Welcome to the 12th annual newsletter designed to update you on the latest news in the field of bioarchaeology in Southeast Asia and the Pacific. Please circulate to your colleagues and students and email me if you wish to be added to the email recipient list. You can also find copies of this and past newsletters at http://seapbioarchaeology.wordpress.com/ and http://eprints.jcu.edu.au/ and search for “Domett”. This will be my last year as editor of the newsletter; 2017 will see Dr Siân Halcrow, from the University of Otago in New Zealand, take over as editor: sian.halcrow@otago.ac.nz

News

**MYANMAR**

From: Anna Willis, Thomas Oliver Pryce, Tin Tin Win and Baptiste Pradier
Australian National University
Email: anna.willis@anu.edu.au
Subject: *Mission Archéologique Française au Myanmar - Excavation of Nyaung’gan*

In January 2016 the excavation of Nyaung’gan was undertaken as part of the *Mission Archéologique Française au Myanmar* in a joint collaboration between the French National Centre for Scientific Research and the Mandalay Department of Archaeology of the Ministry of Culture. The project was directed by Dr Oliver Pryce and Daw Tin Tin Win. The field team included Dr Peter Petchey, Jitlada Innanchai, Dr Aude Favereau, Louis Champion, Lucy Andia, Baptiste Pradier, Dr Anna Willis, Daw Thu Thu Win, Daw Mar Mar Aye, Daw Kalayar Myat Myat Htwe and local residents.

Nyaung’gan is a modern village located in Budalin Township, Sagaing District, near the juncture of the Chindwin and Irrawaddy Rivers in central Myanmar. The Nyaung’gan cemetery is southwest of the modern village, situated on the northwest edge of a small volcanic crater belonging to a line of craters running northeast-southwest. Nyaung’gan cemetery was excavated in 1998-9 by the Department of Archaeology of the Ministry of Culture which uncovered 43 burials. The site was dated to the Bronze Age based on the material culture.

Three excavation trenches were opened at the Nyaung’gan cemetery in January 2016, which yielded seven burials. There were five primary supine inhumations, a secondary interment of a
skull and the remnants of one burial which had been disturbed near the surface layer. There was one subadult 10-14 years old and six adults representing young, middle and old aged males and females. The adults suffered from attrition and associated oral pathology. There was one individual with asymmetric craniosynostosis, trepanation and glenoid hypoplasia or dysplasia, potentially symptomatic of an underlying syndrome. These preliminary data will be published in forthcoming articles. $^{14}$C, Sr isotopes and ancient DNA studies are ongoing. Burial finds included stone beads, with matching production debris excavated at a likely contemporary settlement/industrial site c. 3 km to the southwest.

The re-excavation of Nyaung’gan has provided information that will assist in addressing the multidisciplinary research objectives of the mission, to help understand the social, cultural, economic and political development of late prehistoric central Myanmar and to help contextualise these within the wider Southeast Asian region.
The fifth season at Non Ban Jak, the late Iron Age site in Northeast Thailand, took place in January and February 2016. An area of 10 by 10 metres on the western mound extended the area already opened there, and identified further house foundations, and human burials. A particularly high proportion of the graves contained infant interred in two mortuary vessels. On the eastern mound, a new square also covering 10 by 10 metres was begun. The uppermost occupation dates to the period of the Dvaravati state, and contained the foundations of a Buddhist building associated with a clay statuette of the seated Buddha. Three inhumation burials were also found, with late Iron Age vessels continuing into the early historic period. This square will be completed in the sixth season, planned for next January. Mappoint Asia under the direction of ML Saksiri Kridakon undertook a drone based detailed planning survey of Non Ban Jak and other Iron Age moated sites to map and seek the infrastructure associated with the moats that might include distributory canals into rice fields.

The human skeletal remains are currently being analysed by a team of bioarchaeologists and their students led by A/Professor Hallie Buckley and Dr Siân Halcrow.
In collaboration with Professor Rasmi Shoocongdej and Dr Na Narupol, A/Prof Hallie Buckley and A/Prof Kate Domett ran an osteology workshop for archaeology students and Thai Fine Arts Department employees at Silpakorn University in Bangkok in January 2016. The focus was on building their skills in identification of human bone, estimating the age at death and sex determination as well as beginning to understand paleopathology. At the end of the day, the students completed an osteobiography and talked to the group about their allocated skeleton.

Professor Charles Higham has received a Marsden Fund grant to radiocarbon date key prehistoric sites in Southern China and Southeast Asia. With the cooperation of many colleagues, he has so far obtained new dates for Ban Chiang, Non Nok Tha, Ban Lum Khao, Ban Na Di, Non Ban Jak, Ban Non Wat, Khok Phanom Di, Baiyancun, Man Bac, Jiangxi, Thac Lac, Ru Diep, Jiangxi and several others. These will be published in a major paper when all results are in and co-authors have made their contributions to the interpretation.
LAOS

From: Dr Dougald O’Reilly  
Australian National University  
Email: dougald.oreilly@anu.edu.au  
Subject: Field Report

A new project has begun in Laos focusing on the jar sites in the Xieng Khouang Province. This project is funded by the Australian Research Council from 2015-2019 and is led by Dougald O’Reilly (Australian National University), Louise Shewan (Monash University) and Thonglith Luangkhoth (Ministry of Information, Culture and Tourism). The following report details the findings from the recent fieldwork. A number of burials were uncovered and will be analysed by Kate Domett (James Cook University) and Siân Halcrow (University of Otago).  
http://antiquity.ac.uk/projgall/567

PHILIPPINES

From: Dr Rebecca Crozier  
University of the Philippines  
Email: ecrozier05@qub.ac.uk  
Subject: Projects and News

- In collaboration with colleagues, Agatha Villaluz and Jessica Pena, Rebecca Crozier, is undertaking a project with a taphonomic approach on archaeological human remains from Island Southeast Asia.

- In addition, Rebecca is currently investigating the modification of archaeological human crania from the University of San Carlos Museum.

- **Visiting Researchers at the Archaeology Studies Program**  
**Towards a Philippine Forensic Anthropology**  
There is a significant lack of forensic anthropological research in the Philippines. This is unfortunate given the massive Filipino diasporic communities worldwide and the frequent mass disasters that afflict the country. In order to enhance both local and global forensic capacities, our long-term goal is to establish the first documented reference collection of modern Filipino skeletons in the country. Collected individuals are those disinterred from 5-year lease paupers’ graves at Manila North Cemetery. These disinterred remains typically sit in rice sacks for one year before being reinterred as part of a mass grave. Instead, we seek to salvage these individuals for study as their ages and sexes are often known through tombstone epitaphs. The remains are currently being processed at the Human Osteology Laboratory of the Archaeology Studies Program at the University of the Philippines Diliman. It is our hope that the collection will inspire the development of applicable techniques that push the boundaries of forensic anthropological method, theory, and practice in the region.  
Matthew C. Go (PhD Student) and Amanda B. Lee (PhD Student)  
Department of Anthropology  
University of Illinois at Urbana-Champaign
From: Dr Siân Halcrow  
University of Otago  
Email: sian.halcrow@otago.ac.nz  
Subject: Newly Funded Projects and News

- **Stress and Diet Near the Start of Life: Small beginnings, significant outcomes, funded by a Durham International Senior Fellowship and a University of Otago Matariki Network Grant.**

This year Siân will have an intensive research collaborative visit with:

1) Dr Andrew Millard (Durham) for methodological development and writing of a research proposal on stress and diet of infants and children during the agricultural transition in Thailand; and  
2) Dr Rebecca Gowland (Durham) for collaborative writing of an international interdisciplinary coedited book entitled *The Mother-Infant Nexus in Anthropology: Small beginnings, significant outcomes.*

- **Unraveling the Diet of Tongans from ‘Atele Burial Mounds, Tongatapu (c. 1450 – 1800 CE)**

Rachel Scott (University of Otago) was successful in obtaining a research grant from the Skinner Fund for the project. In this project, the diet of individuals who lived on the island of Tongatapu, the Kingdom of Tonga (c. 1450 – 1800 CE) are being investigated to look at differences that could be related to social status and food allocation during this powerful maritime chiefdom. This is being performed using dental microwear texture analysis, which is the first time this method has been used on an Oceanic group.

- **University of Otago Research Theme in Biocultural Health in the Asia-Pacific Region funded**

Dr Siân Halcrow and Associate Professor Hallie Buckley (co-directors) have been successful in obtaining a University of Otago Research Theme entitled: “Asia-Pacific Biocultural Health: Past and Present”. This is a University of Otago flagship for research excellence, and will incubate research synergies between researchers in the University, community groups and international researchers.

**Recent Publications**

- A new journal has recently been launched entitled *Bioarchaeology International* edited by Sabrina Agarwal and Brenda Baker. The flyer is attached at the end of this newsletter. Our regional Associate Editor is Associate Professor Judith Littleton j.littleton@auckland.ac.nz

This volume provides an overview of research on South Asia in the Past: its history, major theoretical concerns, current insights, and the questions that remain. With contributions by a diverse range of experts—more than 35 scholars from Bangladesh, Canada, India, Nepal, Pakistan, Sri Lanka, UK, and USA, who represent a variety of sub-disciplinary perspectives—this volume is an essential resource for anthropologists, South Asianists, and students of these disciplines. The chapters describe the peopling of South Asia, from the perspectives of palaeoanthropology, paleolithic archaeology, and archaeogenetics; archaeological and bioarchaeological perspectives on biocultural diversity in the subcontinent; and points of entry for understanding the meaning of complex phenomena observable in the South Asian context, from urbanism to monument-construction, economic exchange relationships to commodity cult. The Companion to South Asia in the Past is dedicated to the memory of Professor KAR Kennedy, his scholarship and mentoring. http://www.wiley.com/WileyCDA/WileyTitle/productCd-1119055482.html

The volume includes the following chapters that may be of interest especially for bioarchaeology:

14. Who Were the Early South Asians? A Dental Morphology Perspective
   Diane Hawkey (Arizona State University, USA)

16. Biological Anthropology of the Mesolithic Foragers on the Gangetic Plains
   J.R. Lukacs (University of Oregon, USA)

22. Paleopathology and Bioarchaeology of the Indus Civilization
   Nancy Lovell (University of Alberta, Canada)

25. New Perspectives on Human-Environmental Interactions in the Second Millennium B.C.E.
   Gwen Robbins Schug (Appalachian State University, USA)

35. Status of Human Skeletal Research in India—Prospects for Research
   S.R. Walimbe (Poona University, India)

36. Where Are They Now? Human Skeletal Remains from South Asia
   V.N. Mushrif-Tripathy (Deccan College Post-Graduate Research Institute, India)
In recent years the bioarchaeology of Southeast Asia and the Pacific islands has seen enormous progress. This new and exciting research is synthesised, contextualised and expanded upon in *The Routledge Handbook of Bioarchaeology in Southeast Asia and the Pacific Islands*. The volume is divided into two broad sections, one dealing with mainland and island Southeast Asia, and a second section dealing with the Pacific islands. A multi-scalar approach is employed to the bio-social dimensions of Southeast Asia and the Pacific islands with contributions alternating between region and/or site specific scales of operation to the individual or personal scale. The more personal level of osteobiographies enriches the understanding of the lived experience in past communities. Including a number of contributions from sub-disciplinary approaches tangential to bioarchaeology the book provides a broad theoretical and methodological approach. Providing new information on the globally relevant topics of farming, population mobility, subsistence and health, no other volume provides such a range of coverage on these important themes. Here is a sample of chapters:

- Domett, K., Newton, J., Colbert, A., Chang, N., & Halcrow, S. (2016). **Frail, foreign or favoured? A contextualized case study from Bronze Age northeast Thailand.** In M. F. Oxenham & H. Buckley, R. (Eds.), *The Routledge Handbook of Bioarchaeology in Southeast Asia and the Pacific* (pp. 68-94).
- Halcrow, S. E., N. Tayles, and C. King (2016). **Infant and child health in prehistoric**


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An in-depth analysis of the skeletal adaptations and dental anthropology of stone age foragers of India was recently published. It documents the skeletal and dental adaptations of semi-nomadic foragers to the riparian environment of the Gangetic Plain. Insights into health and nutritional status, biological affinities, dietary toughness, activity patterns and physiological stress are examined in this analysis.


• Higham CFW, Douka K and TFG Higham 2015. A New Chronology for the Bronze Age of Northeastern Thailand and Its Implications for Southeast Asian Prehistory. PLOS One. http://dx.doi.org/10.1371/journal.pone.0137542

This paper presents new radiocarbon dates derived from human bone collagen and shell for the sites of Ban Chiang, Non Nok Tha, Ban Na Di and Ban Lum Khao. It concludes that the claims for early bronze casting at Ban Chiang by 2000 BC must now be set aside. All four sites place initial settlement of Northeast Thailand by the first rice farmers in the mid second millennium BC, with the transition into the Bronze Age taking place from about 1050 BC.


A survey of early world civilizations, including Southeast Asia and China.

This paper was written as a response to claims by Dr. J.C. White that Bronze Age burials in Thailand were interred in or near residences. It argues that this was not necessarily the case, and that the evidence, centred on the site of Ban Chiang, is insufficient to support her conclusions. However new evidence from the late Iron Age site of Non Ban Jak reveals undoubted evidence for human burial in houses.


This paper describes the social changes that took place in the upper Mun Valley during the Bronze and Iron Age.

• Huffer, D, Chappell, D, Dung, LTM, Nguyen, HL. in press. "From the ground, up: The looting of Vịrộn Chuốị within the Vietnamese and Southeast Asian antiquities trade" *Public Archaeology*.


A detailed statistical analysis of the distribution of the Bronze Age phase 4 cemetery of Ban Non Wat.

• Snoddy, A., Buckley, H., Halcrow, S. More than Metabolic: Considering the broader paleoepidemiological impact of Vitamin D deficiency in bioarchaeology. *American


• Pietrusewsky, M, Douglas, MT. (2016) Review of Polynesian and Pacific skeletal biology. In: Stefan, VH, Gill, GW, editors. *Skeletal Biology of the Ancient Rapanui (Easter Islanders).* Cambridge UK: Cambridge University Press. p 14-38. This review examines some of the earlier and more recent work in physical/biological anthropology of the Pacific and Polynesia. Commencing with some of the earliest studies in physical anthropology, which included living as well as prehistoric inhabitants of the Pacific, this survey will focus mainly on what studies of skeletons from the region reveal about the initial peopling of the Pacific, origins of the Polynesians, and the health and lifestyle of past peoples of the region. Human skeletons associated with Lapita Cultural Complex and molecular genetic studies will round out this survey.

• Wohlfarth, B., Higham, C., Yamoah, K.A., Chabangborn, A, Chawchai, S. and Smittenberg, R.H., 2016. Human adaptation to mid- to late-Holocene climate change in Northeast Thailand. Published online before print May 25, 2016, doi: 10.1177/0959683616645947. *The Holocene* May 25, 2016. This paper describes the results of new cores taken from Lake Kumphawapi in Northeast Thailand that have identified a sharp fall in the strength of the monsoon, and increased aridity, in the early centuries AD. This change is integrated with new evidence for a major agricultural revolution at the same juncture, that involved water conservation in moats, and distribution of water into rice fields now cultivated with the tractive power of water buffaloes and iron ploughshares.

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**Conference Details**

**PAPERS PRESENTED AT RECENT CONFERENCES**

• *Annual Meetings of the Paleopathology Association 2016*
  Atlanta, GA April 2016
  Abstracts are available here [https://paleopathology-association.wildapricot.org/page-18191](https://paleopathology-association.wildapricot.org/page-18191)
Annual Meeting of the American Association of Physical Anthropology 2016
Atlanta, GA April 2016
Abstracts were published in a supplement of the American Journal of Physical Anthropology (March 2016).
The following small selection may be of interest but there is likely much more of relevance to bioarchaeology in Southeast Asia and the Pacific:

Skeletal growth over the period of intensification of agriculture at the late prehistoric site of Ban Non Wat, Northeast Thailand. N. DHAVALE, S. HALCROW, H. BUCKLEY, N. TAYLES, A. GRAY.

Isotopic Analysis of Prehistoric Human Diet at Chelechol ra Orrak, Palau. J.H. STONE, J. KRIGBAUM, S.M. FITZPATRICK.

An Assessment of Sexual Dimorphism in the Crania from Roonka Flat, South Australia. C.B. YOAKUM, A.C. DURBAND.

Ill-health or the burial environment: differentiating developmental defects from postmortem stained enamel in deciduous dentition, prehistoric Tonga, Polynesia. S.E. HALCROW, R.A. FARAH, L. PAINUTHARA, J.M. BROADBENT, H.R. BUCKLEY, A. BARKER.

A stressful legacy: Childhood stress and longevity. G. MCFARLANE, J.H. LITTLETON.

Fetal and infant health in prehistoric and colonial Ifugao. ALEXIS N. FRANCOIS and ADAM LAUER

Biological relationships of the Early and Middle Neolithic of the Taiwan Strait using skulls and teeth. ADAM J. LAUER.

Osteometric Sex Estimation from Pelvis in a Thai Population
PASUK MAHAKKANUKRAUH, SITTIPORN RUENGDIT, D. TROY CASE, SAW MYNT TUN and APICHAT SINTHUBUA

Subadult Age-at-Death and Mortuary Practice during the Neolithic Transition at Niah Cave, Sarawak, Malaysia. ALECIA SCHRENK

Experiencing Childhood at Roonka: An Analysis of Enamel Hypoplasia in the Permanent Dentition of Australian Aboriginal Hunter-Gatherers. CAITLIN B. SMITH and JUDITH LITTLETON

A comparative analysis of upper limb cross-sectional properties in the Lake Mungo 3 skeleton from the Willandra Lakes, Australia. E.C. HILL, O.M. PEARSON, A.C. DURBAND.

Australasian Society of Human Biology 29th Annual meeting 2015
This meeting, hosted by the Queensland University of Technology, was filled with presentations relevant to bioarchaeology. Abstracts will be published in Homo: Journal of Comparative Biology in due course.
Marc Oxenham (Australian National University) and Siân Halcrow organised a bioarchaeological session at the recent Southeast Asian Ministers of Education Organization Regional Centre for Archaeology and Fine Arts (SEAMEO SPAFA) conference this week. The papers comprise some of the enlarging corpus of bioarchaeological work that is being done by local SE Asians and foreign researchers in the region (see also the recently edited volume *The Routledge Handbook of Bioarchaeology in Southeast Asia and the Pacific Islands*). Recent bioarchaeological research in Southeast Asia has been instrumental for illustrating variance to the internationally applied models of population biological response to agricultural development and intensification. There has been an increased interest in the bioarchaeological testing of explanatory models of the occupation of Mainland Southeast Asia, including a debate surrounding the suitability of the two-layered (replacement) settlement model, also of relevance to models of settlement in other parts of the world. Our session included papers with a range of methodological approaches including funerary analyses, dental and skeletal palaeopathology, isotopic analyses of diet and migration, and physical activity through entheseal changes.

The session commenced with work addressing broad issues of subsistence and natural and social environmental changes, and migration in the region. Marc Oxenham (co-authored with Anna Willis) started the session by interrogating what the ‘Neolithic’ in Southeast Asia means and asks the question of what influence farming in the region had on these communities and what implications this has for bioarchaeological interpretations. If populations are already sedentary and have high fertility and large settlement sizes, then would a pre- versus post-agricultural palaeopathological comparison be appropriate? I have also previously touched upon the issue of classification of sites into these categories here.

Charlotte King (University of Otago) then turned to a site-specific example of testing human variation during the agricultural transition using isotopic analyses to indicate diet and migration and geometric morphometrics as a genetic proxy from the Thai prehistoric site of Ban Non Wat. She did not find any definitive evidence for population replacement of the hunter-gatherer population by the early agriculturalists.

Siân Halcrow (University of Otago) presented a new biosocial model that is dovetailing the raft of archaeological and bioarchaeological evidence for a rapid socio-political and biological (‘health’) change in the Iron Age in the Upper Mun River Valley in northeast Thailand. By assessing the bioarchaeological evidence within an epidemiological context of the changing natural and social environment, we are starting to understand the changes of mortality and morbidity through transmission modes and the possible aetiologies of disease during this time.

In light of the model of swift change in social organisation and corresponding biological changes that are being seen in the region at this time, Stacey Ward (PhD candidate, Otago) is investigating social organisation and its influence on physiological stress through growth disruption at the Thai Iron Age site of Non Ban Jak.
Rebecca Jones (PhD candidate, Australian National University) then presented on her research that is assessing zooarchaeological evidence for the change in subsistence using two Vietnamese archaeological assemblages, the pre-agricultural site of Con Co Ngua, and the agricultural site of Man Bac, Vietnam.

Korakot Boonlop (PhD candidate, Leicester) presented preliminary oral pathology data from the Neolithic site of Nong Ratchawat in West-central Thailand. Comparative analyses from other sites in the region from later periods will provide a means to assess the impact of oral health with the intensification of agriculture.

Several papers addressed issues of cultural processes on the living and the dead. Rebecca Crozier (University of the Philippines) presented some fascinating evidence for cranial modification from Cebu in the Philippines. This research is starting to look not only at the cultural aspects of this practice, but also the health implications that this modification can have on individuals.

Melandri Vlok (Honours graduate student, ANU) presented a contextualised interpretation of the bioarchaeology of care of an individual who had sustained major leg trauma at the Metal period site of Napa in the Philippines. This lead to some interesting discussions poolside after the session for the development of the bioarchaeology of care model being applied to infants and children in past societies.

Myra Lara (Graduate student, University of Philippines) showcased the diversity of archaeological mortuary treatment practices in prehistoric northern and central Philippines. Her analyses attempted to correlate mortuary treatment over time and space within the Philippines and other Islands within the wider region.

Two talks looked at evidence for activity in the past and interpreted them with wider archaeological and other contextual evidence. Dicky Caesario Wibowo (Masters student, University of Indonesia) presented his analyses of physical activity based on enthesal changes from the late prehistoric site of Gilimanuk, Bali. Sarah Agatha Villaluz (Graduate student, University of Philippines) assessed activity using enthesal changes in a sample from 18th century burial sites from the Philippines, and used historical and ethnographic evidence in her interpretation of possible habitual activities.

Other sessions at the conference also had biological anthropology papers, including a session on Ifugao archaeology and one on Palaeolithic archaeology.

Unfortunately a number of researchers not mentioned above couldn’t make it to our session because of the cost, which was especially prohibitive for Southeast Asian scholars. However, despite this, our session was one of the biggest at the conference, indicating the increased development of local expertise in the area. This success has stimulated us to start organising the next Southeast Asian Bioarchaeological Conference that we hope will be held in 2017. The last meeting was held in 2012 in Khon Kaen in Northeast Thailand and supported the attendance of over 70 delegates from 11 different countries. The main aim of these conferences is for the training and professional development of local students and academics in the field of bioarchaeology.
The following abstracts from this conference were sent in by contributors:

Changing Heads: Artificial cranial modification in the Philippines
Rebecca Crozier
Artificial cranial modification, sometimes referred to as head flattening or binding, involves the deliberate, and permanent, reshaping of the human skull. It is a practice that is recognised and well documented from many regions in the world. In the Philippines, cranial modification, specifically the type identified as occipito-frontal deformation, is quite widespread, particularly within the Visayas and Mindanao regions. However, whilst clearly identifiable in the archaeological record, the crania themselves have not been analysed, in depth, from a bio-archaeological perspective. An investigation, which aims to address this gap in our knowledge, is now well underway. This paper will present some of the results of this new and ongoing work.

Archived in the University of San Carlos Museum (USC), Cebu, Philippines, are a number of human crania displaying characteristics associated with a process of cultural modification. These specimens comprise the starting point for this new research. With the identification of previously unrecorded features, such as those associated with pathological change and non-metric traits, it is evident there is much more to learn from the crania, not only in terms of the effects of such a practice on cranial morphology, but also on the general health of these particular individuals and, ultimately, why such practices may have been performed. This information may then be used to compare and contrast directly with other past populations from around the world whose remains display evidence of this fascinating cultural practice.

Reconstructing physical activity of adult human remains from 18th Century Burial Sites in the Philippines
Sarah Agatha Villaluz
The daily life of ancient populations has been a continuing topic of interest for archaeology; the study of artifact assemblages is primarily aimed at understanding how people lived in the past. One particular point of interest in exploring the daily life of ancient populations is understanding the variety of activities individuals engage in. These activities may be correlated with the social, cultural and political aspects of a community in terms of sexual division of labor, status, social organization and so on. Although analyses of artifact assemblages have yielded good inferences and interpretations as to what people were doing in the past, the examination of human remains presents the most direct evidence for activity.

This preliminary study focuses on studying the entheseal changes found in adult human remains from 18th Century burial sites in the Philippines. Interpretation of results will be achieved through the grouping of identified entheseal changes according to each muscle functional complex (shoulder, elbow, forearm, hip, knee, foot), differentiating between fibrous entheseal changes and cartilaginous entheseal changes. It is intended that this study will illustrate the applicability of entheseal change methods in different Philippine populations, and further studies, combined with historical and ethnographic accounts, may be able to ascertain possible task-specific activities among these groups.

For the Love of Death: Human osteoarchaeology in Southeast Asia and the Pacific
Contributed by Rebecca Crozier (University of Philippines)
Philippines
January 8-9th 2016

Hosted by the Archaeological Studies Program – University of the Philippines, this successful two-day event focused on the latest work on archaeological human remains assemblages from across Southeast Asia and the Pacific. Eleven countries were represented by the 65 delegates in attendance. The 20 oral presentations and 8 posters comprised topics ranging from paleopathology and trauma, to isotopes and mortuary
practices. The delegates were also given the opportunity to tour the facilities at ASP. A session dedicated to non-adult human remains was very kindly sponsored by the Society for the Study of Childhood in the Past, and was chaired by Dr Simon Mays of English Heritage, UK. The final session was dedicated to the latest research in the Philippines and included an overview of human osteology in the Philippines by Rebecca Crozier (ASP), a discussion of the Callao Cave fossil by Dr Armand Mijares (Director ASP) and a report on the ceramic burial coffins from Magsuhot, Philippines, by Nida Cuevas of the National Museum of the Philippines. The keynote speech was given by Dr Marc Oxenham of the Australia National University.

The following abstract from this conference was sent in by a contributor:

Institute of Archaeology, Vietnam
Minh Tran
tranthiminh86@gmail.com

In 2009, Vietnamese anthropologists found nearly one hundred burials in Thang Long citadel, Hanoi. This paper will focus on one burial in particular, burial 09.BD. E27.Mo.040. This skeleton is relatively complete and was buried with two vessels dated to the 9th – 10th century. Determination of age and sex was carried out, in addition to observations of dental health. The results, presented here, give clues as to the diet and health of this individual in life. Based on the skull and teeth wear, this skeleton is a male at 17 – 25 years old and has Mongoloid features with shovel shaped incisors. Moreover, due to not only poor oral hygiene and poor diet but also many stresses in the life, individual Mo.040 had anemia and some dental disease including periodontitis and linear enamel hypoplasia (LEH). Pathogens relating to these diseases may have resulted in this individual’s short life span.
**International Conference on the 50th Anniversary of the Discovery of Ban Chiang Site** Udon Thani, May 26-28, 2016

**Higham**, CFW. Higham gave a paper that described the new chronology for this site, and its broader cultural implications

**Pietrusewsky**, M. The People of Ban Chiang: Bioarchaeology of the 1974 and 1975 Skeletons. Abstract: In this talk, I briefly discuss how I became involved with Ban Chiang and what we have learned, in the decades since, from our studies of the approximately 142 human skeletons (2100 B.C. - 200 A.D.) excavated in 1974 and 1975 by the Thai Fine Arts Department and University of Pennsylvania. Specifically, I discuss what we know about health, diet, life span, and lifestyle of some of the earliest inhabitants of Northeast Thailand, people who were in the transition from hunting and gathering lifestyle to one that increasingly relied on agriculture. I also discuss some of what we have learned about the biological relationships of the ancient inhabitants of Ban Chiang. Then, I will mention one particular burial from these excavations, BC Burial 23, given the nickname, “Vulcan”. My talk will end with ongoing research and plans to repatriate the Ban Chiang skeletons to Thailand.

If you are on Research Gate ([www.researchgate.net](http://www.researchgate.net)), Mike Pietrusewsky’s full paper and presentation is loaded here.

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**UPCOMING CONFERENCES AND EVENTS**

- **Annual Meeting of the American Association of Physical Anthropology**
  New Orleans, April 18-22, 2017
  [http://physanth.org/annual-meetings/future-meeting-venues/](http://physanth.org/annual-meetings/future-meeting-venues/)

  Sean D. Tallman (University of Tennessee) and Matthew Go (University of Illinois), forensic anthropologists with regional interests in East and Southeast Asia, invite you to participate in a poster symposium at the American Association of Physical Anthropologists meetings in New Orleans, LA April 18-22, 2017. As East and Southeast Asia are emerging and vital fields of research for issues of skeletal biology and medicolegal
significance, we would like to share this important research with the greater anthropological community and foster collaborations (see abstract).

**Broadening Forensic Anthropology: Bringing East and Southeast Asia to the Forefront**

While forensic anthropology has expanded considerably in its theoretical and methodological scope as a discipline, it is nevertheless limited by an over-reliance on data from North America and Europe. Current methods largely developed from American skeletal collections that were established in the late 19th to early 20th centuries have become standards in forensic anthropology. However, it is unlikely that these methods developed on individuals of African, European and Native American descent can be accurately applied to worldwide populations. This is especially true when considering the wide range of human skeletal variation and the increasingly diverse biocultural demographics that exist in modern metropolises globally. In particular, Asian individuals make up approximately 60% of the global population, and East and Southeast Asia represent two of the largest sources of contemporary diasporic communities (approximately 6% of U.S. and 8% of Canadian populations); however, such groups are significantly underrepresented in forensic anthropological literature. Additionally, mass disasters, human rights violations, and armed conflict further necessitate the need for Asian-specific biological profile methods. The increasing number and availability of skeletal collections throughout Asia enables the development of forensic anthropological methods for these understudied populations, thereby addressing this mismatch between classic standards and the call for more representation from East and Southeast Asia.

This symposium aims to highlight the diverse research on modern human skeletal variability in East and Southeast Asia that is ameliorating this problematic research gap. Thematic contributions include: the investigation of understudied collections in East and Southeast Asia; the establishment of novel and vital collections; the development of population-specific methods; and the evaluation and applicability of existing techniques. Taken together, these papers push forward the boundaries of current forensic anthropology theory, method, and practice by creating a more inclusive discipline that better reflects modern global demographics and better benefits local and global communities.

If you are interested in contributing original research to this symposium or have any questions, please contact:
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University of Tennessee, Knoxville

- **Annual Meetings of the Paleopathology Association**
  Moscow, 15-19 August 2016
  New Orleans, April 2017
  [https://paleopathology-association.wildapricot.org/events](https://paleopathology-association.wildapricot.org/events)
Australasian Society of Human Biology 30th Annual meeting 2016
Dunedin, New Zealand
5th – 9th December
Keynote: Professor Charlotte Roberts
http://school.anhb.uwa.edu.au/ashb/

Please contact Dr Sarah Croker if you wish to be placed on
the mailing list for the Society scroker@anatomy.usyd.edu.au

As part of this conference there will also be a Symposium
showcasing the research of an Otago Research Theme called the Asia-Pacific Biocultural
Health: Past and Present. This is a network of researchers from Otago and international
collaborators who work together to address this question from an evolutionary medicine
perspective. This includes researchers from the biomedical disciplines, anthropology and
history. A/Prof Hallie Buckley and Dr Siân Halcrow are co-Directors
(http://www.otago.ac.nz/healthsciences/research/themes/)

Australian Archaeological Association
6-8 December, 2016
Terrigal, NSW

Graduate Student Projects

HONOURS PROJECTS

Those underway...

- Melandi Vlok, Australian National University, Canberra, Australia

Healing Bones: A case of healthcare practice in the Metal Period Philippines
Supervisor: A/Professor Marc Oxenham

Using the 'bioarchaeology of care' technique, this thesis explores a case study of an individual
from a Metal Period site in the Philippines who suffered trauma to the right limb resulting in
disability until death. Significant functional and clinical impact suggests that care from others
in the community would have been required to necessitate survival. As such cultural
understanding of the value of extending human life outweighed the costs of factors of
biological needs and care giving, providing insight into social aspects and knowledge of health
care in the community. Furthermore, the potential for exploring the relationship between the
disabled, their carer or carers, and their community is considered.
Maya Turner, University of Otago

Ethics of 3D printing human remains from a Māori and archaeological perspective: a pilot study

Supervisors: Siân Halcrow and Ruth Fitzgerald

This research investigates Māori and archaeological attitudes around the practice of 3D printing human remains from a variety of situations. This will be carried out with both an online survey for those who work within archaeology, and interviews with Māori. This research seeks to ascertain whether or not the use of this technology is appropriate within the New Zealand context.

Anna-Claire Barker, University of Otago

Quantifying the dental enamel defects within a sample from Chiefdom Period Tonga

Supervisors: Siân Halcrow and Hallie Buckley

This research is a comprehensive assessment of the dental enamel defects present in a sample of infant, child, and adult remains from the Chiefdom Period site of 'Atele in Tonga. The project aims to assess the experience of childhood stress in the survivors and non-survivors in the sample to better understand human responses during this period of social change in the past.

Masters Projects

Those completed...

Jessica Cecilia A. Peña

The Preservation and Bone Representation of Non-adult Human Remains from Ille Site, Palawan, Philippines: A Taphonomic Study

Supervisor: Rebecca Crozier (ASP)

Abstract: Opinions are somewhat divided within the archaeological literature as to the survivorship of non-adult human remains. However, to date, few studies have examined the specific preservation and representation patterns of such skeletal material. Therefore, the aim of this study was to establish a taphonomic profile of the non-adult human remains from the Intensified Ritual Phase layer, dated circa 2,000 years ago to 19th century CE, in the Ille Cave and Rockshelter archaeological site, Philippines. The assemblage was analysed for quality of preservation and frequency of bone elements using three methods: the anatomical preservation index (API), the bone representation index (BRI), and the modified zonation method. The results were compared to similar studies on non-adult skeletal material from various archaeological burial sites in the UK to assess differences or similarities between tropical cave and temperate open site burial environments. The findings showed that in spite of opposing environments, the Ille data profile shared similar patterns with those of the UK which suggest that the intrinsic nature of non-adult bones plays a more extensive role in their state of preservation than extrinsic environmental factors. A stark difference at Ille, however, was the better preservation and representation results of the under-5 age group which could point to age-specific differential burial treatment. The possible use of enclosed burial containers for these younger children may be inferred based on the intentional anthropogenic
chop marks found on the leg joints of an infant. This possible unique mortuary treatment of the under-5 age group, especially the infants, ties in with early historical accounts wherein they were accorded traditional protective rituals. This study has contributed to current discourse by providing a greater understanding of non-adult remains in the archaeological record in tropical cave burial environments.

DOCTORAL PROJECTS

Those underway...

- Neha Dhavale, University of Otago
  Intensification of agriculture and its implications for infant and childhood growth at Ban Non Wat, Northeast Thailand.
  Supervisors: Siân Halcrow and Hallie Buckley

The project focuses on the biological consequences of agricultural intensification on childhood growth at the prehistoric site of Ban Non Wat in Northeast Thailand. The so-called bioarchaeological model of health change posits that health deteriorated with the intensification of agriculture. This pattern, however, is not seen in previous works in SE Asia. The aim of my research is to test the applicability of the model using infant and child growth as a proxy for population health during the intensification of health over time at the site of Ban Non Wat.

- Monica Tromp, University of Otago
  Lapita Plants People and Pigs
  Supervisors: Hallie Buckley and Lisa Matisoo-Smith

Plants are an integral part of terrestrial life. Plant foods have been included in the portable subsistence economy of the first people to move into the Southwestern Pacific, though their contribution is less clear than that of their commensal animal counterparts. The wild and cultivated plant components of the diet of these Lapita people is more difficult to assess than the animal due to the scarcity of plant macro remains and the lack of specificity of bone derived stable isotopes results. One direct way to explore the plant portion of their diet is to identify microfossils trapped within calcified plaque or dental calculus. The primary aim of this project is to examine the relationship between Lapita and immediately post-Lapita people and plants. The secondary aim is to examine how closely human and commensal pig plant diets track each other and if it is feasible to use one to inform the other if human remains are not available. To address these aims, microfossils have been extracted from dental calculus from human and/or pig teeth from four different sites: the Reber-Rakival site on Watom Island, East New Britain Province, Papua New Guinea; Teouma on Efate Island, and Vao and Uripiv islands off the coast of northeast Malakula. All of the samples analysed date between Lapita (~3000 cal BP) and Post Lapita (~2500 cal BP) periods. These sites allow a comparison of colonizing (Teouma) and established (Watom, Vao, Uripiv) populations and the variation in the wild versus cultivated plant components of their diets.
• Helen Gilmore, University of Otago
  *A comparative ethnographic study of bioarchaeological practices in Aotearoa New Zealand and the United Kingdom.*
  Supervisors: Siân Halcrow and Greg Rawlings

This research is a comparative ethnographic study of bioarchaeological practices in New Zealand and the United Kingdom, investigating the extent to which approaches and attitudes to engagement with archaeological human remains are shaped by differing cultural backgrounds and socio-cultural understandings.

• Stacey Ward, University of Otago
  Supervisors: Siân Halcrow and Greg Rawlings

This project investigates whether increasing social complexity, represented by social inequality, impacted health at the late Iron Age site of Non Ban Jak in northeast Thailand. This period is a time of rapid social and environmental change in the region and is immediately followed by the rise of stratified state societies in Southeast Asia. Long bone lengths and dental enamel defects will be studied to determine health and mortuary analyses to explore social groupings. Through this combination of bioarchaeological and archaeological investigation, this research aims to shed light on health and social inequality during the late Iron Age social transition.

Recently completed...

• Sean Tallman, Department of Anthropology, University of Tennessee
  *The Evaluation and Refinement of Nonmetric Sex and Ancestry Assessment Methods in Modern Japanese and Thai Individuals*

Dissertation Committee:
Dawnie W. Steadman, Ph.D., D-A.B.F.A.
Amy Z. Mundorff, Ph.D.
Lee Meadows Jantz, Ph.D.
Darinka Mileusnic-Polchan, M.D., Ph.D.

Abstract

Effective biological profiles in forensic anthropology and bioarchaeology depend on the development, validation, and refinement of population-specific methods. However, most methods were developed in North America on individuals of African and European descent, and it is unlikely that such methods can generate accurate biological profiles for Asian individuals. Moreover, Native Americans have served as biological proxies for Asians due to their distantly shared genetic history, resulting in largely untested assumptions that Native Americans and Asians share nonmetric sexually dimorphic skeletal features and a unique suite of cranial traits that can be used in ancestry assessment.

This study explores nonmetric sexual dimorphism and cranial nonmetric variability in 1,397 modern Japanese and Thai individuals, 17 to 96 years of age. The first objective tests and refines the methods based on 15 traits used to predict sex from the cranium, pelvis, clavicle,
and humerus that were developed on non-Asian populations. The second objective establishes 37 cranial and mandibular trait frequencies to determine if the Japanese and Thai differ from each other and from Native Americans in trait expressions. Further, the affects of sex, age, population, inter-trait correlations, intraobserver error, and secular change on the traits are assessed.

The results indicate that population-specific sex assessment methods perform better in classifying the Japanese and Thai compared to those developed on non-Asian populations, producing correct classification rates of 66-98%. Additionally, the majority of cranial and mandibular traits used in ancestry assessment significantly differ in frequency between the Japanese and Thai, resulting in correct classification rates of 60-90%. Further, the Japanese and Thai are different from Native Americans in the expression of nonmetric traits. However, sex, age, population, intraobserver error, and secular change affect many nonmetric traits, thereby complicating their use in sex and ancestry assessment.

This study demonstrates that the Japanese, Thai, and Native Americans are not skeletally homogenous, as they exhibit differences in sexual dimorphism and in the expression of cranial trait frequencies due to unique population histories. Moreover, the findings of this research underscore the importance of developing population-specific biological profile methods for diverse Asian populations, such as those provided here.

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- Nelum Kanthilatha, Southern Cross University, Australia.

**Sediments as artefacts: Geoarchaeological study of prehistoric sediments in Northeast Thailand**

**Supervisors:** Prof. Bill Boyd, Southern Cross University, Australia and Dr. Nigel Chang, James Cook University, Australia

In archaeology, sediments can be used as artefacts. The aims of this thesis are to critique the role of geoarchaeology as a key methodological tool within archaeology, and to demonstrate its capacity to contribute to a deeper understanding of past social and socio-environmental behaviours. These aims are predicated on the principle that analysis of past human behaviour can be enhanced through examination of the sedimentary record as an archaeological artefact, in which the physical, geological, biological and chemical qualities of an archaeological site reflect and therefore provide implications for human behaviour, environmental change, and human-environment relationships. The approach of this research, therefore, is to focus on the sedimentary record of archaeological sites to illustrate how social and human behaviour regarding interactions with the environment and the construction and development histories of the sites represent a mutual exchange between environment and society.

The aims are addressed through site-specific geoarchaeological case studies within an ongoing archaeological program in northeast Thailand. Sediment samples were selected from the two prehistoric archaeological sites of Ban Non Wat and Nong Hua Raet, situated in the Mun River valley of north-eastern Thailand. The sediments represent different cultural layers and features of the prehistoric occupation, including controversial ‘hard floor’ surface sediments. This research addressed six specific archaeological problems.

1. **Sediment chemistry.** Identification of specific chemical signatures of both anthropogenic and non-anthropogenic sediments associated with the sites contribute to understanding the nature of human activities associated with these sediments.

2. **Sedimentological characterisation.** Full sedimentological description of occupation layers allows characterization of the different stratigraphic layers of human occupation.
3. **Geochronology.** The chronology of the cultural layers was further developed using AMS radiocarbon dating to supplement existing data, specifically to examine the dating of the end of the Iron Age occupation.

4. **Siliceous microfossil analysis.** Analysis of siliceous microfossils – phytoliths, diatoms and sponge spicules – provides insight into past environmental conditions and natural resources.

5. **Fatty acids.** In a ground-breaking study for the region, prehistoric fatty acids have been extracted from the ‘hard floor’ sediments, providing new knowledge to the regional archaeology.

6. **Raman spectroscopy and automated chemical and sedimentological analysis.** The state-of-the-art Morphologi G3SE-ID Instrument is used in this study to identify morphological parameters and chemical signatures of sediment particles. Sediments can be regarded as artefacts to reconstruct past human behaviours. This thesis discusses the geoarchaeological methods of sediment analysis to interpret the human activities in their occupation sites.

Bioarchaeology International

SABRINA C. AGARWAL AND BRENDA J. BAKER, EDITORS-IN-CHIEF

Bioarchaeology International will provide a new outlet for rigorous peer-reviewed publication of substantive articles in the growing field of bioarchaeology, augmenting the book series already published by UPF. The quarterly journal will publish original research articles, brief reports, and invited review essays that are related to the study of archaeological human remains and mortuary sites.

The overarching goal is to publish studies that are contextually and theoretically informed, and explore the human condition and ways in which human remains and their funerary contexts can provide unique insight on variation, behavior, and lifestyle of past people and communities. Submissions from varying scales of analysis (e.g. regional, community, site/sample, individual, structural, cellular or molecular) that focus on theoretical and methodological issues in the field are encouraged.

SABRINA C. AGARWAL is associate professor at the University of California at Berkeley and faculty associate of the Archaeological Research Facility at UC Berkeley. BRENDA J. BAKER is associate professor in the School of Human Evolution and Social Change at Arizona State University.

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