BOOK REVIEWS


*Reviewed by Michael D. Petraglia, Leverhulme Centre for Human Evolutionary Studies, University of Cambridge*

In the Foreword of this book, India’s venerable prehistoric archaeologist, V. N. Misra, states (p. v) that, “Palaeolithic studies in India have made ... tremendous progress during the last four decades,” although he opines that an understanding of human evolution and behavior from the record is still “fragmentary” and “incomplete.” In an attempt to indicate what has been learned about the Acheulean, Raghunath Pappu has summarized the available evidence from a multitude of surveys and excavations. In doing so, Pappu has produced a sorely needed compendium centering on the Indian Acheulean. The book rightfully boasts that India is one of the richest areas of Acheulean occupation in the Old World, with solid evidence of Acheulean occurrences in diverse environmental settings. And on this score, the chapters nicely synthesize a diverse array of information about Quaternary environments and archaeological studies. No other current work is dedicated exclusively to the Indian Acheulean, thus this is a valuable and welcomed work.

Given his long research career at Deccan College, the author convincingly demonstrates that he is intimately familiar with all aspects of Acheulean investigations; this is substantially borne out in the site descriptions provided in Chapter 2 and in the up-to-date reference section. Chapter 3, simply entitled “Salient Features,” is a 51-page chapter of a 128-page text, summarizing a large array of topics: site distributions, habitats, tool types, technology, nature of assemblages, tool function, raw materials, Quaternary deposits, mammalian fossils, hominin remains, subsistence patterns, palaeoenvironments, settlement patterns, site formation processes, site catchment analysis, colonization pattern, chronology, and interregional comparison and correlation. It is impossible to address all of the interesting issues raised by the author in this section, but a few significant points deserve to be mentioned in a critical fashion.

Pappu provides the available radiometric dates for the Acheulean in Chapter 2 (and Appendix II), yet he appears to uncritically accept the reported estimates, which range from 600 to 66 kyr. Some of the samples should be considered in a cautious light owing to the applied radiometric techniques and the context of the archaeological associations. Although the presence of habitation structures and dwellings is supported by the author, potentially making these sites of global importance for understanding domestic activities, the available evidence remains highly dubious in light of modern critiques about the formation of Pleistocene sites. The importance of natural
processes in conditioning spatial arrangements should be expected, especially given Pappu’s own cogent review of the importance of site formation in Indian studies. Pappu nicely covers the evidence for Soan industries and discusses the lack of evidence for a pre-Acheulean industry. Based on this discussion, it remains clear that the initial colonization of India is an open-ended question despite a long history of research on this topic. Pappu shows that a large number of Acheulean tools are found throughout India, yet it is apparent that we still do not have convincing evidence of their function. This is the case even though Pappu generically associates particular tool types with specific tasks without the benefit of micro- and macro-wear studies. Forming major topics in Chapter 3, Pappu reviews the evidence for Quaternary deposits and mammalian fossils. While this regional discussion is useful, integrated environmental frameworks are not provided. Unfortunately, the dearth of evidence for Acheulean subsistence comes across clearly in this chapter; the lack of faunal and plant remains in association with Acheulean assemblages is blamed on the nature of the tropical climate and acidic soils.

Chapter 4, entitled “Acheulean Cultural System,” is a brief overview of the ecological and technological evidence in wider perspective. Pappu convincingly shows that Acheulean hominids adjusted to a variety of climatic, environmental, and physiographic zones. Yet, indicating that such studies still lack maturity, he pessimistically notes (p. 121) that “The ecological approach has not fully emerged as an integrated approach capable of isolating and identifying the relationships between the ecological variables governing human adaptations.” This is unfortunate as it would be extremely valuable to know how Acheulean hominids adapted to particular environmental and ecological circumstances, and how this may have differed with Acheulean populations in other geographic regions. A major topic raised by Pappu in Chapter 4 is the relationship of the Indian Acheulean to that of the West. Pappu rightfully notes close typological parallels with African counterparts, inferring a link between the two separated industries. If the Acheulean represents the basal occupation of India, as Pappu asserts, the timing of the colonization process remains a fascinating topic that deserves much more attention. From the overall discussion of the Acheulean, it is clear that more comprehensive and detailed studies in the future have the potential to make substantial advances in our understanding of hominin cognition, adaptive behaviors, and dispersal patterns.

A word should be raised about Pappu’s use of certain terms, for example, “culture” to describe the Indian Acheulean. Although the sustained use of this term in Indian Paleolithic studies may be a matter of convenience, it also has major behavioral implications. Available evidence in India and elsewhere indicates that Acheulean hominids did not possess a “culture” which is reminiscent of modern humans. Rather, these hominids appear to be practicing a form of behavior that is completely unfamiliar, without any resemblance to modern hunter-gatherers. Given this, many archaic terms, including “culture” to describe early human behavior, need to be carefully used by investigators who wish to more adequately describe past populations and their adaptive features.

Although a number of problem areas are raised here, this work represents the only book-length treatment concerning what we know about the Indian Acheulean. It is therefore recommended reading for those who wish to know more about the history and current status of Lower Paleolithic archaeology in India. Technical specialists will find this a useful source that synthesizes a wide corpus of information. A read of this book, however, will reveal the sobering fact that we know very little about the adaptive behavior and social organization of Pleistocene hominids occupying Peninsular India. Nevertheless, Pappu’s masterful synthetic treatment of the data should inspire others to carry out detailed surveys and excavations in an interdisciplinary format, allowing the region to capture a deserved place in global paleoanthropological syntheses.
Systematic, well-designed archaeological surveys have been noticeably rare in Indian Paleolithic studies. The relative poverty of methodical surveys to the present day is the case despite extremely productive results from a handful of earlier investigations. Certain earlier surveys over broad areas have identified large numbers of Paleolithic sites in Quaternary settings, amply demonstrated by comprehensive investigations in the Thar Desert, the Raisen District, the Ghataprabha Basin, and the Hunsgi-Baichbal valleys. Formal surveys and countless informal collections have identified numerous Lower, Middle, and Upper Paleolithic sites in many parts of the Indian subcontinent. As these surveys have thoroughly illustrated, the richness of the archaeological record of India is unparalleled in comparison to many outlying regions, and its potential wealth for understanding the evolution of human behavior is immense. Unfortunately, many field investigations have been plagued by an inexplicit behavioral orientation, concurrently sensitive to the geoarchaeological and formational history of deposits. This has led to major uncertainties about the age of Paleolithic material, as clear links often can not be made between artifacts and the deposits from which they are derived. Moreover, many non-Indian specialists have remained suspicious of behavioral reconstructions since many past investigations have not taken into account the contribution of natural agents and processes.

In light of the inadequacies of prior research, Shanti Pappu has implemented a formal survey in the Kortallayar Basin of southeastern India. The survey was an explicit attempt to improve upon the prevailing situation, assigning behavioral meaning to the variability evident in the Paleolithic archaeological record of the region. As part and parcel of her survey, the surveyor paid close attention to the depositional history of localities and the sedimentary contexts of artifacts in order to assess the degree to which site contents and material arrangements were the consequence of human activities. Pappu’s analysis of the formational properties of the archaeological record has resulted in a masterful and sophisticated treatment, ultimately allowing her to make convincing statements about hominid adaptations. Additionally, the analysis of stone tool technology and typology provides important supplementary information about the nature of Paleolithic assemblages on the Indian subcontinent. Particularly interesting information about raw material choices and mobility patterns are ascertained from her technological analyses.

In one of the five chapters comprising this volume, Pappu describes the results of her ethnographic experiences, centered on the Irula, with a series of transhumant populations that variably practice hunting and gathering. Ethnographic information is mined for data about residential settlements and activity areas, special purpose camps, territoriality and mobility, subsistence strategies, implement use, and butchering and food sharing practices. Pappu further explores a number of topics that she finds relevant for assessing the archaeological record, especially site types, mobility, subsistence, reoccupation, artifact recycling and reuse, and raw material choices. In investigating these topics, Pappu reminds the reader on several occasions that caution needs to be exercised in making any direct analogies to the archaeological record. While she does make prudent use of
the ethnographic information, the brevity of this work makes it a somewhat awkward fit with the wider Palaeolithic issues at hand. One gets the sense that an expanded ethnarchaeological work on the transhumant populations of the region would be better as a stand-alone volume.

The veracity and high quality of the Kortallayar survey findings are remarkable in light of the fact that the fieldwork was initiated and completed by a single researcher during the course of her Ph.D. research. While Pappu successfully follows in the footsteps of others in conducting impressive one-person research operations, readers will likely get the impression that much more information and efficiency would have been gained by assembling an interdisciplinary team. Undoubtedly, in-tandem observations by Quaternary geomorphologists and geoarchaeologists would have likely shed much more light on the depositional character and environmental settings of the Kortallayar localities, assisting in understanding site formation and identifying areas for more productive behavioral investigation.

Although Pappu understandably concerns herself with the regional record of the Kortallayar Basin, the concluding chapter teases the reader into thinking about the broader issues at hand. As Derek Roe cogently points out in the foreword of the volume, one wishes to know how investigations on the Indian subcontinent contribute to our understanding of the Out-of-Africa models, and more specifically, as Roe states, “Just who went exactly where, and precisely when did they do so?” In connection with this line of questioning, many paleoanthropologists certainly wish to know how the Palaeolithic industries of India relate to human evolutionary events outside the subcontinent, including debates over hominid continuity versus dispersal, the origin of modern humans, and the evolution of modern behavior.

Among research findings that have wider evolutionary implications, Pappu describes changing tool types from the Acheulean to the Middle Palaeolithic. Particularly notable is the identification of Levallois elements in the later Acheulean and diminutive hand axes in Middle Palaeolithic assemblages. In further scrutinizing this evidence, it appears that the Kortallayar assemblages are representative of a gradual technological shift, rather than a sudden one, across the Acheulean to Middle Palaeolithic boundary, complementing the evidence from other parts of southern India. As this technological reorganization is connected with significant behavioral changes and possible speciation events in Africa, one wonders how the Indian evidence fits into the overall evolutionary picture. Pappu nicely demonstrates the “prepared” quality of Middle Palaeolithic assemblages, seemingly providing further support for technological similarities with industries in the West, and dissimilarity with those in East Asia. Interestingly, Pappu indicates that her survey results aid little in understanding the Upper Palaeolithic. As she rightly points out, this may be the product of technological expectations for a blade-based industry rather than an absence of populations in the area. This issue will not be resolved until typological systematics are worked out, and stone tool sequences are established and dated in stratigraphic profiles. Pappu appears to be well on her way toward addressing issues of this kind, as one of the most important outcomes of her survey was the identification of Pleistocene landscapes with long stratigraphic profiles. In Appendix VI, recent excavations at the Attiramapakkam locality are preliminarily described, noting the presence of seven meters of deposits with Lower to Upper Palaeolithic industries, as well as animal teeth and footprint impressions, indicative of well-preserved surfaces. Without doubt, the paleoanthropology community will be hearing much more about the Kortallayar Basin in the near future since excavations there are ongoing.

As a final important note, publication of Pappu’s work in the BAR International Series is a most welcome development, as the results of many significant Paleolithic investigations in India are published only in home country presses and journals, thereby making access to the literature somewhat
difficult for nonspecialists. By reaching out to larger international audiences, as Pappu has admirably done, outside researchers will have an opportunity to learn more about the wonderful prehistory of India.


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Sangiran, a truncated dome of Plio-Pleistocene sediments in the Solo Depression of Central Java, is a prolific source of fossils, which span about one million years and include the majority of the world’s Homo erectus finds. The site is rightly listed with the World Heritage as an area of great geological, paleontological, and archaeological significance.

There has been a long history of scientific work at Sangiran beginning in 1893 with the visit of Eugene Dubois, who had just previously found the type specimen of Pithecanthropus (now Homo) erectus at the nearby site of Trinil on the Solo River. But the person who really put Sangiran on the map was Ralph von Koenigswald, who between 1934 and the coming of the Second World War in 1941, found the first Middle Pleistocene hominid remains and associated stone artifacts, used fossils from Sangiran to help describe the biostratigraphic sequence for Java, and was the first to apply the Kalibeng, Pucangang, Grenzbank, Kabuh, and Notopuro Stratigraphic sequence to the site.

Since then, many prominent researchers have worked at Sangiran right up to the present day. Jacob, Soejono, and Sartono, for instance, have all made significant contributions, as have many younger generation researchers, including Fachroel Aziz, Hisao Baba, Tony Djubiantono, Francois Semah, Anne-Marie Semah, Truman Simanjuntak, and Harry Widianto, to name just a few. Many of these have authored papers in this volume, which resulted from an International Colloquium on Sangiran held in Solo, Java on 21–24 September 1998. The aim of the International Colloquium, organized by the Indonesian National Research Centre of Archaeology, was to make Sangiran better known, to take stock of research results from a range of disciplines, and to provide a platform for further work.

The book comprises thirty papers divided into seven sections: Introduction, Early Man, Culture, Environment, Dating, Site Conservation and Museum Management, and Research Perspective. The papers range from general syntheses to very specific descriptions of individual finds. It is the former that are particularly useful. For instance, Harry Widianto’s description of the morphological characteristics of Indonesian Homo erectus and how these change over time includes a tabulation of all major Homo erectus finds up to that time, as well as information on stratigraphic context and evolutionary implications. It has long been known that the Indonesian H. erectus sequence is characterized by an increase in cranial capacity, more rounded contour, and decreased robusticity over time, but there is a major advantage in seeing the relevant evidence laid out so clearly and authoritatively. Similarly, the summary by François Semah, Anne-Marie Semah, and Tony Djubiantono—of the sedimentary
and paleoenvironmental history of the region, as well as at different sites, integrates a wealth of information from multiplet disciplines. In fact, this paper exemplifies the strength, in fact the necessity, for a multidisciplinary approach when dealing with the complexities of landscape transformation, taphonomy, and their archaeological implications over such a time depth—but is it correct, as they claim (p. 202), that at Kedung Cumpleng, a conglomerate bed within the blue clays of the Kalibeng Facies contains mammal fossils and artifacts?

Although most of the information presented in overviews has appeared previously—for instance, the revised faunal sequence for Java, as outlined by Fachroel Aziz and the chapter on paleomagnetic dating by Masayuki Hyodo—having it all in a single reference source makes access much easier and allows for comparison between different lines of evidence. It is also useful to see differences of factual presentation and interpretation, some of which, though, could have been sorted out during the colloquium (or by the editors?). Dates given by Widiasmoro, for the Kabuh Facies, for instance, do not fit well with dates given elsewhere in the book—an important difference since this unit has yielded the majority of fossil hominid remains at Sangiran.

Other papers are concerned with evidence from areas far removed from Sangiran, but provide a wider Australasian context. Zuraina Majid, for instance, describes Pleistocene sites in the Lenggong Valley region of Peninsula Malaysia, while Mokhtar Saidin describes the paleoenvironments of these and the Tingkayu sites of Sabah. There is also one Australian contribution: David Bulbeck presents the results of his quantitative analysis of cranial measurements of Australian Pleistocene finds, as well as some of the earliest modern human finds from Africa. He concludes that there was enough variability in the African material to account for all variation in Australian Pleistocene crania; that the first modern humans in the region (as characterized by Mungo 1 and 3 and the Deep Skull at Niah Cave in Sarawak) were relatively gracile and small, and that a massive increase in robusticity (as shown by WLH 50) was a local Australian adaptation to the harsh climatic conditions of the Late Glacial Maximum. If this is correct, then the clear implication is that the Indonesian H. erectus sequence was an evolutionary dead end with no relation to the rugged individuals from Kow Swamp. However, problems with dating specimens mean that Bulbeck is unable to discount the possibility that there were two migrations of modern humans into the region, an early robust population with possible input from the Indonesian H. erectus lineage, followed by the arrival of a gracile. As with most fundamental issues in archaeology, the core of the problem is dating.

Conservation and management issues for the Sangiran site are also comprehensively dealt with. The Sangiran Prehistoric Site Museum was constructed in 1983 and the area was listed with the World Heritage in 1996, but there is a continuing need to identify research, infrastructure, educational, and ecotourism priorities, as outlined in papers by Harry Untoro Drajet, Hasan Ambary, Tri Hatmadji and Rusmulia, and Luthfi Arisianto. They make the case that involving local people in aspects of site management and research is crucial for ensuring long-term protection of the Sangiran and its contents. This is particularly so in these economically oppressed times, as clearly demonstrated in Boedihartono’s description of finding a H. erectus skull for sale in an antique shop in Jakarta. This specimen (Sambungmacan 3) was subsequently illegally taken to America before being retrieved by Jacob, and is now in the collections of the Laboratory of Bioanthropology and Paleoanthropology Gadjah Madah University (Marquez et al. 2001). Presumably, given the strong economic temptation, other early hominid finds have been sold to private collectors, not returned and thereby lost to science.

For me the highlight of the volume is the reporting of stone artifacts at Ngebung in stratigraphic context with hominid remains from the Pucangan, Grenbank, and Kabuh layers, and dated to at least 800,000
These and similar finds from Ngledok, Dayu, and Kedung Cumpleng confirm the discoveries made by von Koenigswald in 1934. Claims that stone artifacts have not been found in association with Indonesian *H. erectus*, and that the species may, therefore, have been 'acultural,' have always been taphonomically suspect (e.g., Bowdler 1993). They can now be properly laid to rest. It is also significant that the earliest stone artifacts yet discovered in Java, a continental island with periodic land bridges to the Southeast Asian mainland, are about the same age as the earliest stone artifacts excavated in the Soa Basin of Flores, a Wallacean island which never had land connections with the Asian or Australian continental areas (Morwood et al. 1999; O'Sullivan et al. 2001). Is a 'Fast Train' model for initial hominin colonization of the Indonesian archipelago most appropriate, and what are the implications for the cognitive and technological capacities of *H. erectus*?

On the down side, it is true that the papers are of variable standard; that one has to sift through the volume to identify sections and points of real value; and that there is a lot of repetition with different papers describing and redescribing the general stratigraphic sequence, the history of research, etc. And there are those annoying small-time points of inconsistency, which undermine big-time credibility. For instance, has Sangiran yielded the remains of 70 *H. erectus* individuals representing 75 percent of the world total (Widianto), or about 60 individuals representing 50 percent of world total (Simanjuntak), or 50 individuals representing 65 percent of world total (Tri Hatmadji and Rusmulia)? But this is nit-picking. Overall, the colloquium and the resulting proceedings have succeeded in all their aims—and the organizers and editors are to be congratulated.

To conclude, this book, the first comprehensive publication on Sangiran, supplements and updates previous publications on early hominid sites in Indonesia (e.g., Franzen 1994; Watanabe and Kadar 1985), and fits well with the more recent synthesis on the archaeology of the adjacent Gunung Sewu region in the Southern Mountains (Simanjuntak 2002). It is an essential (and very reasonably priced) purchase for anyone interested in Indonesian or early hominid archaeology.

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