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Dispersals Out of Africa and Back to Africa: Modern origins in North Africa

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ABSTRACT

This paper focuses on the dispersals of *Homo sapiens* out-of-Africa and discusses the succession of 'Out-of-Africa' and 'Back-to-Africa' movements from a North African perspective, as a major corridor of dispersal. Specifically, the consequences of anatomically modern human (AMH) dispersals both from North Africa into Eurasia and from there back into North Africa are investigated, and the archaeological and genetic outcomes of such forward and back migrations subsequently considered. In order to achieve these aims, this paper focuses on the dispersals of early modern humans out of North Africa during the Upper Pleistocene, explores possible hypotheses of interbreeding between AMH and Neanderthals, and analyzes the Back-to-Africa movement which appears to have occurred during the final Pleistocene. The debate on the possibilities, timing, and location of interbreeding has recently emphasized the importance of the encounters and genetic admixture between African AMH and Neanderthals when they met as a result of dispersal out of North Africa. The genetic evidence has also suggested a Back to-Africa migration by some AMH who had interbred with Neanderthals outside of Africa before resettling in North Africa.

1. Introduction

Migrations of early anatomically modern humans (AMH) out of Africa occurred during Marine Isotopic Stage (MIS) 5 (130–74 ka BP) and at the beginning of MIS 3 (59–24 ka BP) through different geographic routes (cf., among others, Lahr and Foley, 1994; Van Peer, 1998; Petraglia and Alsharekh, 2003; Drake et al., 2008, 2011; Osborne et al., 2008; Garcea, 2010a, 2012b; Van Peer et al., 2010; Armitage et al., 2011; Beyin, 2011; Groucutt et al., 2015a). A wide range of datasets support multiple dispersals from Africa, including chronological (Grün et al., 2005), environmental (Drake et al., 2011), behavioural (Bouzouggar et al., 2007; d'Errico et al., 2009), and technological ones (Groucutt et al., 2015b). These migrations can be grouped into two major passageways: a northern dispersal and a southern dispersal. The northern dispersal includes northeastern Africa through the Nile corridor (Van Peer, 1998; Vermeersch, 2010), the Sahara, and the Mediterranean coast (Osborne et al., 2008; Drake et al., 2011, 2013), which lead to the Levant; the southern dispersal involves the Horn of Africa and the Bab el Mandab strait, which lead to southern Arabia (Lahr and Foley, 1994; Armitage et al., 2011; Beyin, 2011). This paper focuses on the northern route, as northwestern Libya, where I conducted fieldwork from 2000 to 2010 as Co-Director of the Italian–Libyan Archaeological Project in the Jebel Gharbi, can contribute to this argument (see also Barich et al., 2006; Garcea and Giraudi, 2006; Garcea, 2010a, 2010c, 2012b, 2013; Spinapolice and Garcea, 2013, 2014).

When early modern humans moved into the Levantine region of southwestern Asia, another human population was possibly living there: Neanderthals. Although there is no solid evidence that Neanderthals and AMH chronologically overlapped (cf., e.g., Groucutt et al., 2015a), a certain degree of coexistence and continuity has not been ruled out (Hovers, 2006). Interrelations may have been at social and cultural level, or biological, or both. Given the evidence of domestic space allocation and differentiation, raw material concentration and redistribution, and delayed returns in food sharing, it has been suggested that the social relationship of Levantine Middle Palaeolithic modern and Neanderthal hominins "extended beyond immediate economic returns and was formally constructed" (Hovers and Belfer-Cohen, 2013: S348). Interspecific competition for the same ecological niche between AMH and Neanderthals has also been postulated (Shea, 2007). On the other hand, there may have also been imitations of reciprocal cultural traditions. Technological comparisons of the lithic toolkits made by AMH and Neanderthals in the Levant showed that the assemblages

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share similar features, such as the use of the Levallois technology. However, there are also technological differences in stone tool assemblages concurrently made by AMH in North Africa, such as in the production of Aterian tanged tools, which occur over a large area west of the Nile, but almost never in the Nile Valley and east of it, and bifacial points, which are also present at Skhul, in the Levant (cf., e.g., Richter et al., 2012; Hovers and Belfer-Cohen, 2013). Therefore, different local adaptations to diversified environments should be envisaged instead of a cultural advancement by AMH over Neanderthals (Richter et al., 2012) and neat distinctions between Levantine and North African tool productions can hardly be made.

Although such presumed competition eventually resulted in ultimate success for AMH, inevitabilities should not be assumed. Hunter–gatherers' movements did not involve straight lines or arrows on maps and the construction of an 'Out-of-Africa' model as a pioneering, directional movement is almost certainly incorrect. 'Back-to-Africa' movements have in fact been identified from about 45–40 ka (Olivieri et al., 2006), coinciding with ameliorated conditions in MIS 3, which may have been continuous up to >12 ka (Henn et al., 2012).

This paper approaches the debate on Out-of-Africa migrations from the perspective of this population backflow into North Africa. The specific consequences of the movements of AMH populations from North Africa into Eurasia are examined, together with the archaeological and genetic outcomes of the AMH who moved back into North Africa. The cultural panorama of the various populations and their technological solutions in northeastern Africa are explored, including in the Mediterranean coast of Africa. Finally, possible hypotheses of interbreeding between AMH and Neanderthals are considered in conjunction with a Back-to-Africa migration, which appears to have occurred during the final Pleistocene.

2. The Middle Stone Age in Mediterranean Africa

Modern humans had reached North Africa before the onset of the Upper Pleistocene and of the Aterian techno-complex. The site of Jebel Irhoud, in Morocco has been dated to around 160 ka BP (Hublin, 2000; Smith et al., 2007), whereas the earliest Aterian assemblages at Ifri n'Ammar in Morocco provide age estimates at the boundary of the Upper Pleistocene. For example, Aterian assemblages at Ifri n'Ammar have been dated to ~145 ka (Richter et al., 2010), Dar es Soltan I and Taforalt to 122–121 ka (Barton et al., 2009; Schwenninger et al., 2010), and Grotte des Contrebandiers between 120 and 90 ka (Dibble et al., 2012). However, while the human fossil remains from Jebel Irhoud represent early AMH, their cranial morphology is less modern (Stringer, 1974; Gunz et al., 2009; Harvati et al., 2011) and their facial morphology is not closely related to the sample of Dar es-Soltan II-5, which is associated with Aterian artefacts (Harvati and Hublin, 2012). Consequently, some researchers do not consider the Jebel Irhoud individuals to represent a modern human origins palaeodeme (Reyes-Centeno et al., 2015, but see Bräuer, 2012). By contrast, the anthropological remains from Aterian sites, such as Grotte des Contrebandiers and Dar es Soltan, Morocco, are fully representative of AMH and display morphological similarities with the earliest known skeletal remains of AMH found outside Africa, at Skhul and Qafzeh, in the Levant (Hublin, 2000; Harvati and Hublin, 2012), which provided age estimates of 135–100 ka and 130–100 ka, respectively (Grün et al., 2005).

Differences also exist in the stone industries from Jebel Irhoud (see, for example, Balout, 1970; Salih, 1995) and later Aterian assemblages emerging with the Last Interglacial. As far as can be seen given the limited data, human populations produced much more diversified technologies from MIS 5 than existed previously. For example, in the Jebel Gharbi, northwestern Libya, Early MSA industries (Fig. 1) have always been found in stratigraphic geological series older and under layers including tanged, 'Aterian' artefacts (Garcea and Giraudi, 2006). They also differ from Aterian assemblages as they are often made on local limestone, rarely on grey and brown chert, and never on non-local quartzite. By contrast, chert is the most frequent raw material in Aterian assemblages, quartzite is common, and limestone is extremely rare (Spinapolice and Garcea, 2013, 2014). Technologically, the traditional Levallois method seems to be more frequent in the Early MSA in the Jebel Gharbi than in the later Aterian. It is also possible that the Nubian-type 1 method of production (cf., Van Peer, 1991) only occurs in the Early MSA (Garcea, 2006), although further dates are needed to conclusively test this hypothesis. Early MSA blanks are also larger, wider, and thicker, and toolkits include frequent sidescrapers (Fig. 1.1–2) and denticulates (Fig. 1.3–4) but lack endscrapers, burins, becs, backed tools, and truncated flakes, which are present in the Aterian (cf., Spinapolice and Garcea, 2014).

The spatial diversity of technology from MIS 5 is also striking. Aterian assemblages are not just MSA assemblages with the addition of tanged pieces (Fig. 3.1–5), as was presumed a long time ago (Reygasse, 1922; Bordes, 1961) and has been restated (Dibble et al., 2013). A combination of distinctive features in different regions of North Africa have been identified to define the Aterian, including butt thinning and ventral retouching (Caton-Thompson, 1946), bulbar basal thinning and bifacial retouching (Kleindienst, 1998), small centripetal Levallois and discoidal cores (Fig. 2), and bifacial foliate points (Bouzouggar, 1997; Bouzouggar and Barton, 2012; Spinapolice and Garcea, 2013, 2014) (Fig. 3.6–10). These analyses emphasise the danger of defining the variability of a near continental-scale techno-complex on the basis of one region (i.e., the Maghreb) alone, particularly when temporal resolution is so poor.

In addition to the above typological observations, there are technological investigations indicating considerable variability. For example, some assemblages from the Jebel Gharbi show that blade production can be the second most commonly used reduction method. Non-local quartzite appeared to have been specifically selected to produce more elongated blanks (Spinapolice and Garcea, 2013). Cores were exploited volumetrically, both by rotating the cores by 90° in order to increase their exploitation surface, according to the Taramsa method, as well as through true volumetric knapping methods (Spinapolice and Garcea, 2014) (Fig. 2). The use of these methods may indicate a later MIS 3 date for these assemblages. The latest dates for the Aterian are in fact around 40 ka in the Jebel Gharbi, Libya (Garcea and Giraudi, 2006), and around 37 ka at Taforalt, Morocco (Barton et al., 2013).

Technological comparisons of Aterian lithic assemblages from the Mediterranean coast of Africa demonstrated that the groups living in the northwestern part of Africa, such as the Maghreb, i.e. at Grotte des Contrebandiers in Morocco, shared similar technological traditions with those settled in the Jebel Gharbi (Wadi Ghan) in northwestern Libya, whereas those settled in the northeastern part of Africa produced a type of industry that was still Aterian, but appeared to be clearly distinct from Aterian assemblages in the northwest (Scerri, 2013; Scerri et al., 2014) (Table 1). Scerri (2013) observed no significant discrepancies between the northeastern assemblages classed as Aterian from Kharga Oasis in Egypt and others classed as Nubian Complex from the Nile Valley. On the other hand, the technical similarities between the industries from the Maghreb and those from the Jebel Gharbi have been ascribed to a connection facilitated by a shared savannah biome that existed during MIS 5 in the Maghreb and along the Tripolitanian coast,