

- Brandt, K.H. 1967. *Studien über steinerne Äxte und Beile der jüngeren Steinzeit und der Stein-kupferzeit Nordwestdeutschlands*. Bundruckerei August Lax, Hildesheim.
- Coutts, W. 1969. *The Spacer-Plate Necklaces of the British Bronze Age*. Unpublished MA Thesis, University of Edinburgh.
- Craw, J.H. 1929. On a Jet Necklace from a Cist at Poltalloch, Argyll. *Proceedings of the Antiquaries of Scotland* 63: 154–189.
- Edmonds, M.R. 1995. *Stone Tools and Society: Working Stone in Neolithic and Bronze Age Britain*. Batsford, London.
- Grise, A. 2006. *Früh- und mittelpkuperzeitliche Streitäxte im westlichen Mitteleuropa*. Habelt, Bonn.
- Lomborg, E. 1973. *Die Flintdolche Dänemarks: Studien Über Chronologie Und Kulturbeziehungen Des Südsandinavischen Spätneolithikums*. Universitetsforlaget I kommission hos H. H. J. Lyng, København.
- Shepherd, I. 1973. *The V-Bored Buttons of Great Britain*. Unpublished MA Thesis, University of Edinburgh.
- Sheridan, A. & Davis, M. 2002. Investigating Jet and Jet-Like Artefacts from Prehistoric Scotland: The National Museums of Scotland Project. *Antiquity* 76(293): 812–825.
- Taylor, T. 1999. Envaluing metal: Theorizing the Eneolithic ‘hiatus’. In S.M.M. Young *et al.* (eds.) *Metals in antiquity*: 22–32. Archaeopress, Oxford.
- Vandkilde, H. 1996. *From Stone to Bronze: The Metalwork of the Late Neolithic and Earliest Bronze Age in Denmark*. Aarhus University Press, Aarhus.
- Zápotocký, M. 1992. *Streitäxte des mitteleuropäischen Äneolithikums*. VCH Acta Humaniora, Weinheim.

Catherine Frieman
Merton College
Oxford University

LITHIC ASSEMBLAGES AND LAND-USE IN MALAYSIA

Southeast Asia is one of the least researched areas of the Pleistocene Old World and current understandings of hunter-gatherer technological adaptations, economic organization and mobility patterns remain remarkably poor. In part, this situation reflects a relative scarcity of well-documented and well-dated Palaeolithic sites. An even greater obstacle to the study of behavioural adaptations in the region, however, has been the characterization of Southeast Asian lithic technology as crude and unchanging, and of little interpretive value. This view has been prevalent in the literature since the inception in the 1940s of the ‘Movius Line’. The Movius line effectively divides the Palaeolithic Old World into two separate Western and Eastern technological zones and is based on the presence of handaxes and prepared core technologies in the West and their general absence in Eastern Asia (Movius 1948). A common explanation for the seemingly crude and static nature of stone tools in Southeast Asia is that there was a greater reliance on bamboo and other organic materials in a tropical environment (Pope 1989), and/or that there was a general lack of high quality stone across large areas of the region which is thought to have constrained the development of more complex lithic technologies (Mellars 2006).

However, despite widespread support of these models and a general acceptance of the Movius Line more generally (Keates 2002; Schick 1994), the credibility of this technological division is increasingly being called into question (Brumm 2007; Pawlik 2004; Yi & Clark 1983). It has been noted, for example, that there is little evidence to support widespread bamboo tool use, especially since large tracts of Pleistocene Southeast Asia consisted of arid savannah rather than tropical rainforest environments (Brumm 2007; Hutterer 1985; Raddatz 2006). Nevertheless, a preoccupation with the differences in technologies east and west of this boundary has distracted from research investigating technological variability in Southeast Asia from its own unique regional perspective (Brumm 2007), a sentiment which has been expressed for other regions in eastern Asia (Chen & Wang 2004; Yi & Clark 1983). An

especially important criticism is that this generalized view of Southeast Asian lithic technologies has served to compress a wide range of existing inter-site and regional technological variability in the archaeological record (Brumm 2007; Raddatz 2006). The causes and behavioural significance of this variability have therefore only recently begun to be explored (e.g. Moore & Brumm 2007).



Figure 1: Location of the sites of Bukit Bunuh and Kota Tampan, Malaysia

In particular, my PhD research is investigating patterns of hunter-gatherer land-use and economic organization primarily from the analysis of lithic assemblages from a number of cave and open sites in Malaysia. My receipt of the John Wymer bursary contributed towards my participation in excavations at one of these sites, Bukit Bunuh (Figures 1–4), this past spring, which was followed by a short preliminary study of the lithic assemblage from the nearby site of Kota Tampan (Figure 1). These open sites have been OSL dated to c. 40kya (Roberts *et al.* 2005) and c. 70kya (Hamid 2007), respectively, and both have been interpreted as *in situ* lithic manufacturing workshops located on the shores of a fluctuating palaeo-lake (Mokhtar 2006, 2007). Previous analyses of the site assemblages have focused on typological classification and my study marks the first detailed technological analysis of the lithic assemblages. Specifically, my ongoing work is examining the reduction sequences and stages represented at each of these sites, the extent to which the availability and use of different types of raw materials has affected technological organization and inter-site technological variability, and the intensity of reduction and degree of curatorial behaviour represented in the assemblages. Although no organic materials have been preserved, a high density of artefacts including cores, anvils and hammerstones, and high frequencies of utilized flakes, suggests that Kota Tampan may have functioned as a long-term residential site as well as a stone tool manufacturing location as has been previously reported. While a comprehensive picture of Late Pleistocene settlement systems in Southeast Asia has yet to be determined, evidence

from many cave sites seems to indicate only temporary, intermittent occupations. Anderson (2005) has suggested that this could mean that caves were not the primary locations for settlement during this period; open-air sites, such as Kota Tampan or Bukit Bunuh, may prove to be better examples.



Figure 2: The site of Bukit Bunuh, Lenggong Valley of Perak, Malaysia

Bibliography

- Anderson, D. 2005. The use of caves in Peninsular Thailand in the late Pleistocene and early and middle Holocene. *Asian Perspectives* 44: 137–153.
- Brumm, A. 2007. *The End of the Movius Line: Palaeolithic Stone Technology from a Southeast Asian Perspective*. Unpublished PhD Dissertation, Australian National University.
- Chen, S. & Qi, W. 2004. Lithic technological variability of the middle Pleistocene in the eastern Nihewan Basin, northern China. *Asian Perspectives* 43: 281–301.
- Hamid Mohd Isa. 2007. *Bengkel Alat Batu Zaman Pleistosen Pertengahan (70,000) Tahun Dahulu Di Kota Tampan, Lenggong, Perak*. Unpublished MA Dissertation, Universiti Sains Malaysia, Malay.
- Hutterer, K.L. 1985. The Pleistocene archaeology of Southeast Asia in regional context. *Modern Quaternary Research in Southeast Asia* 9: 1–23.
- Keates, S.G. 2002. The Movius Line: fact or fiction? *Bulletin of the Indo-Pacific Prehistory Association* 22: 17–24.
- Mellars, P. 2006. Going east: new genetic and archaeological perspectives on the modern human colonization of Eurasia. *Science* 313: 796–800.
- Mokhtar Saidin. 2007. Palaeolithic adaptation: some criteria for habitation site selection among the Pleistocene population in Malaysia. In Mokhtar Saidin & S. Chia (eds.) *Archaeological Heritage of Malaysia*: 1–16. Centre for Archaeological Research Malaysia, Penang.
- Mokhtar Saidin. 2006. Bukit Bunuh, Lenggong, Malaysia: new evidence of late Pleistocene culture in Malaysia and Southeast Asia. In E.A. Bacus, I.C. Glover & V.C. Pigott (eds.) *Uncovering Southeast Asia's Past*:

- 60–64. National University of Singapore Press, Singapore.
- Moore, M.W. & Brumm, A. 2007. Stone artifacts and hominins in Island Southeast Asia: new insights from Flores, eastern Indonesia. *Journal of Human Evolution* 52: 85–102.
- Movius, H.L. 1948. The Lower Palaeolithic cultures of southern and eastern Asia. *Transactions of the American Philosophical Society* 38: 329–420.
- Pawlik, A.F. 2004. The Palaeolithic site of Arubo 1 in Central Luzon, Philippines. *Bulletin of the Indo-Pacific Prehistory Association* 24: 3–12.
- Pope, G.G. 1989. Bamboo and human evolution. *Natural History* 10: 49–56.
- Raddatz, E. 2006. *Bamboo technology in the Palaeolithic of Southeast Asia*. Unpublished MPhil Dissertation, University of Cambridge.
- Roberts, R.G., Morwood, M.J. & Westaway, K.E. 2005. Illuminating Southeast Asian prehistory: new archaeological and paleoanthropological frontiers for luminescence dating. *Asian Perspectives* 44: 293–319.
- Schick, K.D. 1994. The Movius Line reconsidered: perspectives on the earlier Paleolithic of eastern Asia. In R.S. Corruccinni & R.L. Ciochon (eds.) *Integrative Paths to the Past*: 569–596. Prentice Hall, New Jersey.
- Yi, S. & Clark, G.A. 1983. Observations on the Lower Paleolithic of northeast Asia. *Current Anthropology* 24: 181–202.



Figure 3: Excavations at Bukit Bunuh, Malaysia



Figure 4: Excavations at Bukit Bunuh, Malaysia

Elizabeth Raddatz & Prof. Mokhtar Saidin

The recipient of the Wymer Bursary, Elizabeth Raddatz, is a PhD student in the Department of Archaeology, University of Cambridge. Her work on these sites is being conducted in collaboration with Prof. Mokhtar Saidin, Director of the Centre for Archaeological Research, Universiti Sains Malaysia.