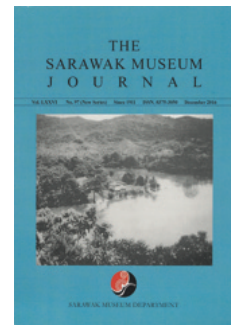




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DEEP SKULL FROM NIAH CAVE AND THE PLEISTOCENE PEOPLING OF SOUTHEAST ASIA

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ABSTRACT

The Deep Skull from Niah Cave in Sarawak (Malaysia) is the oldest anatomically modern human recovered from Southeast Asia. For more than 50 years opinions about its relevance to tracing the prehistory of recent people in the region have been in a state of flux. The most widely held view traceable to Brothwell's initial description and analysis is that the individual is related to Indigenous Australians and provides evidence to support the 'two-layer' model of human origins in Southeast Asia. Here we undertake a new assessment of the potential of the Deep Skull to inform these issues and in doing so provide a description of the specimen including a reassessment of its ontogenetic age, sex, morphology and affinities. We find that this individual was most likely to have been of advanced age and a female rather than an adolescent male as originally suggested. We also find that its morphology points towards its affinities being beyond Indigenous Australasians to East Asians. We propose that the Niah individual might best be considered part of a Negrito population that inhabited Borneo during the Pleistocene perhaps establishing their presence in Northern oceanic Southeast Asia by ~36 kyr.

Keywords: Modern humans, Pleistocene, Southeast Asia, Australasia, Niah Cave

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INTRODUCTION

Discussions about the initial settlement of Southeast Asia and Australasia by anatomically modern humans (AMH) have historically focused on evidence from a small number of Late Pleistocene human remains scattered across this broad region (Thorne *et al.* 1999; Dizon *et al.* 2002; Dètroit *et al.* 2004; Olley *et al.* 2006; Barker *et al.* 2007; Mijares *et al.* 2010; Storm *et al.* 2013; Demeter *et al.* 2012). In many cases, the geological age, and sometimes even taxonomic affinity, of these ancient remains continues to be uncertain (Thorne *et al.* 1999; Dizon *et al.* 2002; Dètroit *et al.* 2004; Olley *et al.* 2006;

Barker *et al.* 2007; Mijares *et al.* 2010; Storm *et al.* 2013; Demeter *et al.* 2012). This only serves to confound the already complicated task of reconstructing the colonisation routes and timing of dispersal of the earliest AMH across Southeast Asia and Australasia as well as their possible relationships to recent populations. Still, with recent advances in dating methods, several new field discoveries and the re-examination of existing but poorly characterised remains it is becoming clear that the earliest AMH appeared in this region by at least 45 ka (Barker *et al.* 2007; Mijares *et al.* 2010; Demeter *et al.* 2012), but potentially >80 ka, as shown recently at several sites in southern China (Bae *et al.* 2014; Liu *et al.* 2015; Curnoe *et al.* 2016).

Superimposed on the Late Pleistocene history of the region are more recent prehistoric migrations by farmers such as Sino-Tibetan, Tai and Austroasiatic speaking people into mainland Southeast Asia and Austronesian speakers across oceanic Southeast Asia (Bellwood 1997). The idea that these migrations resulted in the replacement of most of the hunter-gatherers of Southeast Asia by Neolithic populations has been debated now for close on 80 years (e.g. Callenfels 1936; Hooijer 1950; von Koenigswald 1952; Brothwell 1960; Coon 1962; Bellwood 1997; Matsumura & Hudson 2005). In particular, it has been widely agreed that these Late Pleistocene to early Holocene hunter-gatherers were related to recent Indigenous Australians and New Guineans, potentially even representing the earliest AMH to have settled the region ~60 kyr ago (Matsumura *et al.* 2008). This model, dubbed the 'two-layer' hypothesis (Jacob 1967), has enjoyed somewhat of a revival of late (Matsumura *et al.* 2008; Oxenham & Buckley 2016), being extended even to encompass the Late Pleistocene people of Japan (e.g. Kaifu *et al.* 2011).

For more than 50 years a key specimen in the debate surrounding the origins of AMH in Southeast Asia and the two-layer model has been the 'Deep Skull' from Niah Cave in Sarawak, Malaysia (Fig. 1). This cranium, lacking a mandible, was recovered in 1958 at the level of 106-110 inches in a trial trench dubbed 'Hell' in the West Mouth of the great Niah Cave (Gua Niah) system (Harrisson 1967). Soon after, a ¹⁴C date on charcoal suggested a possible age of ~39,600±1,000 BP (GRO1339) for this partial cranium. While some researchers have raised doubts about its stratigraphic context, suggesting it may have been an intrusive burial (Bellwood 1997; Wolpoff 1999), recent research by Barker *et al.* (2007) including detailed stratigraphic investigations, direct uranium-series dating of cranial bone and ¹⁴C of charcoal from adjacent sediments has confirmed it to be of Late Pleistocene antiquity – deriving from the period c45-39 kyrs BP and centring on an age of 37 kyrs BP (Reynolds &

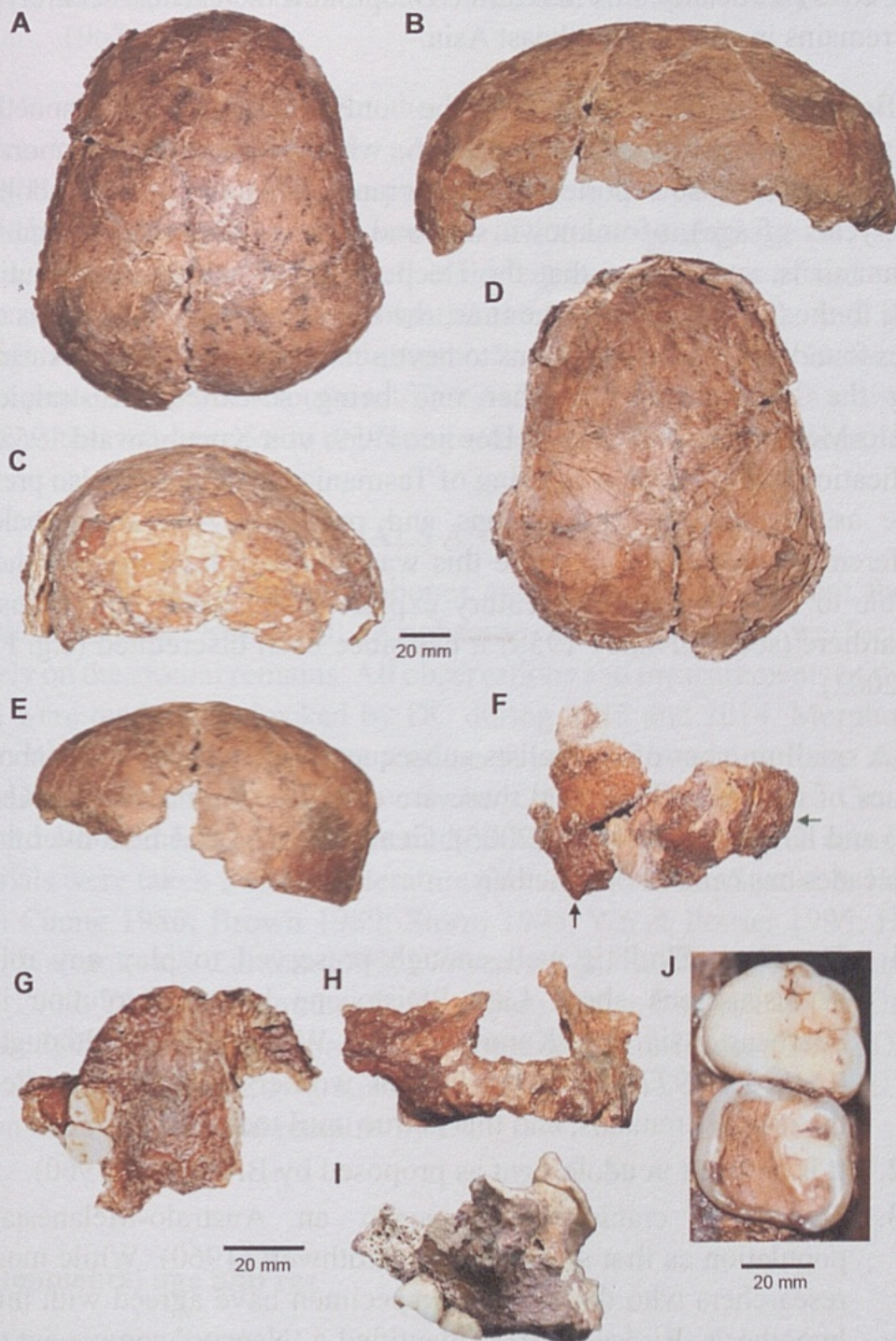


Fig. 1: Deep Skull from Niah Cave: calvaria in (A) superior view, (B) left lateral view, (C) anterior view, (D) posterior view, and (E) inferior/endocranial view; (F) left isolated parieto-temporo-occipital fragment in lateral view (black arrow, mastoid process; green arrow, occipital squama); maxilla in (G) inferior/palatal view, (H) anterior view, and (I) right lateral view; and (J) occlusal surface of maxillary molars.

Barker 2015). Crucially, this makes the Deep Skull the earliest securely dated AMH remains in oceanic Southeast Asia.

Brothwell (1960) provided the only detailed, but nonetheless incomplete, description of the specimen, which was published more than 50 years ago. He also reported that the cranium belonged to an adolescent (15-17 years of age), of unknown sex, and showed strongest resemblances to Tasmanians, speculating that the Deep Skull lay within an evolutionary lineage to the 'Negritoids'. At the time, the Negritoid race was seen as one of the two founding AMH populations to have settled Southeast Asia-Australasia during the Pleistocene, the other one being so-called 'Australoids' or Australo-Melanesian people (e.g. Hooijer 1950; von Koenigswald 1952). His identification of the cranium as being of Tasmanian affinity was also premised on the assumption that Tasmanians and mainland Australians belonged to different populations, and while this was a widely held view at the time traceable to the 18th and 19th Century explorers like Cook, La Pérouse and Labillardière (see Mulvaney 1958) it has since been discredited (e.g. Presser *et al.* 2002).

A small number of specialists subsequently offered opinions about the affinities of the Deep Skull, and these are usefully summarised by Kennedy (1977) and Krigbaum & Datan (2005). Generally, disagreement over the past four decades has centred on whether:

1. The Deep Skull is well enough preserved to play any role in discussions about Late Pleistocene human evolution in Southeast Asia (e.g. Kamminga and Wright 1988). Although, Kennedy (1977) has noted that few workers in the past studied the original remains, and this is true until today.
2. It is an adult or adolescent as proposed by Brothwell (1960).
3. The Niah cranium belongs to an Australo-Melanesian population as first suggested by Brothwell (1960). While most researchers who discussed the specimen have agreed with this hypothesis, Birdsell (1978) identified a 'Negrito' component to its morphology, Harisson (1977) suggested it might be more akin to contemporary 'Dayak' people from Borneo, and Wu (1987) has proposed that it belonged to a 'southern Mongoloid' group that included the Austronesian speaking people inhabiting the region today. Subsequently, Wu (1992) has suggested that the Deep Skull was part of a wider Southeast Asia race, which