Guest Editorial

Southeast Asia: Human evolution, dispersals and adaptation

More than a century ago, Southeast Asia already roused the interest of scientists such as the Dutch anatomist Eugene Dubois who in 1891–92, found on Java (Indonesia), one of the earliest human fossils reported in the world: the femora, skull cap and teeth of the *Pithecanthropus erectus*. Since then, more and more investigations have been carried out in this large region (around 4,500,000 km²) in the fields of Quaternary science, particularly in pre- and proto-history. The importance of this region for the understanding of human evolution, dispersal, subsistence strategies and technology and for environmental and chronological modeling is now well established. The recent creation of a UISPP (International Union of Prehistoric and Protohistoric Sciences) commission dedicated to research in Southeast Asia and the number and the variety of papers presented (N = 34) during its first scientific session in the 37th UISPP Congress in Burgos (Spain) are testimonies to the growing interest in this region.

This volume presents a selection of papers based on presentations delivered in the session “Southeast Asia: Human Evolution, Dispersals and Adaptation” organized by Prof. Victor Paz, Prof. François Sémah and Prof. Hubert Forestier during the 2014 congress in Burgos. It includes results of both completed and on-going research projects, as well as preliminary studies and discussions of research questions to be addressed in the future. This collection is comprised of papers on various fields of study covering a large chronological span in order to give a quick overview of the research questions currently addressed by international research teams working in Southeast Asia.

Our understanding of the chronology of human occupation is closely linked to the development and application of dating methods. Using the island of Java (Indonesia) as an example, Falguères et al. introduce this volume with a review and discussion of the dating methods applied on volcanic effluents, sedimentary deposits, speleothems and fossils. They describe how possible biases can be identified in results of argon, U-series and ESR dating. They conclude that numerous issues can be solved by dating samples using several methods.

Zeitoun et al. follow with a thorough review and criticism of the *Ailuropoda-Stegodon* faunal complex as an ecological and chronological marker in Southeast Asia. Based on geological, taphonomic and chronological data of Middle Pleistocene faunal assemblages, they argue for a reappraisal of this regional complex.

Human-environment interaction is currently a very active field of study. Five papers in this volume specifically deal with this research topic using different approaches. Choa et al. reconstruct past vegetation of the surroundings of Tabon Cave (Philippines) by mineralogical characterization and carbon and nitrogen isotopes analyses of guano and guano-derived deposits from the site. They identified the presence of a forest environment with occurrences of savannah woodland and grassland around 32 ka. These results are very promising and add significant data particularly to the discussion of *Homo sapiens* dispersal in the region.

Sémah et al. present a synthesis of the evolution of the palaeoenvironment of Java in the last 1.5 Ma. This overview takes into account evidences provided by multidisciplinary researches carried out in the Sangiran Dome and the Gunung Sewu region of Eastern Java (Indonesia).

Amano et al. focus on the changes of human subsistence economies resulting from climatic shifts during the Pleistocene–Holocene transition in island Southeast Asia. Through zooarchaeological analyses of the assemblage of Braholo Cave (Java, Indonesia), they were able to identify the predominance of arboreal and semi-arboreal fauna during the Late Pleistocene and Early-Mid Holocene in contrast to the preponderance of taxa associated with open environments in earlier deposits. Their results suggest forest expansion during the beginning of the Holocene and selection of specific taxa by human. They also found evidences of human subsistence based on a mosaic of environments. Samper Carro et al. also followed a zooarchaeological approach but in this case oriented towards the study of the exploitation of the marine environment as part of the human subsistence strategies in the Wallacean Islands during the terminal Pleistocene and the early Holocene. Their description of the faunal remains from Trong Bon Lei on the island of Alor in Nusa Tenggara Timur (Indonesia) shows that fishing was an important component, in contrast to hunting of terrestrial fauna, in the human subsistence activity at this site.

Early tropical forest exploitation by hunter-gatherers and the transition to farming is examined by Jones et al. Through environmental evidences, including pollens and phytoliths, from the southern Kelabit Highlands of Borneo (Indonesia) they identified two cultural waves of human–plant interactions in the region during the late Holocene.

Artifacts manufactured by humans in the past can be very informative about their behavior. For example, they can provide indirect evidence on the use of materials which are rarely or not at all preserved in archaeological sites. Xhuaflair et al. built a reference collection of traces resulting from plant processing as observed on experimental stone tools. This reference collection...
is aimed at testing if use-wear due to bamboo processing is distinguishable from use-wear due to the processing of other types of plants. These new data provide a basis to discuss and challenge the so called “bamboo hypothesis”, which postulates the existence of a bamboo industry during Prehistory in SE Asia. Stone artifacts are also the focus of the paper by Grenet et al. They provide a thorough technological and typological description of the assemblages from three rock-shelters in the Mangkalihat peninsula (Kalimantan, Indonesia). Their results show continuity of the use-reduction sequence and of flake and tool typo-technology across the Pleistocene–Holocene boundary. They suggest that this continuity could be related to environmental and climatic stability. The contribution of Chitkament et al. provides insights into another kind of lithic industry found in Southeast Asia. They analyzed the rich collection of stone artifacts from the Tham Lod rockshelter (Northwestern Thailand) dated to the Late Pleistocene and Holocene. They provide a detailed typo-technological description of the pieces found all throughout the stratigraphical sequence and show that sumatrалithes, typical elements of Hoabinhian assemblages, are present in the site. Sophady et al. also report evidences for the presence of Hoabinhian culture in Lang Spean Cave (Cambodia) at the beginning of the Holocene. They also point out and describe cultural/technological differences between Hoabinhian remains to those found in layers dated to the Late Upper Pleistocene. Singhthong et al. stay on continental Southeast Asia and provide a review of prehistoric finds in Laos. They focus their description mainly on stone tools and suggest few directions for future investigations. Back to the islands, new findings from the ‘forgotten’ Middle/Upper Pleistocene site of Matar (Central Java) are presented by Fauzi et al. Their study of the stone artifacts, faunal remains and geology highlights similarities between Matar and the site of Ngandong.

As mentioned previously, Southeast Asia is an important area for the understanding of human evolution. Indeed, since the discovery of Dubois, human remains are regularly found in the region, particularly in Indonesia where the concentration of Homo erectus fossils is the highest in the world. Grimaud-Hervé et al. present a new fossil, a left inferoposterior part of a H. erectus skullcap, found in Sendang Klampok in the Sangiran Dome (Java). The metrical and morphological features of the specimen show similarities with the Middle/Upper Pleistocene Ngandong hominins. H. sapiens was also present in Southeast Asia during the Upper Pleistocene and Tabon Cave (Philippines) is one of the rare caves where such specimens are found. Corny et al. evaluate the morphological variability of the human bones and teeth from this site and provide a comparative morphometric analysis that includes both archaeological and sub-modern specimens.

Human population movements, pre- and protohistoric contacts of different human populations and transfer of technologies and goods resulting from these contacts are also examined in this volume. Analyses of ceramic artefacts can provide significant information about these processes. Favereau and Bellina’s paper explored the various modes of circulation of Sa Huynh-Kalanay-related pottery from 500 BC to AD 200 and their relation with the movement of goods and people. Through the study of the “chaînes opératoires” of ceramic manufacture and the characterization of pottery traditions from fifteen continental and insular sites, they identified both local and exogenous production and could thus describe specific exchange/contact patterns. Plutniak et al. analyzed the pottery assemblage from Liang Abu (Kalimantan, Indonesia) dated to the sixteenth and seventeenth century. They did not find any traces of long-distance or Bornean internal exchange in the ceramic assemblage.

Contacts between different human populations can also have an effect on their genetic diversity. Kusuma et al. looked at mtDNA and Y chromosome to investigate the genetic diversity of the inhabitants of the Indonesian archipelago and evaluate the corresponding genetic influence of the Western Eurasians who migrated for instance for trade purposes through Indian Ocean. Finally we close the volume going back to the Pleistocene with the study of Reyes-Centeno who provides a review of the modern human genetic and fossil evidences available to question the different scenarios of Out of Africa and routes to Asia.

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