this particular archaeological find category is likely to occur in the near future. Osteological investigations are at high risk of becoming an auxiliary science to archaeology again, where the results will largely be restricted to the macroscopic evaluation and cataloguing of these cultural heritage remains. The contextual evaluation however, e.g. in terms of palaeodemography and palaeopathology, requires skilled natural scientists, what holds even more for the interpretation of bioarchaeometric analyses (the analytical data themselves may be provided by specialized companies). Whether the growing number of freelance osteologists, most of whom are not closely connected to academic institutions, will be capable of filling this gap in the future remains questionable. In contrast to other European countries, even "forensic anthropology" is not a legally protected profession in Germany. This current development recently gave rise to a workshop entitled "Quo vadis Anthropologie" (Anthropologisches Forum 2015). The status of archaeological human remains as part of the cultural heritage and indispensable empirical sources for the reconstruction of human population history through time and space will remain untouched in the future. The current perspectives of physical anthropology are not really encouraging and it is therefore hard to predict how comprehensively archaeological human remains will be fully evaluated on a regular basis according to modern possibilities into the future.

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Chapter 7
Human Skeletal Remains and Bioarchaeology in New Zealand

Hallie R. Buckley and Peter Petchey

Compared to Europe and the Americas, the indigenous, European and Chinese settlement history of New Zealand is relatively short, and the country is one of the last places on earth to have been colonised in both pre-European and European histories. The genesis of bioarchaeology as a discipline in New Zealand is complicated and to some extent entwined with the fates of the indigenous people of the land, the Māori.

The current population of New Zealand is around 4.9 million people and is comprised largely (over 70%) of people of European heritage (Pākeha) most of whom are descended from British colonial settlers, while Māori make up only 14.9% of the population (Aotearoa 2013). The pre-European colonisation of New Zealand began in the late thirteenth century AD from the tropical eastern Polynesian islands; hence, Māori are of Polynesian heritage (Walter and Jacomb 2007; Walter et al. 2010). The first contact of Māori with Europeans occurred in 1642 with a fleeting interaction with Abel Tasman, but it was not until Captain James Cook's first voyage to New Zealand in 1769 that contact and interaction with Europeans became more frequent (Davidson 1984). This contact ultimately led to British colonisation of the country, which was formalised in 1840 with the signing of the Treaty of Waitangi by some Māori communities (Iwi) and representatives of the Crown (Pool 2015). During the period of European colonisation (pre-1907) and up to 1940, the health and life expectancy of non-Māori living in New Zealand was considered to be the best in the world, due to a relative abundance of food, low levels of urban crowding and improvements in child mortality and maternal health (Woodward and Blakey 2014). However, this healthy lifestyle of Pākeha was not matched by the health and survival of the Māori population. The introduction of firearms (fuelling intertribal

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warfare) and new pathogens rapidly and dramatically reduced the indigenous population to after first European contact (the exact decline depends on which demographic estimates one follows: estimates of initial indigenous population size range from 86, 000 to 500,000) (Woodward and Blakey 2014; Pool 2015). Despite this catastrophic decline in population numbers, Māori still made up 98% of the population in 1840 as the new colony became established, but by 1901 the combination of high Māori mortality and high European immigration meant that the proportion of Māori had shrunk to about 6% of the total population (Pool 2015).

While the transfer of lethal pathogens to Māori was unintentional, the institutional marginalisation of Māori that followed led to further depopulation, poor health and a complete loss of political control along with the marginalisation of their language and culture. The greatest impact was the loss of land, as this was desired by the European settler society, and large tracts were either confiscated or purchased from Māori at extremely low prices. This loss of land caused both social dislocation and the loss of food- and resource-gathering areas and was devastating for Māori society. There was also an official policy of assimilation of Māori into colonial society, which removed Māori control over many aspects of their culture and discouraged the teaching of Māori language in schools (Pool 2015). Even today, with the great suite of political reforms benefiting Māori, life expectancy is lower than Pākeha and Māori have increased risk of mortality from all the 'modern diseases' such as cardiovascular disease and various cancers (Woodward and Blakey 2014).

The story of how human skeletal remains (kōiwi tangata) were treated and used in research by colonial curio hunters and adventurers mirrors the treatment and eventual re-empowerment of Māori. Human skeletal remains hold a special place in all New Zealanders' cultural identity, but for Māori, such remains are the physical embodiment of their genealogy representing a direct link to the land on which their ancestors lived and died for the last six or so centuries. For descendants of the nineteenth-century European colonial settlers, and gold rush Chinese of the 1860–1880s, it is arguable that the skeletal remains of their ancestors are viewed with a similar level of reverence and importance to how the Māori view their ancestors.

In New Zealand, scientific engagement with human skeletal remains is on several different levels. Human skeletal remains, usually of pre-European Māori, may be discovered accidentally and analysed as a result of coastal or other erosion, through industrial development, and accidentally during archaeological excavations. This chapter briefly reviews the history of biological anthropology in New Zealand and outlines the current legislative and social context of this research; the legislative and social contexts are expanded on in more detail elsewhere (Ruckstuhl et al. 2016). The professional genealogies and research foci of current biological anthropologists in the Department of Anatomy, University of Otago, Dunedin, are also outlined which highlight the perhaps unique position of this country in global bioarchaeology practice. Two case studies of recent bioarchaeology research carried out in collaboration with local communities are also presented, representing the current state of play for the University of Otago.

A Brief History of Research on Archaeological Human Skeletal Remains in New Zealand

From the very first visit of Europeans to New Zealand, the origin of the indigenous people, the Māori, and Polynesians in general, was a source of much interest to Western scientists and anthropologists (Smith and Aranui 2010). In response to this interest, the foundations of the field of biological anthropology were laid early in New Zealand's history, with the purpose of researching these origins, but were essentially only part of the curio collecting activities of eighteenth- and nineteenth-century colonialists (Forster 1996; Howe 2003). As is the case with many colonised countries, this research attempted to identify Polynesian origins and also to place them in the nineteenth-century human taxonomy (Roberts 2006). The methods used were those employed universally at the time to categorise human populations from their skeletal remains, principally craniometrics (Buck 1938; Smith and Aranui 2010).

Human skeletal remains were acquired for research by means that were perceived at the time to be justified: collecting of curios to delight people back 'home' and to chronicle the passing of the colonised indigenes (Buck 1924). Initially the collecting and sale of Māori body parts was limited to the preserved and tattooed heads (Toi moko) that fascinated Europeans and were seen as evidence for the practice of cannibalism (Smith and Aranui 2010). The trade was largely conducted by sailors and adventurers, and the motivation was purely pecuniary (Smith and Aranui 2010). This trade in tattooed heads was eventually banned by an Act of Parliament in 1831 but was quickly replaced by human skeletal remains being sold or donated to museums throughout the British Isles and Europe (Smith and Aranui 2010; King 1981). The forces behind this acquisition of human skeletal remains included the international museum trade that sought to meet the demand for specimens of indigenous peoples, including Māori, who were considered to be a 'dying race' (Fforde and Hubert 2006). Consequently, hundreds of crania of Māori were curated in museums in the United Kingdom, Ireland, Germany, Austria, Australia, Italy, France and Sweden. People involved in this trade ranged from curio hunters to scholars engaged in anthropological research of the day (Tapsell 2005; Fforde and Hubert 2006; Tayles 2009; Smith and Aranui 2010). For example, several former medical students of the University of Edinburgh donated skulls to the institution and Dr. William Will, a medical practitioner in Dunedin, donated a skeleton he excavated from the lower south island of New Zealand to Trinity College in Dublin (Smith and Aranui 2010). However, probably one of the most prolific collectors of human skeletal remains in the south island of New Zealand was Sir Julius von Haast, a German geologist and the founding director of the Canterbury Museum in Christchurch. Von Haast also engaged others to collect skeletal remains for him, and these were later sent to various European institutions in Italy, Sweden, Austria and Germany (Smith and Aranui 2010).

Those involved in research on collected bones included academic staff at the Medical School at the University of Otago, Dunedin, where the morphology and

origin of Māori were among the first research topics established at this institution. The University of Otago opened in 1871, only 10 years after the initial Otago Gold Rush. Two years later, in 1873, the Medical School was opened to train the first four students, so they did not need to return 'home' (i.e. to Britain). After a shaky start for the fledging Medical School, largely due to a lack of recognition for the degree from the home institutions, the second Professor of Anatomy, John Halliday Scott, was appointed in 1877 marking the birth of biological anthropology in New Zealand (Neuman 1993). Professor Scott's passion was for anthropology, and he collected hundreds of Māori and Moriori (the tribal group living in the Chatham Islands to the east of the south island of New Zealand) skulls and skeletons. These crania were displayed in the Anatomy Museum in glass-fronted cases, a practice that would be considered abhorrent today. Scott published a major research paper on Polynesian cranial morphology based on this collection. Some early research stepped outside the categorisation concept and took an interest in prehistoric Māori dentition that had unusual patterns of wear and a lack of dental caries (Pickerill 1912; Pickerill and Champtaloup 1912; Taylor 1962a, b, c, 1963, 1970). The earlier works by Pickerill were arguably quite visionary for the period as they were concerned with using pre-European population-based patterns of dental disease for understanding present-day health problems. This was at a time when in Britain most anthropologists were still using the skulls of indigenous peoples to justify eugenics-based paradigms (Roberts 2006). Both Pickerill and Taylor were dental practitioners, and Māori patterns of dental wear and other characteristics were very different from anything observed in Europe, possibly explaining their interest.

One later researcher, Professor Philip Houghton, described the singular characteristics of Māori and Moriori cranial and postcranial morphology (Houghton 1980, 1996) and developed a theoretical basis for the cranial morphology with collaborator Martin Kean (Kean and Houghton 1982, 1987, 1990) as well as an adaptive hypothesis explaining the distinctive Polynesian postcranial phenotype (Houghton 1990, 1991a, b, c, 1996).

While over 60 publications and research theses resulted from the Otago collection, few authors were Māori, with the only known indigenous researcher, Te Rangi Hiroa (Sir Peter Buck), publishing a paper in 1925 on the diet of prehistoric Māori that drew on evidence from the collection published by Scott (1893: 20).

The Genesis of Bioarchaeology in New Zealand

New Zealand archaeologists continued to excavate Māori human skeletal remains until the 1970s, but these were largely single inhumations or small samples, negating population-based research questions (Davidson 1984). The discovery of burials during archaeological investigations was invariably incidental and conducted without bioarchaeology specialists on site or analysing the human remains (Leach and Leach 1979). This lack of bioarchaeologists involved in excavations was largely due

to an absence of osteology training at New Zealand universities, probably driven by cultural sensitivities around excavating human skeletal remains. Until the early 1990s, Professor Philip Houghton was essentially the sole osteologist for the country and was responsible for writing at least 75 unpublished reports to the Historic Places Trust, the police and local councils on finds of human skeletal remains, and a small number (four) were specifically for tribal groups. The reports are largely descriptive and provide information driven by archaeologists' questions regarding ancestry, cause of death and age at death. As was the case with British osteology research at the same time (Roberts 2006), Philip Houghton was clinically trained with no anthropology background. His research questions were therefore biologically driven, but his 1980 book *The First New Zealanders* attempted to place the cohort of skeletons he had assessed into the biocultural framework of New Zealand (Houghton 1980).

The discipline of bioarchaeology in New Zealand today is unusual as most field-based research projects are conducted in the Asia-Pacific region, outside of New Zealand. This practice began with Houghton's involvement in the excavation of prehistoric skeletons from the Sigatoka Sand Dunes in Fiji in the 1980s (Best 1987). However, it was Houghton's graduate student, Nancy Tayles, who truly founded bioarchaeology in New Zealand as an internationally recognised centre of population-based biocultural research in the Asia-Pacific region. Associate Professor Tayles trained in anthropology under the four-field system at Auckland University in the 1980s. She received her Doctor of Philosophy in 1992, the research for which analysed the quality of life of the people of Khok Phanom Di, a large prehistoric coastal cemetery site in Thailand (Tayles 1992, 1999). Now retired, Tayles trained almost all the bioarchaeologists currently active in the Asia-Pacific region (Buckley et al. 2016). These researchers collaborate with field archaeologists to gain research funding (mostly Royal Society of New Zealand Marsden Fund grants and Australian Research Council funding) and implement research projects embedded in a biocultural framework analysing the human skeletal remains from sites in this region. Associate Professor Kathryn Domett (PhD 2000), James Cook University, Australia, came from a background of biomedical sciences and conducts research on human skeletal remains in Thailand, Cambodia and Laos. Professor Hallie Buckley (PhD 2001) studied anthropology at Auckland University as an undergraduate and conducts field-based bioarchaeology projects in the Pacific Islands, Thailand and Indonesia and has contributed to projects in Cambodia and Vietnam with Australia-based researchers. Dr. Sian Halcrow (PhD 2006) also studied anthropology at Auckland University and undertakes research in Thailand, Cambodia and Laos. Buckley and Halcrow are now permanent academic staff (tenured) in the Department of Anatomy, University of Otago. Biological anthropology at Otago is currently taught in the Department of Anatomy, where it has its origins. Courses in biological anthropology had been taught in the Department of Anthropology during the 1990s, but graduate research projects in bioarchaeology had mostly been undertaken out of Anatomy. There is currently no undergraduate Major in Biological Anthropology at the University of Otago; however, there is a thriving graduate research programme with the group consisting currently of 12 PhD and master's level students. With this

brief history in mind, it could be argued that biological anthropology in New Zealand has its roots in the British 'osteoarchaeology' tradition but has evolved into hypothesis-driven 'bioarchaeology' of the American tradition (Roberts 2006).

At present there are no academic biological anthropology staff of indigenous Māori descent at New Zealand universities; however, Māori researchers are active in repatriation programmes run through the different museums, such as the Museum of New Zealand Te Papa in Wellington (e.g. Smith and Aranui 2010). With this historical context in mind, the next section outlines social and cultural changes within New Zealand society that affected the legislation and procedures relevant to archaeological human remains.

Current Social and Legislation Context of Bioarchaeology

Social and legislative changes within New Zealand society eventually facilitated a change in approach and a review of how and if research on human skeletal remains could be conducted. One of these changes was the evolution of ethical practice within the field globally. The New Zealand Archaeological Association published a code of ethics in 1993, drawing on the 1991 World Archaeological code, which acknowledged the special importance of human skeletal remains to Māori (Association 1993).

The second driver of change was a challenge to the previous assimilationist government policy. Protests concerning land confiscations and social inequality have a long history in New Zealand, stretching back as far as the earliest days of colonisation and the signing of the Treaty of Waitangi (Byrnes 2006). In 1975, an act of parliament established a permanent commission of enquiry, the Waitangi Tribunal, to investigate and make recommendations on claims brought by Māori relating to actions or omissions of the Crown which breached the Treaty (Ministry of Justice), thus shaping relationships between Māori and the State. This took administrative effect through various judicial and policy procedures requiring State agencies to consider, consult with or include Māori in the formulation, implementation or delivery of public policy by adhering to a set of principles. These included concepts such as protection of Māori taonga (treasures), partnership, good faith, the duty to consult, the right to development and self-regulation, the principle of redress and the recognition of Māori tino rangatiratanga (self-determination) (Byrnes 2006, p. 91). These principles have influenced legislation and procedures that govern archaeological practices and, by implication, how skeletal remains are managed from all perspectives. Combined with the changes in ethical approach in the profession as a whole, these principles guide New Zealand archaeology and biological anthropology research activity in relation to Māori.

A series of Historic Places Acts have provided the legal framework for the protection and administration of archaeological sites (including human skeletal remains) in New Zealand by the New Zealand Historic Places Trust (now Heritage New Zealand), and these Acts have taken an increasingly inclusive approach to

Māori involvement in the process. The Historic Places Act 1980 required that one member of the New Zealand Historic Places Board of Trustees be a Māori and be appointed by the New Zealand Māori Council (Section 7b). The Historic Places Act 1993 established the Māori Heritage Council, with its role being to ensure that 'in the protection of wahi tapu [sacred places], wahi tapu areas, and historic places and areas of Māori interest, the Trust meets the needs of Māori in a culturally sensitive manner' (Section 85(a)). All applications to carry out work on archaeological sites that were of interest to Māori were required to be submitted to the Council (Section 14(3)). The Heritage New Zealand Pouhere Taonga Act 2014 has further strengthened this requirement for Māori cultural involvement, and the principles of the Act state that the 'relationship of Māori and their culture and traditions with their ancestral lands, water, sites, wahi tupuna, wahi tapu and other taonga' must be recognised in all dealings (Section 4(d)). Heritage New Zealand Pouhere Taonga (HNZPT) is responsible under the 2014 Act for the identification, recording, protection, conservation, and management of, and advocacy for, historic places including archaeological sites.

Although the Heritage New Zealand Pouhere Taonga Act (2014) does not refer specifically to human skeletal remains, a location at which they are found is defined as a wāhi tapu (sacred place), whether or not the location is recognised as a Māori cemetery. An archaeological site is defined by the Act as 'any place in New Zealand … that was associated with human activity that occurred before 1900' (HNZPT Act 2014: Clause 43), and therefore human skeletal find locations become archaeological sites under HNZPT management. The Act gives HNZPT the right to issue authority for any archaeological site to be destroyed, damaged or modified (HNZPT 2014 Clause 42 (1)). Any application for authority must provide evidence that tāngata whenua (local Māori) have been consulted (HNZPT 43 (2)(h)), and any scientific investigation of a site of interest to Māori must have the consent of the appropriate iwi or hapū (HNZPT 43 (3)).

The Burial and Cremation Act 1964, administered by the Ministry of Health, states that it generally 'shall not apply to Māori burial grounds or to the burial of bodies therein' (Clause 3) but paradoxically requires that a disinterment licence be obtained from the local Public Health Unit to 'remove any body or the remains of any body buried in any cemetery, Māori burial ground, or other burial ground or place of burial' (Clause 51(1)). Heritage New Zealand Pouhere Taonga produced a series of Archaeological Guidelines of which No. 8 (2010) relates to human skeletal remains which details the process to follow when human remains are discovered and provides precise steps to be taken by the finder, including an archaeologist, during the excavation of an archaeological site under an HNZPT authority. The Ministry of Justice Coronial Services have a fact sheet on kōiwi/historic human remains, the original of which advised that accidentally found human skeletal remains be left in place and the police notified. An earlier version of the Coronial Services fact sheet stated that coroners may call on an 'anatomist or anthropologist' to 'confirm that the bones are human'. However, the updated page (June 2016) now states that 'an archaeologist' may be consulted regarding the age of the bones. There is no reference to biological anthropologists assisting with identification, but there is a link to the

HNZPT guidelines for human remains (Ministry of Justice Coronial Services and https://www.coronialservices.justice.govt.nz/about/finding-human-bones).

Today, human skeletal remains of Māori descent are not purposefully excavated for research purposes, but in some cases, they may be vulnerable to further exposure (especially by coastal erosion) or damage through development and must be moved to a safer place. Where exhumation is necessary, HNZPT states that it is highly recommended for a biological anthropologist to assist with exhumation, but there is no legal requirement to do so.

Where human skeletal remains are held in museum collections, there is no national legislation controlling their management, although some museums have specific, publicly accessible policies. For example, Te Papa Tongarewa, New Zealand's national museum, has a policy regarding human remains (*kōiwi tangata*) (Te Papa Tongarewa 2010) that '….states the position of Te Papa as kaitiaki or guardian in regard to the management and repatriation of kōiwi tangata Māori and Moriori'. The policy is designed to ensure that the kōiwi will be managed and cared for in a 'consistent and culturally appropriate manner' and includes any repatriation from international institutions.

Canterbury Museum Trust Board adopted formal Koiwi Tangata/Human Remains Policy and Procedures in 1998. In that document, the guiding principles of the Ngāi Tahu Kōiwi Tangata Policy (1993) were adopted by the museum to cover skeletal remains of Ngāi Tahu (the major tribe of New Zealand's south island) and also all other Māori human skeletal remains held within the museum. The Ngāi Tahu policy was the first of its kind implemented by a tribal group and has formed the basis for policy in other New Zealand museums (Gillies and O'Regan 1994).

There are no national guidelines for universities relating specifically to human skeletal remains, although changes in ethical practice within New Zealand have become mandated within these institutions. For example, at the University of Otago, researchers are required by the university to submit research applications to the Ngāi Tahu Research Consultation Committee, an advisory body drawn from members of the local hapū (subtribe), whose role is to comment and offer suggestions about research proposals from a Māori perspective. This committee, unique to the University of Otago, has been in place since 2001 when a Memorandum of Understanding was signed between the University and Ngāi Tahu, which was a response to changes in the Education Act (1989) requiring all tertiary education providers to address the 'development goals of Māori and other population groups'.

Engagement between biological anthropologists and Māori in relation to the handling of skeletal remains is conducted in accord with what has become the Historic Places Trust Kōiwi Tangata Guidelines mentioned above (2010). If iwi decide they wish to learn more about particular human remains through bioarchaeological analyses, academic staff from the University are consulted. Information from any analyses is communicated to iwi, and the relevant government offices, by way of a written report and, in some cases, a verbal report on a marae (traditional meeting places). In most cases, the information is not disseminated any further than the rūnanga (governance group) involved and is not published in the academic arena or the wider public, unless this is initiated by the relevant Māori group. Such information is considered by the academics involved to 'belong to' the rūnanga who have

guardianship over the information as much as over the physical remains. The fact that iwi are able to trust that the stories of their ancestors will not reach the wider public and become public knowledge may have helped, at least in the case of the Ngāi Tahu-University of Otago relationship, to build the foundations of a solid working relationship between iwi and academics.

There are two levels of analyses which may be undertaken on the skeletal remains if they reach the laboratory at Otago. The first is macroscopic observations of age, sex and health and metric analyses. This level will also include radiographic and computed tomography (CT) imaging. The second level of analysis involves the destruction of small amounts of bone and teeth for accelerator mass spectrometry (AMS) dating, isotope analysis of diet and migration and extraction of aDNA. Whether any destructive analyses are carried out is decided solely by the Māori group concerned. Consideration is also given to the cultural requirements of a particular tribal group. For example, it is common in Māori protocol that when the dead arrive at or exit from a location, they are welcomed into and bidden farewell from that place through specific rituals. There is also a distinction made between the living and the dead, so that when the dead depart, the room is spiritually cleared and those who exit wash their hands to signal that they are 'freed' from death. This is then finalised by the sharing of food that ensures that those who have been in a state of tapu (suspension from the day-to-day) are returned to a state of noa (the everyday). These protocols form part of the process of examination, giving permission to the researchers to carry out their technical analysis with the knowledge on both the Māori and researcher side that the analysis is respectful and spiritually safe.

Today, human skeletal remains enter the university by various means. Sometimes they come directly from a tribal group who have exhumed the remains and wish analysis to be undertaken. Alternatively, they arrive through Heritage New Zealand at the direction of the tribe or the New Zealand Police who need confirmation of antiquity and ancestry of remains, usually also with consent of the tribe. Having described the procedural elements involved, two case studies are outlined below that demonstrate the types of engagement between indigenous and Pākeha (European New Zealanders of nonindigenous descent) communities in relation to research-driven bioarchaeology projects.

Community-Driven Bioarchaeological Research: Two Case Studies

Case Study 1: The Wairau Bar

The site of the Wairau Bar, at the mouth of the Wairau River, north coast of the South Island (Fig. 7.1), holds a special place in the prehistory of New Zealand (Wilmhurst et al. 2008). The dating of this site places the people of Wairau Bar as a very early, possibly initial colonising population of New Zealand (Walter et al. 2010).

A collection of skeletons from the Wairau Bar was held in the Canterbury Museum as a result of several excavations during the 1940–1960s. Over a period of

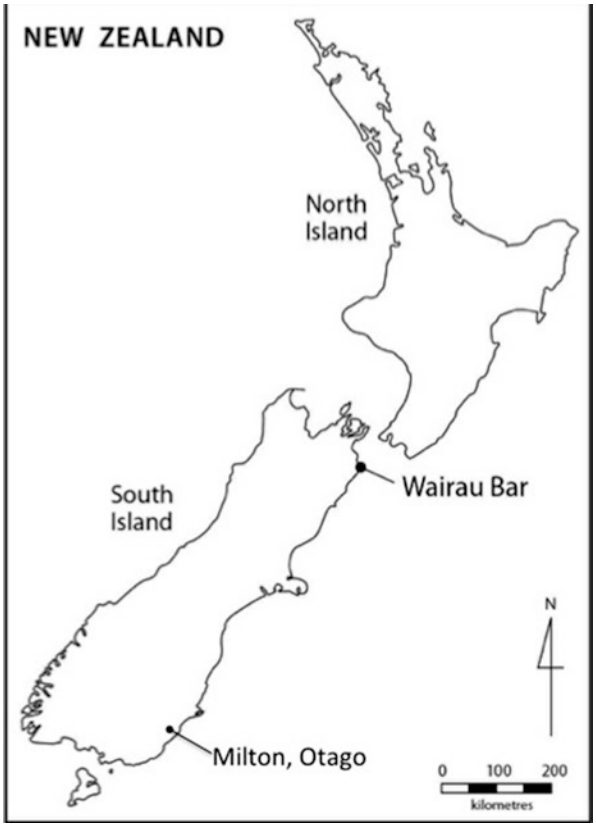

Fig. 7.1 Map of New Zealand indicating the location of Wairau Bar and Milton

about 20 years, Rangitāne o Wairāu, the iwi (tribe) with guardianship over the site, approached the Canterbury Museum regarding return of the remains. In early 2008, the museum agreed to the reburial of the skeletons on the proviso that a full scientific reanalysis of the collection was undertaken. Once the political negotiations had been concluded, all parties agreed to the analysis, with Rangitāne agreeing that the University of Otago should undertake the research.

Canterbury Museum had separately approached staff at the Anatomy Department of the University of Otago to develop a research proposal outlining the scope of analyses that could be conducted using modern technology. The reburial process also involved further excavation of the site to prepare the ground for reinterment (Brooks et al. 2009). In August 2008, the proposals for further research, including destructive analyses, and the excavation strategy were verbally presented to Rangitāne by university staff in Christchurch. Following further discussions between Rangitāne and the research project leader, Hallie Buckley, a research protocol was agreed. A wider Memorandum of Understanding (MoU) between the University of Otago, Rangitāne and the Canterbury Museum was also developed and signed by all parties in December 2008. This tripartite MoU represented the first

mutual agreement between scientists and iwi (tribes) for the analysis and public reporting of scientific findings and as such was the first of its kind in New Zealand.

The collection of 41Wairau Bar individuals was transported to the University of Otago in October of 2008 and received at the Anatomy Department from the Canterbury Museum in a formal ceremony. This project was essentially an exercise of information gathering for posterity prior to reinterment. However, given that these remains represent the only sample of initial Polynesian colonisers of a size allowing population-based health and disease analysis, the research objectives were focussed on addressing bioarchaeological questions of origins, diet and quality of life. The Wairau Bar burials had been analysed macroscopically previously by Prof. Phillip Houghton (Houghton 1975), and the 2008–2009 research programme involved macroscopic observations of bones and teeth, radiographic and CT imaging of much of the material and destructive chemical and molecular analyses.

One of the long-held questions regarding this site was that seven of the individuals were interred with much 'richer' grave goods than the rest of the sample and the people had been variously interpreted as the initial colonising group or as people of higher status (Duff 1977; Anderson 1989). Isotope analyses of diet and migration were applied to test these assumptions (Kinaston et al. 2013) and found that these seven individuals had distinct dietary and strontium isotope signatures foreign to the environment of Wairau Bar and indicated that they were most likely the first pre-European settlers to the region (Houghton 1975). Overall the analysis has so far yielded publications on the macroscopic findings on health (Buckley et al. 2010), the aDNA of the humans (Knapp et al. 2012), isotope studies of diet and migration (Kinaston et al. 2013), facial approximation (Hayes et al. 2012) and a 95-page written report presented to Rangitāne (Buckley et al. 2009). aDNA research on the genetic affinities of the dogs excavated from Wairau Bar have also been published (Greig et al. 2015). A new model for pre-European colonisation of New Zealand has resulted from a synthesis of this body of work and oral traditions of settlement are forthcoming.

Analysis of the skeletal remains was completed in early 2009, and in April of that year, they were returned to Rangitāne for reburial. The reinterment generated huge national and international media interest (Blundell 2013) and was attended by several hundred members of the tribe along with local community dignitaries, members of Parliament, Canterbury Museum staff and the University of Otago researchers.

The positive relationship between the University of Otago and Rangitāne cannot be underestimated in relation to the effect that this has had on establishing Māori trust in biological anthropologists and research in general. In the last few years, a collaborative study of the DNA of modern Rangitāne is being conducted to help with understanding their connection to their ancestors buried on the Wairau Bar (Matisoo-Smith 2016) which would have been inconceivable 10 years ago. Since that time, other tribal groups have approached the university for the examination of their ancestral remains demonstrating the benefits of such an approach for both science and iwi (Ruckstuhl et al. 2016).

Excavation of Nineteenth-Century European Settlers' Cemetery

After European colonisation, the burial grounds of Māori were largely kept separated from those of the colonisers in areas of spiritual significance. While legislation today is primarily set up for the protection of Māori skeletal remains, pre-1900AD burials of European or Chinese ancestry are considered 'archaeological' and therefore come under the same rules as kōiwi tangata. St. John's Cemetery (archaeological site H45/56) is located near Milton in South Otago and was established in 1860 as an Anglican burial ground for the local European settler community. The cemetery has been disused since 1926 and was formally closed in 1971. For many years it has been in a state of disrepair, and recently a local community group, Tokomairiro Project 60 (TP60), was formed with the intention of restoring the cemetery. Their intention was to repair the remaining headstones, to identify the extent of graves within the cemetery (as the existing post and wire fence does not follow the legal or actual boundaries of the original cemetery) and ultimately to create a well-maintained lawn cemetery. The TP60 group contacted Dr. Petchey (Department of Anthropology and Archaeology, University of Otago) and Professor Buckley to seek assistance in defining the cemetery boundaries and finding the 'lost' graves. The outcome was an opportunity to investigate an early farming community from archaeological and bioarchaeological perspectives. The research objectives of this project were threefold. Firstly, driven by the community's need to identify the boundaries of the cemetery and attempt to positively identify those buried there, the first objective was to search for burials in the fields surrounding the fenced cemetery, with the result that 16 unknown burials were found. Second was an attempt to positively identify those buried there, by matching of biological information (osteology, DNA and isotopes) from the excavated skeletons with historical records of people known to have been buried there. Thirdly, British propaganda of the period hailed settlement in New Zealand as a more healthy option than 'home'. Therefore the overarching research aim of the project was to test whether this assertion was valid in the context of South Otago.

Prior to this, research-driven bioarchaeological excavations of historic cemeteries had not been conducted in New Zealand, so the project raised a number of ethical and legislative issues. As the cemetery is located on land owned by the Anglican Church, the bishop of the diocese was approached in the first instance, and support was granted to initiate public consultation. After extensive public engagement involving press releases, a public meeting and consultation with local Māori, an archaeological authority (No. 2017/171) from Heritage New Zealand and a disinterment licence (No. 17-2016/17) from the Ministry of Health were obtained. The archaeological excavation of part of the cemetery took place between 28 November and 16 December 2016.

The project exposed a total of 29 grave cuts (Fig. 7.2) and excavated 25 graves to recover the remains of 27 individuals (2 of the infant/child burials contained double burials). A broken and buried headstone was also found that identified Mr. Henry Pim (Fig. 7.3), and as the permissions were for unmarked and unidentified burials,

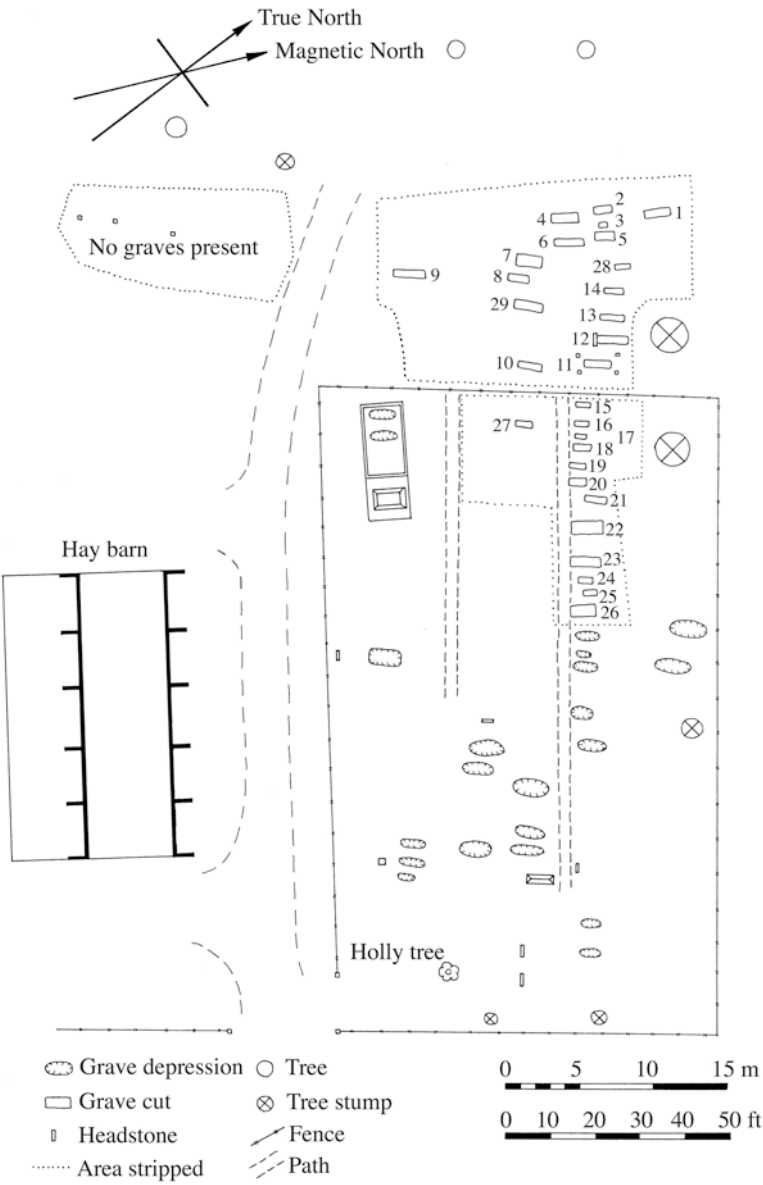

Fig. 7.2 Plan drawing of the St John's Anglican historic cemetery with burial locations indicated

this interment was left untouched. Four individuals were identified in situ by the preservation of painted iron plates on the lids of the coffins. As already mentioned 16 of these graves were found outside the fenced area, confirming suspicions that the cemetery was larger than it appeared. The layout of these 'lost' burials continued in the rows from the known cemetery.

Fig. 7.3 The early stages of the St John's cemetery excavation outside of the modern fenced boundary with grave cuts appearing under the topsoil

The preservation of the human remains was highly variable across the site, partly due to equally variable ground conditions, and all ages from young infants to adults were found. An intensive laboratory examination of the skeletal remains is currently underway and includes chemical and molecular analyses of bones, teeth and hair. The death certificates and other historical information of 75 individuals known to be buried at the cemetery, including those positively identified during excavation, are being utilised for building a holistic biocultural picture of Victorian period quality of life in the new colony.

At completion of the excavation, the locations of all identified graves were marked with 2-inch square posts prior to backfilling of the site, and it is anticipated that the reinterment of the skeletal and artefactual material will be into the original grave locations. The range of skeletal and artefactual material that has been found will allow a detailed examination of the people, their origins, health and cultural traditions, especially those relating to death which was a Victorian preoccupation.

While the motivations and outcomes of these two case studies are different, they share some fundamental characteristics. Firstly, both samples represent early colonisers into new environments which raise interesting questions of biocultural adaptation during two key periods of human settlement of New Zealand. They were both also initiated by the community for different reasons but with the motivation of establishing appropriate custodial care of the remains of their ancestors. Both of these projects have brought the benefits of collaborative bioarchaeological research to public attention through media and community engagement, and both communities have warmly embraced the different insights given into their past. Finally, the social and legislative contexts in which the two projects were undertaken were completely different and reflect how Māori were viewed within New Zealand society in the past and the foundation of the archaeological discipline. The original burials were found at Wairau Bar by an amateur enthusiast, and for later excavations at the site, it was not legally required to consult and collaborate with Māori as was the case with all excavations involving human remains. As awareness grew in the archaeological community of the distress excavating Māori human remains caused, field archaeologists avoided them even after the legislation gave back the rights of decision-making to Māori, thus respecting the special importance of the dead in the Māori worldview. It is of note that this reticence in archaeological research towards human remains has extended to European burials as well, possibly partly due to their relative recent origin (especially when compared to burials in the Old World) but also possibly because of the wider adoption of Māori mores towards death and the dead in late twentieth- and early twenty-first-century New Zealand society as well.

As explained, Māori skeletal remains are not purposefully excavated for research purposes today, but there is increasing interest from Māori for the stories their ancestors can tell. Interestingly, while St John's project has received overwhelming positive support from the local European and Māori community, some members of the archaeological community and public remain uncomfortable with purposeful excavation of human remains (Huffadine 2015; Mackenzie-McClean 2015), regardless of their ancestry or antiquity. With future plans to enlarge the investigation of European and Chinese gold miners and settlers in New Zealand, bioarchaeology is evolving and will no doubt continue to garner robust ethical debate around the value and protection of our ancestral voices as told through kōiwi tangata (human remains), whether they be Māori, Chinese or European.

Final Remarks

The pre-European and European colonising history of New Zealand is unusual compared to that of Old World Europe and has shaped the worldview of both the colonised and colonists with respect to how the dead are perceived. While it is still early days, from recent experience, it would seem that New Zealand is entering a new age of mutual trust and collaborative research between scientists and the varied

communities they serve. This new age will hopefully be of benefit to the community engaged in these collaborations and the wider public.

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Chapter 8
Skulls and Skeletons from Documented, Overseas and Archaeological Excavations: Portuguese Trajectories

Ana Luisa Santos

The recognition of human fossils in the first decades of the nineteenth century, with several discoveries in Europe, and the definition in 1865 of a new discipline, *paleoethnology*, during the *1st International Meeting of Anthropology and Prehistoric Archaeology* that took place in Spézia (Italy), generated great enthusiasm amongst Portuguese researchers (Athayde 1934) who began to look for evidence of ancient populations in the national territory (Fabião 1999; Martins 2007; Umbelino and Santos 2011). The archaeological record also contributed to the construction of national identity in response to nationalist movements that emerged in the nineteenth century.

After a period in which anthropological studies were carried out by persons with diverse backgrounds, in 1885 the discipline was created at the University of Coimbra (Tamagnini and Serra 1942; Areia and Rocha 1985), followed in 1911 by the Universities of Lisbon and Oporto (Xavier da Cunha 1982). In these institutions, anthropology arose within natural history, and as a consequence, teaching included comparative anatomy of human and non-human primates and fossils, and the universities acquired relevant teaching materials that included documented (i.e. of known biography) human osteological collections (Museu e Laboratório Antropológico 1985, 2016; Mendes Correia 1941).

At this same time, Portuguese museums, as what happened in many similar institutions in the world, start to benefit from 'offers' made by military men, scientists, priests and others who worked in the colonies or in other countries. Amongst the ethnographic materials sent to the museums were skulls and skeletons. As Dias (1998) noted, in the nineteenth century, anthropological collections appear to have been constructed specifically to demonstrate racial differences.

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The period of the foundation of the discipline was followed by decades of studies on craniology and metric characterization of individuals, to evaluate if 'miscegenation' leads to the dissolution of the specific characters of the mainland Portuguese. During the dictatorship known as *Estado Novo* (1933–1974), these studies were justified by the urgent need to affirm the position of the country in the 'civilized' world and amongst the colonial empires. Interestingly, the same type of metric analysis and evaluations made in the individuals from the colonies were also undertaken in the home nation.

In the following decades, there was a general decline in the number of studies and excavations. After the Revolution in 1974, the (former) colonies were no longer the focus of anthropological studies. The Portuguese universities were restructured and modernized in the 1980s, and the scenario of physical anthropology changed around 1990, with a new wave of researchers that made the transition between the traditional biometrical studies and the international trends of anthropological/bioarchaeological investigation. Simultaneously, education and training of students was developed in bachelors, masters and PhD courses. At the same time, the number of human remains available increased as a result of excavations carried out all over the country in ancient necropoli during the construction of infrastructures such as roads and renovation of old religious buildings.

The aims of this paper are to investigate the motivations behind the constitution of collections, the excavations of human bones and the trajectories of the discipline in Portugal.

Skull and Skeleton Collections at the Foundation of the Discipline

Portugal is recognized internationally for the number and quality of the documented osteological collections assembled since 1882. Less known are the bone collections of individuals from overseas, both from the former Portuguese colonies and from other countries, which are summarized here. These collections and its collectors are the subject of the following two sections.

Documented Osteological Collections

The collection of assemblages of modern human remains, with the aim of furthering anthropological research and teaching, was possible within the framework of Portuguese law. Despite the presence of the inquisition in the country until 1821, the study of human cadavers was allowed at least since 1546 by the decree passed by King John III. The use of corpses in practical teaching was regulated in the eighteenth century (Abreu 2007).

The first collection with bones from individuals with biographic data was assembled by Francisco Ferraz de Macedo (1845–1907). This pharmacist and physician was born in Portugal but moved as a child to Brazil (Santos 2012). A former student of Paul Broca, he was the 'patriarch of Portuguese anthropology' (Tamagnini and Serra 1942) and considered 'the first Portuguese [Physical] anthropologist' (Ferreira 1908). Later in his career, Ferraz Macedo became devoted to criminal anthropology (Tamagnini and Serra 1942; Xavier da Cunha 1982). With more than 1023 skulls and one complete skeleton (Duarte 2017), gathering the Ferraz Macedo collection began in 1882 in the cemeteries of Lisbon (Tamagnini and Serra 1942), and it was donated to the Bocage Museum [Lisbon] in 1907 (Ferreira 1908; Cardoso 2006a, b). Unfortunately, in 1978 this collection was destroyed in a fire (Xavier da Cunha 1982; Rocha 1995) with only around 40 skulls and dispersed postcranial elements surviving (Cardoso 2006a).

At the University of Coimbra, the first documented collection was designated the 'Medical School Collection'. The 585 skulls, amassed between 1896 and 1903 (Museu e Laboratório Antropológico 1985, 2016), from the Universities of Lisbon, Coimbra and Oporto, were collected by Bernardino Machado (Rocha 1995). Bernardino Luís Machado Guimarães (1851–1944) was born in Brazil and came to Portugal to study at the University of Coimbra, where he later became a professor (1885–1907) and was responsible for the creation in 1885 of the course of *Anthropology, Human Palaeontology and Pre-Historic Archaeology* at the Faculty of Natural Philosophy (Areia and Rocha 1985; Tamagnini and Serra 1942). He was also the director of the anthropological section of the Natural History Museum at the same university (Areia and Rocha 1985) and, in the words of Barbosa Sueiro (1944), 'created the Museum annexed to the discipline'.

Bernardino Machado was very active politically, both during the monarchy and after the creation of the Republic in 1910. During his resulting absence, he was replaced at the University of Coimbra by the 'substitute professor' Henrique Teixeira Bastos (Areia and Rocha 1985).

He funded the Society of Anthropology, based in Coimbra, taught courses to nonacademic members of the public (*Cursos livres*), defended the education of women and held many political offices including president of the country from 1915 to 1917 and 1925 to 1926. His opposition to Antonio Salazar's dictatorial regime led him into exile in Spain and in France.

Later, Eusébio Barbosa Tamagnini de Matos Encarnação (1880–1972), Machado's successor at the University of Coimbra from 1907 to 1950, was also Minister of Public Instruction, during the government of António Oliveira Salazar, and the first president of the Portuguese Society for Eugenic Studies (*Sociedade Portuguesa de Estudos Eugénicos*) (Areia and Rocha 1985). Tamagnini amassed the 'International Exchange' collection (Rocha 1995), with 1142 identified skulls (Lopes 2014), and the 'Identified Skeletal Collection' comprising 505 skeletons, both deriving from the Municipal Cemetery of Conchada in Coimbra (Lopes 2014; Santos 2000). These collections have a small number of individuals born outside Portugal (Cunha and Wasterlain 2007; Lopes 2014; Santos 2000).

The University of Oporto housed a documented collection with individuals exhumed from the Cemetery of Repouso, collated by António Augusto Esteves Mendes Correia (1888–1960). He justified the formation of this collection on the grounds that there were as many studies on skulls, in Portugal as abroad, but few of complete skeletons (Mendes Correia 1917). This physician and first professor of anthropology at the University of Oporto (Tamagnini and Serra 1942; Mendes Correia 1941) combined academic and political activities: for example, he was the mayor of Oporto (1936–1942) and a deputy in the National Assembly (Matos 2012). According to Cunha (2010), curator of the archaeological and anthropological collections at the Natural History Museum, the exact number of individuals amassed by Mendes Correia is difficult to ascertain, but it is probable that there were 173 skulls of Portuguese origin, 125 of which are of known identity, 41 skeletons and more than 400 isolated limb bones and many mandibles. These human remains were divided into two collections: 'research' and 'teaching' (Cunha 2010, 2012). More recently, Cardoso and Marinho (2015/2016) published an inventory of the remaining 99 documented individuals from the original collection. The possible explanation for the reduction in number could be their transference to the Department of Zoology/Anthropology to be used in teaching (Cunha 2010).

At the Universities of Lisbon, Coimbra and Oporto, from the beginning of the anthropological studies until the 1950s/1960s, these collections were analysed according to district of birth of the individuals, and various measures, indices and angles were determined. The results obtained in these contemporaneous remains were compared with the individuals from archaeological excavations and with studies made in other 'races' and fossils. For Tamagnini (1934), all of humankind belonged to the same species, but there were superior and inferior races, and he warned of the problems of miscegenation. In the case of Portugal, these studies tried to prove that the presence of Muslims 'moors', mainly from North Africa, as well as miscegenation with inhabitants from the colonies (in 1551, e.g. Cristovão de Oliveira points out that 10% of the 100,000 inhabitants of Lisbon were slaves (in Estácio da Veiga 1887: 501)) had not altered the European nature of the population. The titles of these works are very suggestive of the contents, for example, *Diameters and indexes of the Portuguese skulls*, *The prognathism of the Portuguese* and *The femur of the Portuguese*, with similar studies for almost all the bones of the skeleton.

Overseas Collections

Portugal started systematic ocean navigations (so-called Descobrimentos) in 1415. The overseas expansion in the fifteenth and sixteenth centuries resulted in the creation of several colonies, most of which became independent in the last quarter of the twentieth century. Human remains were brought to Portugal from the former colonies of Angola, Goa, Guinea-Bissau, Mozambique, São Tomé e Principe and Timor. However, apparently there are no bones from Cape Verde archipelago and

from Macau. Brazil had become independent in 1822, therefore before the beginning of anthropological studies in Portugal. Scientific exchanges between Portuguese and Brazilian researchers existed but apparently not in an intricate way as can be confirmed by the chapter in Volume I of this series on 'Bioarcheology in Brazil' by Mendonça de Souza (2014). However, they mutually read their publications, researchers of one country were members of professional associations of the other, and conferences were presented on both sides of the Atlantic, with Mendes Correia visiting several institutions in Brazil in 1934 and 1937 (Matos 2013). Topics like race, in prehistory and in living populations, miscegenation and eugenics were of common interest to both Brazilian and Portuguese anthropologists (Matos 2013).

The study of the 'indigenous' from the colonies became of primary interest during the dictatorship regime, *Estado Novo (New State*) or the Second Republic (Santos 2012), which was created in 1933 and ended with the Carnation Revolution in April 1974. It held a 'belief in the hereditary or cumulative environmental physical, and cultural inferiority of non-European populations' (Santos 2012: S36). Notwithstanding this original position advocated by many researchers, the narrative changed in the 1950s, and miscegenation, considered inevitable in a colonial power like Portugal, became evidence of the 'absence of racial prejudice by the Portuguese' (Mendes Correia 1954). The Lusotropicalism (*Luso-tropicalismo*), proposed by the Brazilian Gilberto Freyre (1900–1987), inspired by Franz Boas, was adopted by the Portuguese political system both at home and in official occasions abroad (Matos 2013; Santos 2012; Viegas and Pina-Cabral 2014). Lusotropicalism stressed the distinctive character of Portuguese imperialism and proposed that the Portuguese were more enlightened colonizers than other European powers.

In 1934, prior to the development of Lusotropicalism which happened after World Word II, Oporto hosted the *1st National Meeting of Colonial Anthropology*, coinciding with the *Portuguese Colonial Exhibition*, organized by the *Portuguese Society of Anthropology and Ethnology* (*Sociedade Portuguesa de Antropologia e Etnologia*, SPAE) founded in 1918 (Mendes Correia 1941). At this meeting, 'race' was a theme covered in several presentations. The studies analysed human remains brought from the colonies and donated to institutions in the metropolis by persons who worked in those territories or were collected during anthropological missions. According to the research done for this paper, these collections are now at the universities of Coimbra, Oporto and Lisbon.

At the University of Coimbra, the first group of crania was sent by the governor of Macau and Timor to the Natural History Museum in 1882/1883. According to Barros e Cunha (1894), the 35 skulls allegedly came from a battlefield, and most of them had been decapitated. The precise origins of these individuals have been the target of different interpretations analysed by Roque (2010b). In 1902, six of these skulls were loaned by Bernardino Machado to Rudolf Martin (Rocha 1995), a Swiss-born anthropologist. Later, in 1913, Tamagnini asked for their return which never occurred (Rocha 1995). Despite the teaching and research interest in physical anthropology at Coimbra, the number of human remains from Africa is small. The 10 skulls currently in the collection were brought in the 1920s from Angola (n = 5)

and S. Tomé e Principe (n = 5), and the studies performed consisted mainly in very detailed qualitative and quantitative descriptions.

At the University of Oporto, the Museum of Natural History includes collections from the former Anthropological Museum of Oporto (*Museu de Antropologia do Porto*) established in 1911 by Mendes Correia, its first director (Cunha 2012). Mendes Correia played an important role in the anthropological expeditions (*Missões Antropológicas*) to colonies (Cunha 2012). The colonial anthropology collection included human remains, mainly skulls,[1] from around 15 individuals from Angola, Guinea Bissau and Mozambique (Cunha 2010, 2012). There are also four males and one female identified as Satary, killed in a battle in November 1895, and exhumed from the cemeteries of Sanquelim and Cudnem in Goa (Mendes Correia 1916 in Cunha 2010), acquired by Artur Augusto Fonseca Cardoso, treasurer of the SPAE and founder of *Colonial Anthropology* in Portugal (Mendes Correia 1941; Roque 2010a).

Still at the University of Oporto, the colonial anthropology section of the Anatomical Institute has a group of 29 skulls from Guinea, metrically analysed by Pires de Lima and Mascarenhas (1931) and presented at the *XV^e Congrès International d'Anthropologie & d'Archéologie Préhistorique – I^e Session de l'Institut International d'Anthropologie*, which took place in Coimbra in 1930. The same authors referred to the ethnic composition of the individuals, Arabic-Berber and Black (*Negrito*), and asked 'How will it be possible to subordinate these two groups to the same legislation? [...] It is incontestable that the Arab-Berber element has a mentality more developed that the 'Negrito' [...] We consider it an urgent need for the State to promote anthropological recognition of indigenous peoples' as other colonial powers [e.g. France and Britain] had done (Pires de Lima and Mascarenhas 1929). These statements reflect the policies of that time, in which it was important to know the territories and their populations to better govern them.

At the University of Lisbon, the *National Museum of Natural History and Science* (*Museu Nacional de História Natural e da Ciência – Museu Bocage*), according to Barbosa Sueiro (1952), housed the skeleton of a Bachope man (Mozambique) who came to Lisbon in 1940 to be exhibited during the *Exhibition of the Portuguese World* (*Exposição do Mundo Português*) and who died of tuberculosis during his stay. Manuel Bernardo Barbosa Sueiro (1894–1974) was an anatomist who developed palaeopathological research (Santos and Cunha 2012) so not surprisingly his study included pathological and morphologic variations of the vertebral column and ribs (Barbosa Sueiro 1952). The remains of this individual were probably lost in the fire that destroyed the museum in 1978. Since 2006, this institution has also housed the so-called Silva Teles Collection, moved in 1981 to the *Institute of Tropical Scientific Research* (IICT – *Instituto de Investigação Científica Tropical*) from its original location in the *museum of the Society of Geography of Lisbon (Sociedade de Geografia de Lisboa)* that had been created in 1875 (Neto 1991). Francisco Xavier Silva Teles (1860–1930) was a naval physician and a geographer, born in Goa and member of the directorate of the *Society of Geography of*

[1] In these early publications, the word skull was used as synonymous of *cranium*.

Lisbon. He probably created the collection during his stay in Angola between 1897 and 1899 (Neto 1991). In a letter dated from 1898, Silva Teles wrote that he had begun to collect skulls and this will be 'the first [African?] collection to appear in Portugal' (Neto 2003). This collection has been the subject of several studies. Mascarenhas (1934: 209), for example, metrically analysed the 116 skulls to 'investigate their probable ethnic origin and to frame racial types'. More recently, studies have been done specifically on ancestry, from the perspective of forensic anthropology (Tavares 2008). In 2016, the *Museu Bocage* received, from the extinct IICT, three male skeletons (with age and cause of death recorded, one with possible ablation of the incisors) recovered during anthropological expeditions to Mozambique (*Missão Antropológica a Moçambique*) undertaken between the 1930s and 1950s (Santos 2004).

Dental 'mutilations' (including both dental modification and wear) was a topic of research in skulls of the museum collections and in the 'indigenous of our overseas provinces, displayed in this beautiful exhibition at the Palácio de Cristal' in Oporto (Monteiro and Adrião 1934: 238). In the study of the teeth from the Guineans that were exhibited (18 male and 2 female Balantas, 2 Bijagos and 1 Manjaca), it is mentioned that the 26-year-old Manjaca had 'maxillary incisors very sharp [...] as he is already civilized, he is ashamed. We could only see his teeth, after Prince Abdullah Sissé [from Guinea] had made a great speech to convince him. Now he wants to remove his incisors and replace them with a dental prosthesis, as many of his fellow countrymen have done lately'. Four of the 38 persons from Mozambique also had dental modifications. The techniques applied were described: amongst the Balantas the modification is made by persons different from those who treat dental problems and occurred 'without pain or bloodshed' (Monteiro and Adrião 1934: 242). This study included other cultural aspects learned from the individuals present at the exhibition, and worldwide examples, both from archaeological and living populations, and the possible origin of dental modifications were discussed.

In addition to these individuals/collections, former students of anthropology, like the military officer Artur Augusto Fonseca Cardoso, 'never stopped measuring skulls, here and beyond sea […] in his officer's baggage, wherever he went, he never failed to carry the *trousse* of the anthropologist' (Fortes 1913: 202). He served in India, Angola and Timor where he also conducted anthropometric studies amongst living populations (Athayde 1934; Fortes 1913). In Angola, Lemos metrically analysed 54 skulls from Humbe and Cuamato (Barros e Cunha and Lemos 1931). According to these authors, these skulls were supposed to be sent to Portugal but were lost during the war.

In addition to the collections from the former colonies, there are in Portugal human remains from other regions. As example, the Natural History Museum at the University of Oporto received specimens from Argentina (donated by Professor Lehmann-Nitsche, from the University of Buenos Aires), Brazil (donated in 1929) and Burkina Faso, designated as *Foreign Anthropology* (Cunha 2010, 2012). In the storerooms of the University of Coimbra (Department of Life Sciences), there are four skulls from France and Italy and two from Spain.

This synthesis is not a complete and systematic review of all the human remains in Portugal that were brought from the overseas.[2] Hopefully, it will give an overview of the collections, their origin and context as well as the underlying aims of those studies. Nonetheless, it allows us to estimate that the remains of at least 230 individuals arrived from the Portuguese former colonies, consisting the largest groups of 116 skulls from Angola (University of Lisbon), 35 skulls from Timor (University of Coimbra) and the single donation of 29 skulls from Guinea (University of Oporto).

It is noteworthy that for many decades studies in Portugal, just as elsewhere, aimed to quantify the difference between populations. These times of racial discrimination and colonialism seem very distant in face of the developments occurring in the last decades. However, despite a UNESCO declaration in 1978 stating that there are no races in humankind, this is not globally recognized. Hopefully, the memory of the past will help societies to be more inclusive and tolerant.

Excavations of Human Remains

Archaeological work in Portugal started with researchers who belonged to the *Commission for Geological Works* (*Comissão de Trabalhos Geológicos*) which was founded in 1857 (Leite de Vasconcelos 1933) and later by the *Geological Services of Portugal* (*Serviços Geológicos de Portugal*), established in 1918 (Raposo and Silva 1996; Fabião 1999; Umbelino and Santos 2011).

To sum up the prodigious advances in knowledge in the nineteenth century, it must be remembered that Charles Darwin (1809–1882) published *The Origin of Species* in 1859 and *The Descent of Man* in 1871. In the century of Positivism, the existence of human fossils in Europe and Asia/Oceania (Java) was recognized. The coexistence of ancient humans and extinct faunas began to be accepted by researchers, and the emergence of our species was placed in previously inconceivable chronological frameworks. Scientific research was intensified all over the world, resulting in an increase in the number of publications, both journals and books (which were widely circulated), scientific meetings and the foundation of professional associations.

This scientific environment framed the beginning of the archaeological exploration of the Portuguese landscape and the emergence of prehistoric studies. Moreover, in the last quarter of the nineteenth century, a movement of intellectuals called the 'Generation of the 70s' (*Geração de 70*) promoted national 'regeneration' and the modernization of the country. In the words of Leal (2006), anthropology started in Portugal as an *anthropology of nation-building*. This nationalist rhetoric was concerned to prove the 'unity" and the 'antiquity' of the Portuguese 'nation' or 'race', terms used interchangeably at this period (Santos 2012: S35).

[2] This publication does not consider the mummified bodies from Egypt and South America and the so-called trophy heads brought to Portugal.

It was in this fervour for evidence of ancient fossils that 'Tertiary Man' able to produced carved flints (*eólitos*) from Ota (see Roque 2010b; Umbelino and Santos 2011) was named by Mortillet, the French archaeologist and anthropologist, as *Homosimius ribeiroi* (Mendes Correia 1915), a homage to Carlos Ribeiro, one of its most committed defenders. The need to discuss the interpretations of this prehistoric site as well as other findings that were discovered in the country (e.g. the shell midden of Muge, Citânia de Briteiros, caves with human occupation, amongst others) with their international peers led to the organization of the *IXe Congrès International d'Anthropologie & d'Archéologie Préhistorique* in Lisbon in 1880 with the proceedings published in 1884 (*Compte rendu de la 9ème session du Congrès International d'Anthropologie et d'Archéologie Préhistorique*). This was a major event in the development of the discipline in Portugal. In the words of Mendes Correia (1941:8), this scientific meeting 'brought the attention of all educated Portuguese to anthropological issues'.

One of the hottest themes debated was the origin of the ancestors of the Portuguese – the Lusitanians – with Francisco Martins Sarmento (1833–1899), a pioneer archaeologist with a paleoethnological orientation, being a major proponent of this idea (Fabião 1999). The hypothesis of the eastern cradle of humanity, in the Caucasus region, was proposed by some researchers and repeatedly and sarcastically rejected by others such as Estácio da Veiga (1891). At that time, craniometric morphological analysis prevailed, with a strong influence from French anthropology. Several studies in Portugal confirmed the existence of inhabitants, both in the past and in living populations, who were either dolicho or brachycephalic. Brachycephaly was considered an ancient characteristic in opposition to the more civilized dolichocephalic individuals (Mendes Correia 1918). In the words of Estácio da Veiga (1887), it does make sense to speak of brachycephaly coming from the Indo-European peoples from Asia, and his explanation goes further 'the superiority or inferiority of a race or an individual could not be deduced from the cranial capacity or from the cephalic index'. In accordance with the Romantic School, he declared that the achievements of the Portuguese were not in line with weak aptitudes revealed by the indices; 'the calliper does not measure the index of this heroic people' (Estácio da Veiga 1887).

It is interesting to note that at the beginning of systematic excavations in Portugal, both cultural materials and human remains were studied in an integrated way between archaeologists and anthropologists. The *Portuguese Ethnographic Museum* (Museu Ethnográfico Português), later *Ethnological Museum* (*Museu Ethnológico*), nowadays *National Museum of Archaeology* (*Museu Nacional de Arqueologia*), was founded to represent the 'Portuguese people'. Its founder was José Leite de Vasconcelos (1858–1941), a prominent archaeologist and ethnographer (Fabião 1999, 2008). This integrated perspective was lost during much of the twentieth century with many archaeologists neglecting the importance of the human remains as source of information about the populations who shaped the metals and the ceramics and built the architectural structures.

Physical Anthropology in Portugal Since the 1990s

In the years immediately after the 1974 Revolution, studies/scholars associated with the old and colonial regime were excluded, and the relevant educational and cultural institutions were managed temporarily by left-wing students (Viegas and Pina-Cabral 2014) and workers committees. In the following years, the African colonies became independent countries, and the allusion to overseas (Ultramarino) or to colony was deleted from the name of the institutions, for example, the *Institute of Social and Ultramarine Political Sciences* (*Instituto Superior de Ciências Sociais e Políticas Ultramarinas*) became *Institute of Social and Political Sciences*, and the *Museum of Ultramarine Ethnology* (*Museu de Etnologia do Ultramar*) was recalled *National Museum of Ethnology* (Areia 1986).

In the early 1980s, Portuguese universities were restructured and started to adopt international academic practice (Areia 1986; Viegas and Pina-Cabral 2014). In terms of physical anthropology, the beginning of the 1990s witnessed the rebirth of the field. In the previous decades, there had been a reduction in teaching due to the lack of professors who developed research in human remains, namely, at the University of Coimbra (Areia and Rocha 1985; Cunha 2002; Umbelino and Santos 2011). However, this trend changed, thanks to the vision of Manuel Laranjeira Rodrigues de Areia (who finished his PhD in 1980 in cultural anthropology), Maria Augusta Rocha and others, responsible for the creation in 1992 of the degree in anthropology. This course differed from the others existing in the country because of the balance between the number of disciplines in biological anthropology and sociocultural anthropology (Umbelino and Santos 2011). Teaching, and research, in biological anthropology occurs also at the Instituto Superior de Ciências Sociais e Políticas (Lisbon) since the creation of the degree in anthropology in 1968. More recently, the degree in anthropology at the Universidade Nova de Lisboa (NOVA) started to integrate in the curriculum disciplines of biological anthropology, while ISCTE (Instituto Superior de Ciências do Trabalho e da Empresa – Instituto Universitário de Lisboa) maintains exclusively the teaching of sociocultural anthropology.

Many of the new graduates in anthropology, as well as many biologists and archaeologists, extended their knowledge of human remains by attending the *Masters in Human Evolution* created in 1998 (since 2007 called *Master in Evolution and Human Biology*) at the University of Coimbra, with an important role in the creation of this programme played by Eugénia Cunha, who finished her PhD in 1994 with a study of mediaeval populations of the north of Portugal. The absence of senior professors in Portugal to supervise doctoral thesis was remedied by foreign supervisors (e.g. France, the United Kingdom, Spain), with a few PhD dissertations undertaken abroad.

The body of knowledge about past populations has been increased since 1999 by the *Regulation of Archaeological Works* (Diário da República 1999, 2000, 2014), which insists on the mandatory presence of a specialist in physical anthropology in any excavation with human bones. The *Directorate-General for Cultural Heritage*

(DGPC) (*Direção Geral do Património Cultural*) 'is responsible for managing the cultural heritage in mainland Portugal', including the authorization of excavations (the methodologies proposed and subsequently can inspect the works) that occur mostly due to the need to renovate the interior and/or exterior of churches or of former monasteries/convents or as a result of public and private constructions that uncover ancient burial places. After the conclusion of an excavation, the DGPC receives and evaluates the reports from the field projects. The analysis of human remains recovered, which is mostly done in the contest of master and PhD theses, is also recommended.

This law also had as a consequence the (re)integration of the results of human bone analysis in the archaeological interpretations of the sites. In 1999, at the *3rd Congress of Peninsular Archaeology* (*3° Congresso de Arqueologia Peninsular*) held in Vila Real, at the University of Trás-os-Montes, there was a session entitled *Interpretation of human skeletons in an archaeological context* organized by Eugénia Cunha and Francisco Etxeberria from Spain. After this meeting, the presence of bioanthropologists became more and more common in archaeology and history meetings.

The systematic collection of human remains from contemporaneous cemeteries persists to the present. Although biographical data exist, the name of these individuals is never published for ethical reasons. To replace the lost 'Ferraz Macedo Collection', the University of Lisbon started a new collection in the 1980s, now with over 1800 skeletons (Cardoso 2006a, b; Cardoso and Marinho 2015/2016). The University of Évora began an identified collection in the 1990s. In 2007, the University of Coimbra created the so-called twenty-first century identified collection, with skeletons exhumed from the Cemetery of Capuchos in Santarém (Ferreira et al. 2014). This was justified by the need of reference individuals who lived and died more recently. In 2011, the University of Oporto, with the Northern Delegation of the National Institute of Legal Medicine and Forensic Sciences, started a new identified collection within the BoneMedLeg project with individuals from the Cemetery of Agramonte in Oporto (Cardoso and Marinho 2015/2016). These collections have been used by local and foreign researchers to develop methodologies for sex, stature and age-at-death estimation, palaeopathological diagnosis and forensic identification. At the University of Coimbra, staff members and students benefit from presentations given by those visiting researchers.

The current research can be placed in the bioarchaeological tradition. However, this designation is not frequently adopted probably due to historical reasons. In Portugal, the teaching of anthropology arose in the context of natural history (sciences), while archaeology diverged from history (humanities). On the other hand, physical anthropology, or biological anthropology (a more recent formulation that intends to show that craniometry is no longer the aim of the investigations), had to assert itself as a disciplinary area in a country where for many anthropologists, anthropology is synonymous with the sociocultural approach. On a positive note, recently the *Portuguese Association of Anthropology* (*Associação Portuguesa de Antropologia*) began to integrate bioanthropologists more actively and the *Centre for Research Anthropology* (CRIA, *Centro em Rede de Investigação em Antropologia*), houses at NOVA, the new *Laboratory of Biological Anthropology and Ostelogical Human Remains*.

In the last few decades, interdisciplinary and internationality have been key factors in the study of human remains, namely, at the group of *Past Cultures and Populations* from the *Research Centre for Anthropology and Health* (CIAS, *Centro de Investigação em Antropologia e Saúde*), where some research projects involve foreign researchers and/or human remains from other countries (e.g. Argentina, Brazil, Spain, the United Kingdom, amongst many others).

Investigations explore topics like mortuary practices, biodistance, mobility, dental nonmetric traits, paleodiets, osteobiographies and population-based studies, including palaeopathological analysis of individuals from prehistoric sites to contemporaneous populations. In these studies, updated techniques are applied (e.g. imaging and microscopy, isotopic analysis or aDNA), and the interpretations tend to follow a biocultural approach. I believe that the discipline has a great future based on a past of more than 150 years.

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Chapter 9
From the Time of Tsar Peter the Great to Modern Russia: The Development of Physical Anthropology and Bioarchaeology

Vyacheslav Moiseyev, Alexandra Buzhilova, and Eileen M. Murphy

Introduction

The study of human skeletal remains in Russia had its genesis in the late seventeenth century during the reign of Tsar Peter the Great who was instrumental in the foundation of the Kunstkamera Museum and the Russian Academy of Sciences in Saint Petersburg. During the nineteenth century, physical anthropology was recognised as a discipline in its own right as a result of the efforts of scientists working in both Saint Petersburg and Moscow, thereby paving the way for the modern structures within which the discipline still operates today. In this paper we review the birth of physical anthropology in Russia, assess the impact of the Soviet era on its activities and examine the changes that have arisen in more recent post-Communism times.

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The Development of Physical Anthropology in Russia

The development of physical anthropology in Russia is primarily related to the reign of Tsar Peter the Great (1672–1725), a polymath with a hunger for knowledge, whose social position enabled him to gain first-hand experience of a range of scientific pursuits, including anatomy and dentistry. He undertook his 'Great Embassy' in the years 1697 and 1698 when he travelled throughout Western Europe and had the opportunity to view the private cabinets and collections of other royal families, scholars and wealthy trading merchants. It is thought that this period of travel inspired his plans for the development of science and education in Russia (Radzuin and Chistov 2012: 3). During these travels, Peter began collecting zoological and anatomical collections as well as various scientific implements which formed the basis of the 'Tsar's Cabinet'. In 1714, the collections were moved from Moscow to Saint Petersburg and were placed in the Summer Palace, thereby forming the foundation for the Kunstkamera Museum, the first museum in Russia. The collections were later augmented by the purchase in Amsterdam of Albert Seba's (1665–1736) zoological collection and the herbarium and anatomical collection of leading anatomist, Frederik Ruysch (1638–1731).

In 1718, work commenced (1718–1727) on the construction of the current Kunstkamera building on Vasilievsky Island in the centre of the new capital; this saw the unification of Peter's library and collections, an anatomical theatre, an observatory and the famous Gottorp Globe under one roof. It was also the location for the meetings of the Academy of Sciences, established at the behest of the Tsar in 1724 (Radzuin and Chistov 2012: 29). Even after the death of the Tsar in 1725, the archaeological, ethnological and anthropological collections of the Kunstkamera continued to be enlarged, and two volumes of *A Catalog of the Collections of the Kunstkamera (Musei Imperialis Petropolitani)* were published during the 1740s (Gokhman 1980).

In 1718, the Tsar issued several decrees that ordered the acquisition of materials that could be included within the museum's collections. Payment was provided for 'newborn freaks' and antiquities, including 'unusual stones, human and animal bones, old inscriptions on stones, iron or copper, old weapons, pottery – whatever is very old or unusual' (Chistov et al. 2004: 8). To realise his ambitious projects, the Tsar recruited a number of European specialists, and the first expedition, which started in 1719 and lasted for 8 years, was led by Daniel Gottlieb Messerschmidt who was a specialist in both medicine and botany (Novlyanskaya 1970). In Tobolsk, which at that time was declared by the Tsar to be the official capital of Siberia, Messerschmidt met a Swedish lieutenant colonel of German origin, Philip Johan von Strahlenberg, who had been taken prisoner at the Battle of Poltava and had lived in exile in Tobolsk for 13 years. Strahlenberg accompanied Messerschmidt on several expeditions to Siberia and later published some of Messerschmidt's and his own observations (Strahlenberg 1736). Messerschmidt's expedition collected unique information concerning not only the geography, geology, flora and fauna of Siberia but also information on the linguistics and history of native Siberian

populations. He and Strahlenberg were the first researchers to excavate Early Iron Age kurgans in Southern Siberia, for example, and to conclude that European Scythians were closely related to ancient Siberians (Vadetskaya 1986). The tradition of complex scientific expeditions proceeded throughout the 18th century. It is notable that human morphological studies became an important component of these expeditions. The test list compiled by Gerhard Friedrich Müller, a Russian historian of German origin, for the Great Northern Expedition of 1733–1743, for example, included questions relating to height, the shape and colour of the eyes and hair and the shape of the nose amongst others (Miller 1999).

A milestone in the development of physical anthropology occurred in 1805 during the 50th anniversary celebrations of the establishment of the Imperial Moscow University (now Lomonosov Moscow State University), founded on the basis of the efforts of scientist Mikhail V. Lomonosov. Head of the Department of Anatomy, Ivan F. Vensovich, a lecturer in human anatomy, physiology and forensic medicine, presented a report in which he strictly differentiated between the terms anthropology (in the broadest meaning of this term) and physical anthropology. In his view, physical anthropology encompassed studies about humans, including body composition, physical activity as well as morphological and physical changes during periods of ill health. He made the observation that physical anthropology was not a part of medicine, because it had other purposes, including the study of human variability (Levin 1960).

As the 19th century advanced, the study of physical anthropology gained momentum. Working in the Imperial Moscow University, Alexei L. Lovetsky (1835) published the university textbook *Synopsis on Physiology or Anthro-Biology*, followed in 1838 by the first anthropological manual in Russia *Guidebook to Knowledge of the Tribes of Mankind* (Chtetcov 2004). It is Karl Ernst von Baer, however, who is usually accredited as having been one of the founders of both Russian and European anthropology (Chistov et al. 2004: 8) since his work resulted in the start of the practice of the regular collection of osteological specimens for scientific purposes in Russia. He graduated from the medical faculty of Derpt University (today Tartu University, Estonia) in 1814 and proceeded to spend time in Austria and Germany where he studied natural sciences and left his medical career behind (Buzhilova 2011: 364). After moving to Saint Petersburg in 1834, he became a member of the Saint Petersburg Academy of Sciences and Head of the Anatomical Chamber of the Kunstkamera Museum in 1842. During this period he accumulated and studied human crania, publishing the first study in physical anthropology in 1845 in which he compared the skulls of several Siberian populations (von Baer 1845). He interested other Academy members in physical anthropology, and his connections with Russian archaeologists and ethnographers led to the acquisition of crania from around the country; by 1858 the Kunstkamera curated as many as 350 crania. Von Baer was one of a number of Russian scientists who believed in the concept of evolution prior to the publication of Darwin's (1859) *On the Origin of Species*. He disagreed with Darwin's theory, however, and believed that 'the natural purposiveness of life resulted in favourable variations' (Graham 1993: 66). In 1878, the name of the anatomy department was changed

to its current one: the Department of Physical Anthropology (Levin 1960; Gokhman 1980; Chistov et al. 2004: 94, 102).

Meanwhile in Moscow, the Society of Enthusiasts of Natural Sciences was founded in the University in 1863 and, in the following year, was redesignated as the Anthropological Department because of the initiatives of Anatole P. Bogdanov (Kozintsev 1997a: 195). One of the key roles of the society was to collect archaeological, anthropological and ethnological materials, and this involved participation of its members in expeditions throughout Eurasia (Buzhilova 2011: 364–365). Bogdanov continued to spearhead the subject's development in Moscow, and he was instrumental in the foundation of the sub-Faculty of Anthropology in the Imperial Moscow University in 1876. Bogdanov and fellow scholar, Dmitrii N. Anuchin, were involved in the Russian section of the Anthropological Exhibition in Paris in 1878, at which the most significant discoveries from both archaeological and ethnographical expeditions were presented. This led the two men to organise the Anthropological Exhibition in Moscow the following year. This popular exhibition was located in the heart of the city near the Kremlin for 6 months, and it paved the way for the opening of the Anthropological Museum at the Imperial Moscow University in 1883 (Buzhilova 2011: 366; Fig. 9.1). Anuchin, in contrast to most early Russian physical anthropologists who focused mainly on cranial studies, paid more attention to the analysis of living people (Kozintsev 1997b: 95–96). This branch of physical anthropology is usually referred to as somatology, and it became very popular in Russia and flourished throughout most of the 20th century.

To end this short review of the early stages of development of physical anthropology in Russia, we cannot escape discussion of the theoretical background of most pre-World War II population studies, namely, the concept of 'race'. Correct understanding of this issue will not only contextualise the history of pre-Soviet Russian anthropology but will explain certain aspects of the Soviet and post-Soviet periods. At the present time, many modern physical anthropologists and specialists in adjacent areas believe that the concept of race was not only scientifically misleading but also a construct of the social order of 19th-century colonial empires that should therefore be completely abandoned. The authors of this paper have never witnessed accusations in the media of modern Russian anthropologists as being proponents of the concept of race. The issue was tackled by Mogilner (2013) in her volume – *Homo Imperii: A History of Physical Anthropology in Russia* – in which she argued that the Russian Empire was not a typical colonial empire, a situation that certainly influenced the development of science. This is also true with respect to Russian interpretations of race, which Mogilner refers to as 'liberal race', and can be understood through the words of Dmitrii N. Anuchin who was of the view that 'racial traits do not coincide with tribal and national' characteristics. He was of the view that groups formed historically and culturally did not equate to races and that the only valid scientific approach with respect to the origin of races was one that followed a monogenic theory (Anuchin 1899; Mogilner 2013: 9). Mogilner (2013: 5) is of the view that Russian researchers cannot escape the Imperial social order which needed the concept of race to legitimise the suppression of national movements. The Soviet Union, and later modern Russia, as descendants of the Russian Empire, inevitably inherited this concept of race. In short, race is traditionally

Fig. 9.1 Photograph of the room of the Anthropological Museum of Imperial Moscow University where Anuchin gave lectures to his students. (Photograph taken by Sherer Nabgoltsc and Company, Moscow. Copyright – Archives of the Research Institute and Museum of Anthropology, Moscow State University)

accepted in Russian physical anthropology as a scientific unit of classification, but it was not envisaged by its practitioners that it was a tool that could be used to justify social inequality. This was the general view of the broader global physical anthropological community of that time who attempted to distance themselves from the work of ethnographers and linguists who were attempting to construct 'racial hierarchies', in which the Aryan race was supreme (Mogilner 2013: 7). This perspective is exemplified through the approach of the physical anthropologist Nikolai Miklouho-Maclay (1846–1888), who studied the populations of New Guinea, Melanesia and other Pacific peoples (Fig. 9.2). He was a strong advocate of racial equality which he defended in all of his scientific works; he wrote against both slavery and colonial expansion. He took this to the extreme, and his will stated that his skull was to be exhumed and housed together with the skulls he had collected during his research in the Pacific (Webster 1984). His wishes were fulfilled, and today his skull is stored in the Peter the Great Museum of Anthropology and Ethnography (Kunstkamera). This case is unique, but it is tangible proof that to be a proponent of the concept of race does not equate to racism.

Fig. 9.2 (**a**) Portrait of Nikolai Miklouho-Maclay painted by K. G. Makhovskiy in 1882 (oil on canvas) (Published with the permission of the Peter the Great Museum of Anthropology and Ethnography (Kunstkamera), Russian Academy of Science (collection number 216–1)). (**b**) The skull of Nikolai Miklouho-Maclay alongside those he had collected during his research in the Pacific. These skulls are stored together in the Peter the Great Museum of Anthropology and Ethnography (Kunstkamera) in accordance with the wishes expressed in Miklouho-Maclay's will. (Photograph taken by Vyacheslav Moiseyev)

To our mind the Russian concept of race should not necessarily be viewed as an aberration of the social policy of the Russian Empire but rather as a natural product of its uniqueness. Most parts of the former Russian Empire comprised territories with very sparse populations and harsh climates. Human resources were greatly needed to develop these territories, while mass Russian migration into the regions only happened during the 20th century. The aim of the authorities of the Russian Empire was not to clear lands to enable the settlement of Russian populations, as was the approach of other empires, but rather the integration of native populations into the Empire system no matter how morphologically different they appeared. As a consequence, the newly developed Russian scientific community was not given specific directives in relation to this subject. Russian science from the very beginning was influenced by what was happening in Europe, and it is not at all surprising that it adopted European analytical methods with respect to the study of races. Russian physical anthropologists took the concept of race and developed it in their own way; Imperial social order had only involved the accurate description of numerous native populations, so Russian specialists directed their efforts with respect to race to this purpose. As such, the unification of methods of morphological description became one of the main priorities in Russian physical anthropology, work that was under way when the October Revolution occurred.

The Soviet Period

A consequence of the social revolution of 1917 was a change in relation to the status of historical monuments and museum collections. A decree made by the new Communist government on 13 July 1918 proclaimed that the property of the Russian

Emperor was to be confiscated and then come under the ownership of the Russian Socialist Soviet Federal Republic. A subsequent decree on 5 October 1918 introduced the registration and preservation of the country's collections and historical monuments (Rybak 2005; Buzhilova 2011: 368). This was followed in 1919 by a government decree in Petrograd (now Saint Petersburg) which saw the establishment of the Russian Academy of the History of Material Culture (RAHMC) and had a similar structure to the disbanded Imperial Archaeological Commission, which was the principal archaeological organisation in pre-Soviet Russia. In 1937, the RAHMC joined the Academy of Sciences of the USSR and changed its name to the Institute of Material Culture (IHMC). Eventually, it developed into the Institute of Archaeology of the Russian Academy of Sciences (RAS) in Moscow and the Institute of the History of Material Culture in Leningrad (now Saint Petersburg).

In basic terms, the new Soviet authorities faced the same economic challenges as the former Russian Empire, namely, the underdevelopment of marginal areas of the state as a consequence of low population density in these regions. The situation was exacerbated for Soviet leaders as a consequence of the losses incurred during the civil war, and they adopted a new strategy, one that was based upon the revival of the 'national self-conscious' of even the smallest national groups. As such, the biological egalitarianism which had formed the basis of prerevolution Russian physical anthropology corresponded greatly with the ideas of the new Communist elite. It is therefore not surprising that population studies were central to the Soviet agenda, thereby enabling physical anthropology to flourish during this period.

Up until the collapse of the Soviet Union in the early 1990s, extensive research projects were undertaken by national branches of the Academy of Sciences and involved the study of the population history of the aboriginal peoples living in the vast territories of the USSR. Numerous publications arose from this work that focused on the origins of most populations living in both the European (e.g. Vitov et al. 1959; Abdushelishvili 1964; Bunak 1965; Mark 1970; Alexeeva 1973) and Asian parts of the USSR (e.g. Yarkho 1947; Oshanin and Zezenkova 1953; Levin 1958), including many of the now independent states.

One of the consequences of the realisation of the industrialisation of the Soviet economy was an extensive programme of infrastructure building. Legislation necessitated the archaeological investigation of all construction areas, so large-scale excavations were routinely undertaken in the USSR. This resulted in a notable increase in the number of osteological collections housed in central and local museums around the territory which, in turn, provided excellent opportunities for a variety of morphological studies of the human skeleton. It is no exaggeration to state that craniometrics was the most popular branch of physical anthropology during Soviet times.

The significance of hybridisation in the population processes that occurred in Northern Eurasia was recognised, and one of the prime aims of craniologists of that time was a quest for characteristics that could effectively differentiate between Asian and European populations. A number of unique characteristics were identified in relation to facial flatness (see, e.g. Abider (1960)), most of which are still used by modern Russian physical anthropologists. The intensive collection of crania

from historical populations formed the basis for cranial studies of modern populations that are comparable with current somatological studies (e.g. Debets 1951; Alexeev 1969, 1974; Denisova 1977). The foundation of subsequent palaeoanthropological cranial studies can be found in the book of Georgi F. Debets – *Paleoanthropology of the USSR* – published in 1948. Debets summarised information derived from cranial series dating from the Palaeolithic to Mediaeval times from all territories of the USSR. Later cranial studies have substantiated many of the results of his analyses.

Facial reconstruction is another technique that saw major developments in Soviet times, with Mikhail M. Gerasimov (1907–1970) developing his technique, now referred to as the 'Russian method' throughout the 1920s. The approach viewed the development of the musculature on the skull and neck as being of primary significance. Throughout his long career, Gerasimov undertook numerous reconstructions, including Rhodesian man, Heidelberg man, Peking man and Tsar Ivan the Terrible, as well as numerous forensic cases. He became the director of the Laboratory for Plastic Reconstruction, founded at the Ethnographic Institute of the USSR Academy of Sciences in Moscow in 1950 (Prag and Neave 1997: 17).

One of the most notable trends in world physical anthropology in the aftermath of World War II was the introduction of new systems of recording and identifying morphologic traits and, later, genetic markers which further enhanced the understanding of population history (e.g. Dahlberg 1951; Cummins and Midlo 1961; Berry and Berry 1967). This development also occurred in the Soviet Union where, as had been the case with previous craniometric studies, the traits were utilised for the purposes of investigating population processes in Northern Eurasia. The approach was spearheaded in relation to dentition by Alexander A. Zubov, who developed the approaches used by Western researchers, including Dahlberg, Pedersen and Selmer-Olsen, and proposed his own battery of nonmetric dental traits (Zubov 1968, 1973). His method is still widely used in modern Russian population studies. Similar work has since been undertaken by Genrietta L. Khit (1983) for dermatoglyphics and by Alexander G. Kozintsev (1992) for cranial nonmetric traits.

Interest in palaeopathology in Russia was spearheaded by Dmitrii G. Rokhlin, who founded the Museum of Age and Pathological Osteology of Modern and Ancient Populations in the Department of Roentgen and Radiology of the First Leningrad I. P. Pavlov Medical Institute (now known as the Saint Petersburg State Medical University). Rokhlin had a particular interest in the study of the palaeopathological features of skeletons of known historical individuals, such as Duke Yaroslav I (c. 980–1054) who was thrice Grand Prince of Novgorod and Kiev, but he also undertook analyses of many archaeological populations. His book, *Diseases of Ancient Humans: Human Bones of Various Epochs – Normal and Pathologically Changed* (Rokhlin 1965), remains the only palaeopathological textbook to have been published in Russia to date. Palaeopathology continued to grow as a discipline throughout the 1970s and 1980s, but within Russia this approach was most prominent in Moscow.

Post-Soviet Russia

The dissolution of the Soviet Union in December 1991 could not but impact upon the development of physical anthropology in Russia. The first evident consequence was the disintegration of the broader scientific community into those of the newly formed independent republics. This resulted in a rapid decline of anthropological branches that required permanent verification of observational methods, such as somatology, and today only a few specialists continue to work within this once mighty field of physical anthropology. The political and economic instability that existed in Russia during the 1990s affected physical anthropology along with most other scientific disciples. Decentralisation and a lack of funding for publications led to difficulties regarding the availability of scientific data.

Since the beginning of the 21st century, the situation has improved, and increasing numbers of postgraduate students are specialising in the different branches of physical anthropology. More publications are being produced, and a range of projects are being supported by a variety of national funding organisations. Today the number of regional centres of physical anthropology in Russia is even higher than it was during the Soviet period. At the present time, in addition to Saint Petersburg and Moscow, anthropological research is conducted in a variety of museums and universities throughout Russia, including Barnaul, Ekaterinburg, Kazan, Krasnoyarsk, Novosibirsk, Rostov, Samara, Tomsk, Tumen, Ufa and Volgograd. Most of these centres focus on undertaking research on the numerous collections of skeletal remains that have been excavated in their regions.

One of consequences of the dissolution of the Soviet Union was the inclusion of the new Russia in the process of scientific globalisation, and this has resulted in a number of international multidisciplinary projects. The importance of the territory of Russia for the understanding of ancient migrations in Northern Eurasia, in addition to the substantial quantities of human remains to have been excavated, has resulted in a number of large-scale genetic projects in collaboration with researchers from organisations, including Max Plank Institutes, Harvard University and the Centre of Geogenetics of the University of Copenhagen. Such studies have focused on Palaeolithic humans (Reich et al. 2010; Seguin-Orlando et al. 2014; Sawyer et al. 2015; Fu et al. 2016), the origins of the Indo-Europeans (Allentoft et al. 2015; Haak et al. 2015) as well as studies of particular diseases, such as tuberculosis (Murphy et al. 2009) and plague (Rasmussen et al. 2015).

From the 1990s bioarchaeological studies, with an emphasis on palaeopathology, has been a regular component of paleoanthropological projects in the Institute of Archaeology (RAS) and the Research Institute and Museum of Anthropology in Moscow State University (e.g. Buzhilova 1992; Kozlovskaya 1996; Mednikova 1999, 2001; Buzhilova and Berezina 2008; Dobrovolskaya and Mednikova 2011; Gresky et al. 2016). A number of anthropological departments in other parts of Russia now employ palaeopathologists (see, e.g. Pererva, 2005, 2012; Aristova et al. 2006; Kufterin and Dubova 2013; Chikisheva et al. 2014; Tur 2014; Borutskaya et al. 2015; Tur et al. 2016). Biocultural studies have also been undertaken by non-Russian scholars on collections from throughout Russia (e.g. Loyer et al. 2013; Murphy 2003,

2008; Murphy and Khokhlov 2016; Murphy et al. 2002). Palaeodietary analyses based both on the analysis of dental palaeopathology and carbon and nitrogen stable isotopes have also provided major new insights, particularly in relation to the diet of ancient hunter-gatherers and pastoral nomads (Dobrovolskaya 2005; Dobrovolskaya and Tiunov 2013; Murphy et al. 2013; Svyatko et al. 2013; Buzhilova 2016).

A number of substantial multidisciplinary projects have demonstrated the huge potential to be gained in relation to major archaeological questions through the inclusion of bioarchaeological analyses of human remains. Notable examples from recent years include the Social Sciences and Humanities Research Council of Canada funded 'Baikal-Hokkaido Archaeology Project' on hunter-gatherer populations of the Cis-Baikal region of Siberia led by Andrzej Weber of the University of Alberta, Canada (Weber et al. 2008), and the National Science Foundation funded 'Samara Valley Project' that focused on the Bronze Age societies of the region and was led by David Anthony, Dorcas Brown, Alexander Khokhlov, Pavel Kuznetsov and Oleg Mochalov (Anthony et al. 2016).

Conclusions

The development of physical anthropology in Russia has had a colourful history since the days of Tsar Peter the Great through the Soviet era to modern Russia. During this time Russian physical anthropologists have been at the forefront of many methodological advances. Bioarchaeology is continuing to develop as a field, and increasing numbers of palaeopathologists trained in Moscow are now working in laboratories throughout the territory. The important contribution the analysis of archaeological human skeletal remains from Russia can make to the understanding of broader global issues, such as the spread of early humans and languages, has been recognised through their inclusion in recent major genetic projects. The past people of Russia will undoubtedly continue to play a central role in scientific debates long into the future.

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Chapter 10
Human Remains and Archaeologies of Identity in Senegal

Cameron Gokee and Ibrahima Thiaw

Questions of identity have been a recurrent theme in West African archaeology for more than a century, even as specific interests in race, ethnicity, status, and religion have developed in response to broader colonial and postcolonial projects (Holl 1990, 1995; Stahl 1999). In this chapter, we explore this complicated history through scholarship in Senegal (Fig. 10.1) where studies of human remains have alternatively supported and challenged archaeological interpretations of identity otherwise based on material culture, monumental architecture, written documents, and oral traditions. We suggest that, on the one hand, the methods of anthropometry and bioarchaeology have offered a scientific objectivity for legitimizing or refuting claims of identity based on these other bodies of evidence. On the other hand, the remains of the dead have evoked subjective visions of the once living, making them important resources in contests over heritage. We first summarize these tensions by locating intersections between the archaeology of human remains and essential definitions of identity from the colonial era to the present day. We then revisit discussions focused on six individuals excavated at Gorée Island (Thiaw 2003, 2011) to consider how human remains can become a forum for authoring more nuanced, if no less contested, histories of identity—a move vital to the decolonization of archaeological practice in Africa.

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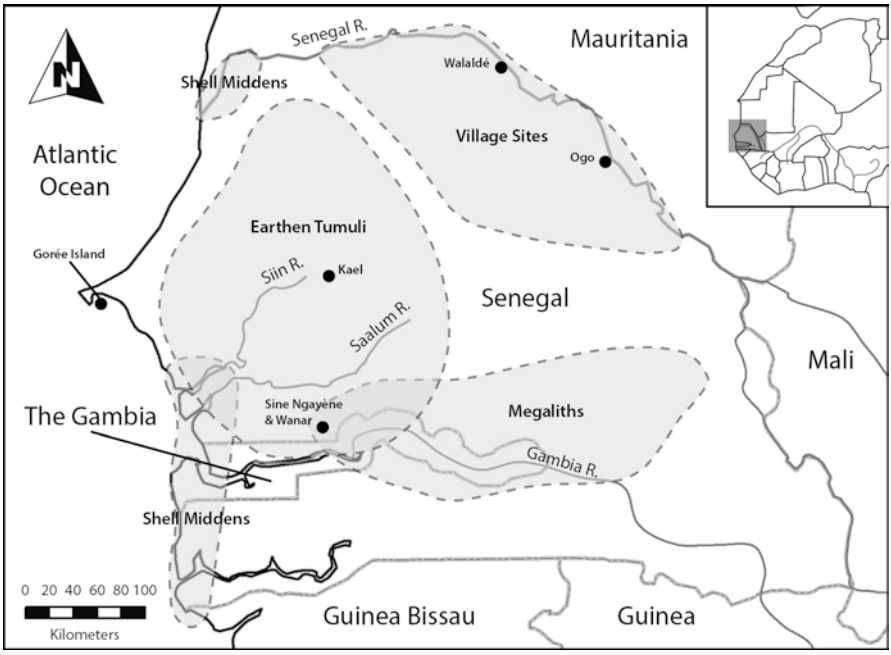

Fig. 10.1 Map of Senegal showing archaeological culture areas and sites mentioned in the text

Tensions: Human Remains and Essential Identities

Archaeological approaches to human remains in Senegal have developed within a complex terrain of research agendas, institutions, and questions (see Richard 2009; Thiaw 2012b). Beginning in the early twentieth century, the first explorations of archaeological ruins were largely amateur attempts by French colonial administrators to prove the biological inferiority and/or historical stagnation of subject populations. Insofar as the comparative measurement of people was both an expression of imperial power and a justification for the mission "to civilize" West Africa (Mudimbe 1988), the French colonial project depended, in part, on the hierarchical ordering of physical and cultural differences into categories of race, ethnicity, and status. Seen through essentializing ideologies of racism and ethnocentrism, human remains were held up by colonial regimes as irrefutable evidence for these identities based on physical variability, genetic differences, and associated cultural patterns, including mortuary practices and grave goods.

Although these interests would persist for several decades, the establishment of the *Institut Francais d'Afrique Noire* (IFAN) in Dakar in 1936 encouraged a more rigorous approach to archaeology and physical anthropology following the European program of natural science: fieldwork to collect specimens, museum work to curate and classify them, and publication to disseminate the results to fellow scholars

(Conklin 2002). An emphasis on empiricism continued following national independence in the 1960–1980s when IFAN came to stand for the *Institut Fondamental d'Afrique Noire*, shrugging off its colonial mandate to further postcolonial valorization of ethnic and national identities. Building on this foundation, archaeology has continued to grow more diverse during the last three decades through alignments with the Department of History at the *Université Cheikh Anta Diop* (UCAD) in Dakar, applications of processual and postprocessual perspectives from North America, and research on the recent past, including colonial encounters themselves.

Beneath this shifting political and intellectual landscape, one common concern has been to narrate history in terms of contemporary racial and cultural groups. This move depends on a primordial view of these identities as outside of, or at least resistant to, the social trajectories in which they are enmeshed. Archaeologies of identity in Senegal have thus been complicit in what Richard (2009) calls a "progressivist orthodoxy" papering over the nuances of local and regional participation in broader political economies and cultural entanglements (see also Croucher 2016). Expanding on this critique, we briefly explore the interplay between the study of human remains and politics of identity oriented around definitions of race, ethnicity, and status.

Race

Archaeological debates about the race of prehistoric peoples in Senegal were set in motion during the early twentieth century when colonial elites began to collate ethnographic and historical data that would ostensibly support the logic of direct and indirect rule (e.g., Delafosse 1912). Local administrators, however, had relative autonomy to collect this data, and, as a result, their curiosities about burial customs, monumental architecture, and religious rites became focal points in debates about African progress toward civilization (Abbey 2011). Colonial interests focused most strongly on the ruins of megalithic cemeteries lying between the Siin-Saalum and Gambia Rivers (Fig. 10.1) where, from 1891 to 1951, more than a dozen reports by French civil servants in Senegal, and their British counterparts in the Gambia, describe the excavation of articulated skeletons, disarticulated crania and long bones, and associated iron spears and copper bracelets (Thilmans et al. 1980: 14–21).

These amateur excavators mainly relied on medical doctors for the description and analysis of fragile human remains. One physician-in-training, Ernest Theodore Hamy, became a dedicated physical anthropologist through his studies of non-European skeletal remains, including those from Senegal (Hamy 1904), ultimately founding the *Musée d'Ethnographie du Trocadéro* in Paris. Another medical doctor, Pierre Cantrelle, joined the IFAN laboratory of physical anthropology in 1954 to collect and measure human crania as part of a project to classify races across West Africa (Cantrelle 1969). In the neighboring Gambia, British medical doctors such as John Lancelot Todd, an infectious disease expert, became involved in the study of skeletal remains exhumed from megalithic mortuary sites (Todd and Wolbach 1911). Notably, the conclusions of these physicians came at odds with colonial

assumptions about the origins of megalith builders from outside Africa. Physical analysis of the material confirmed the "negroid" shape of excavated crania, thus challenging the supposed technological inferiority and cultural stagnation of African subjects (Hamy 1904: 567; Todd and Wolbach 1911: 164; Jouenne 1930: 370). European scholars responded by arguing that black African populations must have acquired knowledge of monument-building and ironworking through diffusion from white Mediterranean ones (Thiaw 2003). So even as colonial-era archaeology and physical anthropology successfully pointed to some demographic continuity in the Senegambian region, the classification of human remains became the basis for projecting colonial ideas of race deeper into the precolonial past.

Coincident with the independence of many African states in the 1950–1980s, the Senegalese scholar Cheikh Anta Diop offered a rebuttal to these Eurocentric narratives by tracing the origins of African civilization back to the "cradle" of dynastic Egypt (Diop 1974, 1987). This Afrocentric agenda appealed to Pan-African and national liberation movements, but it never gained support beyond a few scholars based in Africa and North America (Holl 1995). One reason is that this model appropriates the state-centered, evolutionary framework of Eurocentrism without questioning its colonial logic or empirical fit with data from specific times and places. Another reason is that Diop's research program did not effectively deploy data from physical anthropology beyond using mummy tissue samples to argue for the dark skin pigmentation of ancient Egyptians. Although he drew on historical linguistics, oral traditions, and archaeological evidence to map the ancestral migration of major Senegambian ethnic groups, including the Peul, Tukulor, and Serer, from their origins on the Nile, Diop also neglected anthropometric data from contemporary and/or prehistoric human remains which could inform more directly on long-term population flows.

The absence of human biological data in the work of Cheikh Anta Diop is all the more striking when compared to recent studies of crania housed in the IFAN collections, including specimens from the aforementioned megalithic cemeteries and from shell middens and habitation sites along the Atlantic littoral and the Senegal River (Ribot et al. 2006; Thiam 2006). Isabelle Ribot (2004), a bioarchaeologist at the *Université de Montréal*, includes a sample of 49 prehistoric crania from Senegal in an anthropometric study of migration patterns and gene flow across the African continent over the past several thousand years. Although her results do not necessarily support Diop's hypothesis of an Egyptian homeland, they are consistent with the spirit of his research agenda insofar as they reveal the potential for human remains, when considered alongside genetic, linguistic, historical, and archaeological evidence, to speak to the phenotypic underpinnings of racial and ethnic identities in the African past.

Ethnicity

The writings of Cheikh Anta Diop represent an intellectual pivot from colonial questions of race to postcolonial concerns with ethnicity and unity during the 1960–1970s, but the politics of nation-building were of little concern to other

archaeologists, most of whom were expatriates, working in Senegal (Richard 2009: 95, Thiaw 2012b: 358–359). Nevertheless, an emerging focus on historical demography, coupled with surveys to document fast-disappearing sites (Martin and Becker 1974, 1984; Ravisé 1975), did mirror interests in shaping contemporary cultural identities. This is most evident for sites dating to the protohistoric era (circa 1000 BCE to 1500 CE), which were grouped into four cultural areas as shown in Fig. 10.1 (Descamps 1979). Within this paradigm, the role of human remains shifted to loosely equate these cultural areas with ethnicity and, by extension, explain long-term processes of demographic change and diffusion.

Mortuary sites were a major focus of this program, particularly in the work of Guy Thilmans, a Belgian researcher who was the last physical anthropologist at IFAN from 1966 to 2001. Following an early interest in anthropometry (see below), Thilmans and his colleague Cyr Descamps undertook excavations at several sites in the megalithic zone where a sample of poorly preserved remains from at least 138 individuals attested to complex primary and secondary burial practices (Thilmans et al. 1980). Despite his training in physical anthropology, Thilmans continued the colonial-era tradition of collaborating with physicians, including Dr. Bernard Khayat, in the Faculty of Medicine at UCAD for the analysis of these human remains. Long bones and dentition showed that the population of megalith builders differed in several ways from the Wolof now occupying the region: they were slightly taller by an average of 3–8 cm; they had larger teeth and intentionally notched incisors; and they had higher rates of calculus, periodontitis, and caries. Thilmans et al. (1980: 132) concluded that the Wolof had replaced a protohistoric population, perhaps one with cultural connection to sites along the middle Senegal River where at least one individual was found to have similar dental mutilation. Regionally, the variability in burial positions was taken to support the definition of three archaeological facies presumably signaling diffusion of megalithic culture eastward and westward from a central zone of innovation (Thilmans et al. 1980: 141–149). This model of cultural diffusion, which contrasted with colonial-era interests in the race of the megalith builders, found further support in research by Charles Becker and Victor Martin (1982) arguing that megalithic burials and earthen tumuli were analogous to the mortuary rites of the Serer who historically occupied the Siin-Saalum River basin.

A smaller sample of human remains from prehistoric settlements along the Senegal River has also informed discussions of identity, though usually with broader reference to questions of social complexity. At the site of Walaldé, burial pits for nine articulated skeletons with superficial burning and red ochre attest to the performance of complex mortuary rites throughout the occupation of this site circa 800–400 BCE (Deme and McIntosh 2006). A bioarchaeological analysis by Ribot (2003) found that three of the well-preserved individuals were adult males aged 40+ years, while a comparative multivariate craniometric analysis on one skull revealed greater affinity with modern-day Ashanti populations in Ghana, than with Serer populations living much closer in Senegal. Unfortunately, human remains from later tell sites along the middle Senegal River are poorly preserved, precluding the analyses necessary to assess claims of cultural affiliation and regional interaction otherwise

based on material culture such as pottery or exotic trade goods (Thilmans and Ravisé 1980; McIntosh and Bocoum 2000; McIntosh et al. 2016).

Despite poor osteological preservation, the documentation and dating of human remains from mortuary complexes and settlements (Descamps and Thilmans 1979; Thilmans et al. 1980; Gallay et al. 1982; Thilmans and Descamps 2006) have made it possible to estimate populations across the cultural areas which they seem to define (Becker et al. 1987). In this way human remains help to index demographic shifts and past processes of migration by contemporary ethnic groups. And because movement at multiple scales is a key theme in social histories across the Senegambia (e.g., Wright 1985; Schmitz 1994; Drame 2009), ethnicity has come to be a common unit of analysis in questions of social complexity, including the emergence of long-distance trade, economic complementarities, hierarchical states, and colonial rule.

Status

Racial and ethnic identities in Senegal and the neighboring Gambia are historically bound up with status differences between indigenous landowners and immigrant latecomers, enslaved captives and ruling elites, and endogamous craftspeople and freeborn farmers (e.g., Diagne 1967; Wright 1999). Moving to explore these relations, archaeological research agendas and methods have grown to encompass earlier approaches to culture (ethnic) history and processual approaches to social complexity over the last three decades. In this context, studies of human remains have played a peripheral, yet important, role in debates about social status and ritual.

Bioarchaeological insights on social complexity have coincided with the excavation of mortuary complexes where sample size and context enable interpretation of past social institutions. In the megalithic zone, the analysis of dentition by Thilmans et al. (1980) found that a majority (56%) of individuals were adults aged 26–55 years, rather than the infants, adolescents, and elderly individuals expected in a natural mortality profile, leading to an interpretation of ritual sacrifice of low-status people or captives. Alain Gallay (2006, 2010), from the *Université de Genève*, has reassessed the depositional sequences from megalithic monuments excavated in the 1960–1980s to argue that disarticulated human remains were perhaps more prestigious burials accompanying the interment of chiefly elites. This interpretation finds support in recent fieldwork at the megalithic cemetery of Sine Ngayène by Augustin Holl (*Université Paris Nanterre*). Here the excavation of a central double-monolith-circle revealed an early concentration of disarticulated remains and later deposits of isolated bone fragments, hinting at continuity in secondary burial practices even as the monument evolved into a place of communal ritual over the period 700–1350 CE (Holl et al. 2007). In comparison, two nearby earthen tumuli contained primary burials, one of an adult male whose bronze armor and iron weaponry would befit a warrior elite and one of a possible woman of similar high status (Holl and Bocoum 2006). Meanwhile, a Franco-Senegalese team under the direction of Luc Laporte (*Université de Rennes*) has adopted a taphonomic approach

(*archéologie de terrain*) to the nearby site of Wanar where the position and preservation of human remains from at least four individuals suggest that megalithic circles were once symbolic funerary houses for complex primary and secondary burial rites (Laporte et al. 2012). In the tumulus zone to the north, recent excavations at the site of Kael by Sonja Magnavita (*Goethe-Universität Frankfurt am Main*) and Ibrahima Thiaw (UCAD) have uncovered the primary burial of an adult male aged 30–40 years, adorned with a gold bead, silver bracelets, and iron weapons and accompanied by another six individuals aged 18–24 years, indicating at least two tiers of status distinction (Magnavita and Thiaw 2015). In the middle Senegal River valley, a study of dentition from two individuals interred at the site of Ogo has led to their interpretation as an adult woman and her infant, while their east-west orientation suggests that they were low-status members of a non-Muslim community (Chavane 1985: 167–168). Common to these diverse research programs is an attention to the depositional context of human remains as a means of interpreting the status roles that recursively shaped the ritualized treatment of the dead.

An attention to taphonomy also compensates for poor bone preservation in tropical soils, enabling archaeologists to draw inferences about status even where an assessment beyond age and sex is not possible. One work around, taken by Guy Thilmans prior to his research on megalithic burials (above), was to seek out human remains with less exposure to depositional vagaries. According to his field notes, Thilmans (2006) came to work in Senegal primarily because some ethnic groups, such as the Serer and Lebou, bury their *griots*—an endogamous class of bards—in the hollows of baobab trees. Over the course of several months in 1965, he collected crania from these burials, including some from the village of Sowaan in the Siin region (a probable quarantine village for people with leprosy), essentially grave robbing under the cover of night and ignoring the concerns of local Serer and Wolof communities about the disturbance of their ancestors (Thiaw 2012b: 359). So while initial analyses point to a high incidence of leprosy among these baobab burials (Thilmans 2006), a lack of spatial and temporal context renders these data useless for understanding the history, and phenotypical dimensions, of endogamous status distinctions in the Senegambia.

The looting of human remains by Thilmans further illustrates how status has played into relations between local communities and outside actors in the production of knowledge about the past. Although Cyr Descamps argues this work had support from Cheikh Anta Diop and Abdoulaye Ly in the postcolonial administration of IFAN (Thilmans 2006: 168), it must be pointed out that IFAN was ultimately under the direction of Vincent Monteil, a French national, and the institution remained dependent on French subsidies into the 1970s. Indeed, a large part of IFAN's collections were constituted under practices that are today questionable. The ability of Senegalese communities to resist the power deployed by colonial science was undercut by the weakening of traditional local institutions through French direct rule and, at the same time, the rapid expansion of Islam. This colonial legacy persists insofar as archaeological practice in Africa too often continues to privilege the authority of scholars trained in North America and Europe and the interests of global heritage defined by UNESCO (Schmidt 2009). As a result, indigenous

accounts of history, including the ambiguity and/or contingency of cultural identities, remain largely unexplored through the study of archaeological evidence, including human remains. We must, therefore, begin to more strongly advocate best practices that account for the cultural sensibilities and interests of local communities.

Possibilities: Human Remains and Community Archaeology

Over the past two decades, archaeological research by scholars based in the USA (Gokee 2011; Richard 2013) and in Senegal (Thiaw 2012a) has elaborated on identity-based questions of ethnicity, migration, and social complexity to explore local engagements with the Atlantic world-system in the fifteenth to nineteenth centuries. Human remains do not, however, figure into most of this research. One reason may simply be the limited number of excavated burials. Widespread conversion to Islam over the past few centuries has moved burial practices into cemeteries remembered and protected by modern-day communities. Another reason may be the rapid reconfiguration of social landscapes during this period of political economic instability, leading to less investment in cemeteries to define ancestral territory. Whatever the case may be, bioarchaeology could potentially contribute to current research on the negotiation of identities in global entanglements of the past and the public concerns with questions of identity and heritage in the present.

Archaeology and the Public

Public perceptions of archaeology in Senegal, including the excavation of human burials, vary widely across space and time (Thiaw 2003), but one common theme is the perceived cultural and temporal distance between living populations and archaeological remains. Responses to Thilmans' fieldwork nicely illustrate this point. First, his access to baobab burials was made possible by village elders showing him their ancestral sites (Thilmans 2006), so it should have come as no surprise when local people sometimes responded angrily to the pillaging of skulls. Later on, the excavation of megalithic burials elicited little reaction from nearby villagers (Thilmans et al. 1980). Indeed, farmers have dismantled an untold number of megalithic ruins to open new land for cultivation, perhaps reflecting the attitudes of present-day Muslims toward "prehistoric" non-Muslim ancestors. Relations between archaeologists and local communities are, however, continuing to evolve with inscription of the megalithic circles as a UNESCO World Heritage site in 2006.

Public perceptions of archaeologists as treasure hunters can also shape beliefs about buried human remains. When archaeologists avoid local collaborations, they invite misinterpretation about the relative profitability of their actions. In Senegal, for example, a common belief about the excavation of burials is that prehistoric

skulls must be filled with gold or diamonds (Chavane 1985: 168; Thiaw 2003: 217). The result can be catastrophic for the archaeological record if locals then begin digging for already poorly preserved human remains.

Debating the Dead on Gorée Island

Fieldwork directed by one of us (Thiaw 2003, 2011) on Gorée Island demonstrates how excavation and analysis of human remains could work to stimulate discussions with local communities about identity in the past and present. In large part, this is because the history of the island, located just off the coast of Dakar, is deeply intertwined with the Atlantic slave trade, symbolized by the infamous *Maison des Esclaves*. This museum commemorates the collective trauma of Africans forced beyond a "Door of No Return" to a life of slavery on plantations in the Americas. Visitors include both foreign and Senegalese tourists, so the island has become a place where the memory of the Atlantic experience and racial discourse resonate with unique intensity. Beneath an official narrative of the slave trade, archaeology on Gorée Island has offered a better understanding of the lifestyles and historical interactions between domestic slaves and wealthy *signares*—the African and Afro-European residents who rented them to Europeans as skilled laborers, soldiers, domestics, and sexual partners.

Although excavations across the island uncovered many interesting artifacts, the discovery of six human burials (Fig. 10.2) elicited the most politically and symbolically charged reactions from the local populace—Were the skeletons remains of black or white people? Were they slaves or free men and women? Were they

Fig. 10.2 Excavation of three human burials in public view on Gorée Island

Muslims, Christians, or Animists? Some of these questions could be approached from an archaeological perspective. Contextually, the burials were all found with wooden coffins and date to the second half of the nineteenth century. A bioarchaeological analysis of the human remains by Abby Chipps Smith (2007), a student at Rice University, looked at age, sex, stature, pathologies, and bone chemistry to explore questions of race, origin, and status. Three of the individuals were juveniles aged 2–5 years, while the three adults included two females and one indeterminate sex. Excluding this latter, a staple isotope analysis showed that these individuals likely shared a common (African) origin. Although local interest faded before arriving at these results, it should be clear that tensions can emerge from bioarchaeological interpretations of race, ethnicity, and status, thus opening the way for human remains, and the history they represent, to be claimed by some and contested by others. In other words, human remains can offer an important point of dialogue about the ambiguity and fluidity of past identities and competing narratives of Gorée Island, and thus a resource for mobilizing greater public interest in, and collaboration with, archaeologists.

Conclusion: Decolonizing the Archaeology of Human Remains

Archaeology is inherently political, and the history of archaeological research in Senegal undoubtedly reflects long-term entanglement with colonial and postcolonial agendas. A widespread recognition of the need to listen to subaltern voices in African history has not, however, translated into the decolonization of archaeological practice through greater collaboration with local communities and other stakeholders in heritage resources (Schmidt 2009). This is certainly the case for the study of past human remains where a desire for scientific objectivity often works to continue a colonial mentality excluding the questions and concerns of descendant and residential communities.

We would suggest that bioarchaeology could open a forum for community collaboration in several ways. First and foremost, archaeologists might open a dialogue with various stakeholders—local landowners, possible descendants, and national and global heritage organizations—about what questions to ask of human remains and how best to answer them. Secondly, we might work to present more clearly the results of bioarchaeological analyses in ways that are accessible to the broader public, through discussion with community leaders, outreach in local schools, and presentation in museums. These moves would together shift the interpretation of human remains from the hands of professional scholars and their intellectual agendas and at least partly into the hands of stakeholders with novel or competing ideas about the interplay between identity and history in Senegal.

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