

Bioarchaeology of Southeast Asia

Bioarchaeology of Southeast Asia is the first book to examine directly the biology and lives of the past people of this region. Bringing together the most active researchers in late Pleistocene/Holocene Southeast Asian human osteology, the book deals with two major approaches to studying human skeletal remains. Using analysis of the physical appearance of the region's past peoples, the first section explores such issues as the first peopling of the region, the evidence for subsequent migratory patterns (particularly between Southeast and Northeast Asia) and counter arguments centering on *in situ* microevolutionary change. The second section reconstructs the health of these same people in the context of major economic and demographic changes over time, including those caused by the adoption or intensification of agriculture. Written for archaeologists, bioarchaeologists and biological anthropologists, it is a fascinating insight into the bioarchaeology of this important region.

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Foreword Emerging frontiers in the bioarchaeology of Southeast Asia

CLARK SPENCER LARSEN

Much has changed in the two decades since Karl Hutterer (1982) lamented that tropical Southeast Asian archaeology had not advanced much beyond antiquated models based on limited empirical evidence. Indeed, in just the last few years, the scope of archaeology of this region has expanded in new and exciting ways (see Bellwood 1997, Higham and Thosarat 1998, Junker 1999, Higham 2003, Glover and Bellwood 2004). In reading the published archaeological literature on the region before the 1990s, one cannot help but ask why human remains – a highly visible part of this record, having been recovered from such well-known sites as Non Nok Tha and Ban Chiang in Thailand and Niah Cave in Borneo – have not been brought into the discussions about such issues as adaptation, landscape use, population history, settlement, subsistence practices and dietary shifts. Indeed, in this as in other areas of the world, the adoption of agriculture led to fundamental alterations of cultures and landscapes. Human remains provide an informative record of this important adaptive transition (e.g. Krigbaum 2003). Why not include them?

One reason for the lack of inclusion of human remains in developing an understanding of the prehistory of the region is that very little beyond descriptions of skeletons (e.g. Brooks *et al.* 1979) had been published prior to the mid 1990s. The other reason is that archaeologists have oftentimes viewed skeletons as not particularly informative about the past. Scientific reports on skeletons typically ended up as an appendix to an archaeological report, rarely read and not a part of the larger perspective about a region and its prehistoric occupants. This approach is changing, however. On the one hand, the results of new and comprehensive analyses of human remains from this region are appearing in the scholarly record (e.g. Tayles 1999, Oxenham 2000, Domett 2001, Pietruszewsky and Douglas 2002, Krigbaum 2001, 2003). These bioarchaeological studies provide a wealth of new information about population history, colonisation, lifestyle, foodways, nutrition, adaptive shifts, and specific and general

aspects of health. On the other hand, we are beginning to see a greater appreciation for the role that analysis of skeletons can play in reconstructing and interpreting the past. Here and elsewhere, this transformation reflects the remarkable expansion of bioarchaeology since the early 1990s (see Larsen 1997, 2002), whereby human remains are increasingly seen as an important part of the design and completion of archaeological research.

Recognising the importance of the human skeletal record in Southeast Asia, Oxenham and Tayles have gathered leading experts to present their research on two areas of bioarchaeological enquiry: population history and health. Part I, the population history section, presents evidence from the analysis of cranial metric and non-metric data that speak to a complex population history involving both migration and *in situ* development. In the larger picture, Matsumura provides evidence to suggest that present-day Southeast Asian populations are genetically influenced by migrations from Northeast Asia (Ch. 2). In the last five millennia or so of prehistory, there is substantial evidence indicating local population continuity in inland Southeast Asia, perhaps more so than in coastal settings (Chs. 3 and 4). Within specific regions, we see biological change, such as involving a reduction in cranial length and facial robusticity, in peninsular Malaysia (Ch. 6), a pattern that has been well documented in other areas around the post-Pleistocene world. Arguably, these morphological changes reflect adaptation to new circumstances affecting the mastication and cranio-facial development, such as the adoption of new foods and new ways of preparing them. Prior to the 1980s, such cultural and biological changes were largely seen as being externally driven (Hutterer 1982). The bioarchaeological record is showing that the origins of biological and cultural variability are complex and derive from both external and internal forces, ultimately resulting in the cultures and peoples that we see distributed about this vast region of the world today.

Part II deals with the palaeopathological record and adds much to the emerging picture of the history of human health in the Late Pleistocene and Holocene. Dental health – especially as it is represented by dental caries – does not appear to have declined substantially with the adoption of rice agriculture, either within particular settings (Ch. 9) or the region generally (Ch. 11). This seems to be the case because rice is not especially cariogenic, in contrast to plants domesticated in other areas of the world (e.g. maize in the Americas). Therefore, it should come as little surprise that health declines in the region are minimal (or non-existent) in comparison with other regions of the world where agriculture emerged (Larsen 1995), at least with respect to oral health. Although the evidence is more

preliminary, other skeletal indicators (e.g. infection) also show lack of substantive health change (see Pietrusewsky and Douglas 2002).

There are some large skeletal samples in the region covered by this book (e.g. Ban Chiang), but overall, the samples are small, especially in comparison with settings from eastern North America and western Europe. Despite the limitations, the contributors to this volume present a fascinating picture of biological complexity, population history and health in prehistory. Understanding this bioarchaeological record of the past helps us to understand better the peoples and cultures that live in the region today.

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Preface

For every complex problem, there is a solution that is simple, neat, and wrong!

Attributed to H. L. Mencken

We hope that this book will spark wider interest in the bioarchaeology of Southeast Asia, including the neighbouring Pacific, and will spur the development of greater synthetic and collaborative research in the region. It is a delight to read about the culture, the society, the technology, the subsistence, the settlement patterns and the environment of prehistoric populations; however, central to all this are the people themselves. Nothing brings them to life as individuals, communities and populations like the physical remains themselves. They are, or should be, central to any archaeological endeavour. In particular, we hope that it will spark the interest of indigenous researchers and encourage them to consider the study of human skeletal remains as a central component to any archaeological project (even if it is only to show us that we have got it all wrong!).

The editors would like to thank all of the authors for their contributions to this volume. Further, we wish to thank all those anonymous reviewers who spent a considerable amount of their time and energy in providing a wealth of critical and constructive comment on each and all of these chapters.

1 *Introduction: Southeast Asian bioarchaeology past and present*

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When originally discussing and formulating the idea that eventually led to this volume we asked ourselves ‘is there a recognised need for a book on Southeast Asian bioarchaeology?’ ‘And does everyone know what bioarchaeology is anyway?’ We address the second question, ‘what is bioarchaeology?’, first. Human remains provide the only direct record of the biology of the people and the populations who created the ‘archaeological record’ and these are, therefore, central to any archaeological research. This is not to deny the fascination of the material culture, the environmental context, the settlement patterns and the mortuary practices of past peoples, it is nevertheless (and despite the reluctance of many archaeologists to admit it) axiomatic that human remains *are* the people who created the pots, the tools, the houses, the middens and the modified landscapes. As such they must, or ought to be, recognised as central to any research of past society that uses archaeology as the means of data recovery. This recognition of the value of human remains as a window into past peoples has gained momentum over recent decades (e.g. Larsen 1997, Cox and Mays 2000). With the development of appropriate means of interpreting the skeletal evidence beyond the simple description that the term ‘physical anthropology’ implies, those of us who are captured by the challenge are now seeing ourselves as human biologists. Having moved beyond taxonomy into the wider and richer world of biology, an appropriate epithet was sought.

The field of human osteology is one that has existed for rather longer than what is referred to as bioarchaeology, but it carries with it the impression that the objective of practitioners is simply to study human bones; it is not. It is to study the people represented by the bones, which is

an important shift in emphasis. Hence the adoption of the term bioarchaeology, which indicates the biological component of such research. As Clark Larsen (1997) noted, although the term was first applied to archaeozoology, it is now only used in reference to humans. It is not universally adopted (hence the title of the excellent volume by Margaret Cox and Simon Mays (2000): *Human Osteology in Archaeology and Forensic Science*). Nevertheless, and despite its meaning not being immediately obvious, it seems to us the most appropriate term to apply to the study of past people through the medium of their skeletal remains recovered from archaeological sites. It is conventionally used to refer to *Homo sapiens*; study of fossils of earlier hominin species is palaeoanthropology.

Now to the issue of Southeast Asia and why it merits a book like this. There are multiple reasons why we deemed the time to be right for this exercise. Despite the fame, or even notoriety, of some of the earliest hominin specimens in Asia, Southeast Asia as a region has been relatively invisible in the broader sweep of world prehistory and in the centres of bioarchaeological research in Europe and North America. Beyond the Indonesian fossils, Southeast Asia and the southwest Pacific have unique characteristics which will mean that research on the area will not only clarify issues about regional prehistoric peoples but also contribute to an understanding of prehistoric human biology worldwide. These include a very long human settlement; geographic variation over time and space, including marked changes in sea level; a climate that varies from the hot, humid tropical equatorial region to a cooler subtropical climate away from the equator; and a current rice-based subsistence system with a deep antiquity in many areas. This suite of characteristics does not occur anywhere else in the world and justifies this effort to take the first step in what should be a long process synthesising research on human biology to address the issues of human evolution, variation and biocultural development in this unique environment. Its singularity is further enhanced by it being a crossroads between the major, influential and very different cultural and biological regions of China, India and Melanesia.

Beyond its geographical boundaries, the influence of Southeast Asia spreads far to the east as the biocultural origin of the eastern Pacific populations. Eastern Melanesia and Polynesia, designated Remote Oceania, in Roger Green's (1991) very appropriate definition, have had a very short human settlement but, for this very reason, have attracted large sums of money, and a considerable amount of polemic, in the search for the origins of their peoples. This origin is still unclear but inevitably includes a reference to 'Southeast Asia' as if this were a well-defined, homogeneous region. The reality, of course, is that it is anything but well

defined and certainly it is gloriously varied in its human biology (and in its cultures, but that seems to be an issue that people happily recognise).

Southeast Asia has been an area that has stimulated much discussion and some grand and interesting theories about human origins and migrations (e.g. Oppenheimer 1998). Nevertheless, despite the ongoing significance of, controversy about and research into the Indonesian *Homo erectus* remains, which have attracted international attention from the time of Dubois in the nineteenth century, it is almost as if the later human biological prehistory of the region is of no concern on the world stage. As an example, it does not figure in the comprehensive review by Mark Cohen and George Armelagos (1984) of the human biological response to the development of agriculture, despite at the time having been acknowledged to have adopted agriculture as early as the fifth or even sixth millennium BP (Higham and Bannanurag 1990). Nor does it appear in standard texts of biological or physical anthropology other than in the context of human evolution and the Javan *H. erectus* specimens.

There can be numerous explanations for this, not the least of which has been the political instability of a number of states over the last half century. The insecurity of the region and individual countries has worked against the development of a research ethos among the local scholarly communities that is secure enough to develop objectives in the field of prehistoric human biology beyond the ratification of the unity and duration of the peoples living in each country. Western scholars have only relatively recently begun working here and local archaeologists have joined them in research that transcends modern political boundaries. There is now a cohort of bioarchaeologists that has developed expertise in the area and has produced a corpus of literature which has prompted this first attempt to draw together a benchmark publication. This book is not a comprehensive treatise but a starting point showing the breadth of research in the area, which we hope will serve as a stimulus for further consolidation of the topic.

Southeast Asia and the southwest Pacific is for all these worthy reasons a place to be reckoned with in human bioarchaeology. It is overdue for attention on a broader scale. It is well past time to bring together a group of authors in an effort to 'mark a line in the sand' in bioarchaeological research and to encourage people away from their local specialities into a regional synthesis. In an ideal world, this book would include everyone who works in this topic as contributors and provide an integrated overview of the whole region. This, of course, was our initial aim. The reality is something different and we have collected here a selection of papers that cover the two themes of skeletal studies: one on the evolution and variation

in morphology and relationships among groups (biodistance) and the second with contributions on the quality of life of the prehistoric inhabitants as represented by their health.

Beyond the consideration of the people themselves, it is also time to integrate the findings of bioarchaeology into the general archaeological literature on the region. Publications on prehistory in general are primarily focused on archaeology and linguistics, although some refer to human biology, for example Bellwood (1997) in his comprehensive review of Indo-Malaysia and Higham in his introductory chapter to Jin, Seielstad and Xiao's edited volume (2001). Others tend to skirt around the issue, although clearly desirous of including human variation in a triumvirate with linguistics and archaeological evidence in the search for clarification of the prehistory of the region. This lack of integration we see as probably a consequence of the lack of a summarising publication on human biology. We hope this volume will begin the process.

Where is Southeast Asia? Figure 1.1 shows the core, which is mainland Southeast Asia: Burma (Myanmar), Thailand, Laos, Cambodia, Vietnam and, ideally, southwest China (but the reality is that there is little or nothing available to us from this area) and island Southeast Asia: the Indo-Malaysian archipelago (Malaysia and Indonesia), the island of Borneo (East Malaysia, Sarawak and Sabah, Kalimantan and Brunei) and the Philippines. The authors of the first section of the book have also spread their nets to include samples from the wider east Asian and Pacific region (Fig. 1.2). Both maps identify locations referred to in the chapters. Buckley's samples (Ch. 13) are from the southwest Pacific and are located in Fig. 13.1 (p. 310).

Development and current state of bioarchaeology in Southeast Asia

The first bioarchaeological study of significance in Southeast Asia was carried out by the Belgian anatomist Eugene Dubois following his discovery of Pleistocene hominin specimens at Trinil, in the Solo Valley, Java in 1891. These finds, comprehensively described in his monograph (Dubois 1894), were subsequently paraded throughout Europe and promoted as a form of human forebear or missing link. The interest in what became known as *Pithecanthropus erectus* was such that at least 80 papers and books were published on these specimens by the turn of the twentieth century (Trinkaus and Shipman 1993; Shipman 2001).

From the beginnings of palaeoanthropological research, explanations for observed modern human diversity have been developed and debated.