Quaternary International xxx (2017) 1–20

Contents lists available at ScienceDirect

Quaternary International

journal homepage: www.elsevier.com/locate/quaint

Between continuity and discontinuity: An overview of the West African Paleolithic over the last 200,000 years

B. Chevrier [a, b, *], É. Huysecom [a], S. Soriano [b], M. Rasse [c], L. Lespez [d], B. Lebrun [e], C. Tribolo [e]

[a] Laboratory Archaeology and Population in Africa, Department of Genetics and Evolution, Anthropology Unit, University of Geneva, Switzerland
[b] UMR 7041 CNRS, Archéologie et Sciences de l'Antiquité, Team Anthropologie des Techniques, des Espaces et des Territoires au Pliocène et au Pléistocène, Maison René Ginouvès, Nanterre, France
[c] Archéorient, UMR 5133 CNRS, University of Lyon 2, France
[d] Department of Geography, University of Paris-Est Créteil, France
[e] Laboratory IRAMAT-CRP2A, CNRS, University of Bordeaux, France

ARTICLE INFO

Article history:
Received 27 April 2016
Received in revised form
14 August 2017
Accepted 13 November 2017
Available online xxx

Keywords:
West Africa
Middle Stone Age
Diversity
Ounjougou
Falémé

ABSTRACT

In Paleolithic settlement models for Africa, West Africa has been neglected, if not entirely ignored, due to an obvious lack of research in the region but also of the availability of reliable and precise chronostratigraphic data. However, since 1997 research conducted at Ounjougou (Mali) has significantly updated our view of the West African Middle Stone Age with the establishment of the first archaeological and chronostratigraphic sequence and use of a comprehensive geomorphological approach. This site complex has provided most of the data for MIS 5 to 3, but in order to document MIS 2, one must turn to the Falémé Valley (Senegal), where data is now available from research conducted since 2011. Complemented with other scattered data from West Africa, it is now possible to propose a nearly continuous techno-cultural history for the Upper Pleistocene, supplemented by substantive evidence from the Early Holocene. We can now demonstrate significant diversity in lithic production systems, the probable times of their appearance and disappearance, and their very rapid rate of change. The Middle Stone Age in West Africa thus reflects a unique techno-cultural mosaic and technological history, very different from that observed in the Sahara and North Africa.

1. Introduction

For more than a century, numerous surveys and research in West Africa, conducted by isolated researchers as well as international teams, have revealed the existence of more than a thousand sites clearly indicating a human presence throughout the Paleolithic. Unfortunately, the use and attribution of the names of industrial facies, such as Lupembian, Sangoan, or Guinean Aterian, to inappropriate contexts have paralyzed the potential for a detailed techno-cultural approach (for a review, see Mauny, 1955; Davies, 1964; Hugot, 1967; Huysecom, 1987). Furthermore, despite this abundant yet scattered information, the western part of the African continent is either absent from review articles (McBrearty and Brooks, 2000; Pleurdeau, 2003; Marean and Assefa, 2005; Garcea, 2012; Lombard, 2012; Henshilwood and Lombard, 2013) or represented on maps by a multitude of points (Clark, 1967; Banks et al., 2006) for which the authors retain the information on the artifacts' discovery context or typological description (fig. A-suppl).

Above all, our knowledge of the Middle Stone Age in West Africa suffers from an unevenness in the quality and quantity of the research. This is in part due to political conditions as well as the logistical difficulties involved in accessing certain regions. Entire countries, such as Guinea and the Ivory Coast, are underrepresented on distribution maps, whereas high concentrations of archaeological sites are reported for others, for example Senegal and Ghana (Huysecom, 1987). Consequently, no meaningful spatial distribution can currently be constructed on the sub-continental scale. In addition, the lack of Pleistocene fauna and human remains, mostly due to the acidity of African sediments, has diverted elsewhere the attention of researchers interested in socio-economic approaches or modern humans origin.

Another problem typical of the Middle Stone Age in West Africa is the lack of precision in chronostratigraphic contexts. Most

* Corresponding author. Laboratory Archaeology and Population in Africa, Department of Genetics and Evolution, Anthropology Unit, University of Geneva, Switzerland.
E-mail address: benoit.chevrier@unige.ch (B. Chevrier).

https://doi.org/10.1016/j.quaint.2017.11.027
1040-6182/

discoveries are surface finds, and only very rarely found *in situ* in sedimentary formations that are fully understood and chronologically defined, whether in relative or, even less frequently, absolute terms. West African Pleistocene sites rarely contain charred material suitable for radiocarbon dating. The few sites that have yielded potential charcoal samples for dating have resulted either in *terminus ante quem*, due to very low ^{14}C concentration (e.g., the site of Nok, Nigeria: > 39000 uncal BP - Y-142-8; Barendsen et al., 1957; Fagg, 1969), or in dates that are considered aberrant because they are clearly too young (e.g., at Zenabi, Nigeria: 5440 ± 100 uncal BP, Y-142-7, Barendsen et al., 1957; Allsworth-Jones, 1981). This leaves Optically Stimulated Luminescence (OSL) as the main alternative method that can be used for fating in this region.[1] Yet few specialists in this technique are interested in West Africa as the sedimentary contexts are often difficult to analyze (cf. *supra*). Thus, on the scale of West Africa, the chronology of occupations that can be attributed to the Middle Stone Age remains largely unknown.

It should be stressed that the lack of clearly established stratigraphic contexts and absolute dates is prejudicial, particularly in this part of Africa, especially since a purely typological approach has been shown to be insufficient for building a reliable chrono-cultural attribution (e.g., Soriano, 2003).

The near-complete neglect of the prehistory of West Africa and the limited research in this area can be explained partly by the focus of researchers in other parts of the continent, i.e., the South, North and East, and partly by the predominance of population diffusion models which, as valid as they may be, often disregard the zones bordering the assumed migration routes. The Out of Africa models, whether those tracking the expansions of hominins in the Lower and Middle Pleistocene or the expansions of modern humans outside Africa, have generally been developed based on regions with the most data (which in some instances is limited to a few data points) and propose axes of mobility in the form of migration routes or arrows. This over-simplistic view leads in some cases to the elimination of concepts of space and time from settlement phenomena (Chevrier, 2012).

Several models have been proposed for the appearance and spread of anatomically modern humans. Most often, two very different explanatory models for the appearance of *Homo sapiens* are contrasted (for a review, see Groucutt et al., 2011). One proposes local, multi-regional and convergent evolution (Thorne and Wolpoff, 2003) while the other, nowadays more dominant, supports the hypothesis of a single, African, origin, with one or several migrations out of Africa (Lahr and Foley, 1998; Petraglia et al., 2010; Stringer, 2011, 2014; Mellars et al., 2013; Reyes-Centeno et al., 2014). The dominant model, the *Recent Single Origin* or *Recent African Origin* model, is backed up by paleoanthropological and genetic data which indeed support an African origin. However, the specific region of origin within this continent remains a subject debate (Lahr and Foley, 1998; Henn et al., 2011; Hublin and Klein, 2011; Stringer, 2011; Hublin and McPherron, 2012; Oppenheimer, 2012; Mellars et al., 2013; Groucutt et al., 2011). These models most often involve population movements via the Nile Valley, the Arabian Peninsula and/or the Mediterranean Basin. Since West Africa is not located on these migration routes, human migration models that take West Africa into consideration are rare. Therefore, West Africa remains largely overlooked or even entirely ignored in migration models based on paleoanthropological and archaeological data. However, unlike the latter, which has a tendency to be biased in selecting data, whether by geography (by excluding data considered to be disparate or incomplete) or by techno-typology (by focusing on a single artifact class, such as microliths or points) (Mellars, 2006; McBrearty and Brooks, 2000), the more encompassing genetic approach more willingly includes data from the West African zone (Hammer et al., 2011; Callaway, 2012). Yet, attempts at more inclusive regional and spatial archaeological analyses have been undertaken (especially in North Africa and Saharan Africa). These demonstrate a strong interpretive potential (Scerri et al., 2014). In particular the Sahara, which has been typically seen as a barrier to migration, should now be considered as a completely separate circulation zone just as the Green Sahara paleoenvironmental model proposes for MIS 5 (Osborne et al., 2008; Drake et al., 2011).

2. Ounjougou: a heuristic and methodological renewal

Such macro-regional approaches necessarily involve the collection of new and precise techno-cultural data within a well-established chronostratigraphic framework using proven methods. The establishment of local or micro-regional sequences provides extremely important information. Only two zones at present provide data in such a context: the Ounjougou site complex in Mali (including the Bandiagara Cliff) and the Falémé Valley in Senegal (Fig. 1).

Following the chance discovery in 1988 of a polished axe, a sandstone arrow point and a few stone flakes along the path between Sanga and Bandiagara, a find considered at first to be insignificant, one of the authors (E.H.) undertook a survey in this zone in the winter of 1993–94 (Huysecom, 1996). This led to the discovery of the Neolithic site of Ounjougou and the Paleolithic site of Orosobo, both the focus of brief test excavations between 1995 and 1997. Rapidly, tens of archaeological, geological and archaeobotanical sites were discovered in a 30 km^2 sector called the "Ounjougou site complex", after the locality where the first artifacts were found. The diversity of the cultural assemblages, covering all periods from the Middle Stone Age to the present, the thickness of the stratigraphic sequences and the preservation of plant remains in the Holocene formations (pollen, leaves, charcoal, wood, seeds, etc.) provided the opportunity, still nearly unique in West Africa, of studying human occupations in relation to climatic and environmental change over a long chronological sequence.

These elements led us to develop an international research program now entitled "Human settlement and paleoenvironment in Africa" in 1997. With the common objective of analyzing the response of human populations to climatic and environmental change using a multidisciplinary approach and addressing paleoenvironmental, stratigraphic, archaeobotanical, archaeological, ethnographic, linguistic, ethnohistorical and ethnoarchaeological questions. Among others, twelve institutions from five countries currently work in close partnership, both in the field and laboratory (Huysecom, 2002). Over several years, fieldwork was steadily expanded over an increasing geographic area, covering the Dogon Country in its entirety and, after ten years of research, this multidisciplinary approach enabled a chrono-cultural and environmental sequence for the region to be proposed, extending over at least the last 200,000 years, from the Lower Paleolithic to the present.

Unfortunately, given the unstable geopolitical context in Mali, in 2011–2012 we made the decision to develop our research program to the south, in a different environmental context. Our fieldwork was thus extended to the Falémé Valley in eastern Senegal, with the goal of complementing the human settlement/climatic-environmental change model constructed through our preceding research in the Dogon Country. Particular emphasis has been placed

[1] In this paper, we note that ^{14}C and OSL dates are expressed slightly differently. For radiocarbon dates, the use of BC (Before Christ) or BP (Before Present) indicates respectively the age before the years 0 and 1950, while ages obtained by OSL dating refer to the date that the sample was measured.

Please cite this article in press as: Chevrier, B., et al., Between continuity and discontinuity: An overview of the West African Paleolithic over the last 200,000 years, Quaternary International (2017), https://doi.org/10.1016/j.quaint.2017.11.027