

Discussion Forum

MANUPOINTS PREDATE MODERN HUMANS: A RESPONSE TO WILKINS *ET AL.* (2021)

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(Received May 2021. Revised December 2021)

In a published paper in *Nature*, entitled ‘Innovative *Homo sapiens* behaviours 105 000 years ago in a wetter Kalahari’, Wilkins *et al.* claim that “the emergence of human behaviours that are regarded as uniquely modern” was not limited to coastal Africa as previously postulated (Wilkins *et al.* 2021: 252). Their argument is based, *inter alia*, on archeological evidence from the Ga-Mohana Hill site, in the South African Kalahari, which has delivered ostrich eggshells and presumably manuported (i.e. transported over a distance [Bednarik 2002, 2013a]) calcite crystals, dated to ~105 ka. It is concluded that this supports the cognitive and cultural modernity of the local population of presumed *Homo sapiens* that occupied the site, that “behavioural innovations among humans in the interior of southern Africa did not lag behind those of populations near

the coast”, and that “models that tie the emergence of behavioural innovations to the exploitation of coastal resources by our species may therefore require revision” (Wilkins *et al.* 2021: 248).

In a commentary on this paper in the same issue, Pamela Willoughby (2021) essentially supported this view. The commentary was entitled ‘Early Africans living inland collected unusual objects’, with the conclusion that the ostrich eggshells and crystals “reveal that technological innovations occurred beyond its coast”, and suggest that “it is time to revise current thinking about the emergence of cultural innovations among early human populations” (Willoughby 2021: 193). We would like to introduce the following relevant aspects to this debate.

We contend here that the collection of non-utilitarian geological items was likely widespread across Africa, and the Old World, well before the evolutionary origin of anatomically modern *Homo sapiens*, and thus does not represent a uniquely modern behavioural innovation (Fig. 1). This response will focus on manuports (Bednarik 2002, 2013a), the archaeological record of which can be followed as far back as the late Pliocene (Bednarik 2002, 2013a, 2017; Helm *et al.* 2019) as acknowledged by Wilkins *et al.* (2021), and is not limited to modern *Homo sapiens* (Oakley 1965; Soressi & d’Errico, 2007; Caron *et al.* 2011; Moncel *et al.* 2012; Bednarik 2013a,b). For example, in Morocco, Bednarik (2013a) reports the discovery of two manuports from Acheulian sites – the Erfoud manuport (an *Orthoceras* fossil shaped like a penis) and the Tan-Tan proto-sculpture (a modified piece of quartzite) – which in the region are no younger than 300 to 200 ka (Herries 2011; Sahnouni *et al.* 2018). The Acheulian industry is usually associated with *Homo erectus* (Herries, 2011; Sahnouni *et al.* 2018); however, recent dating

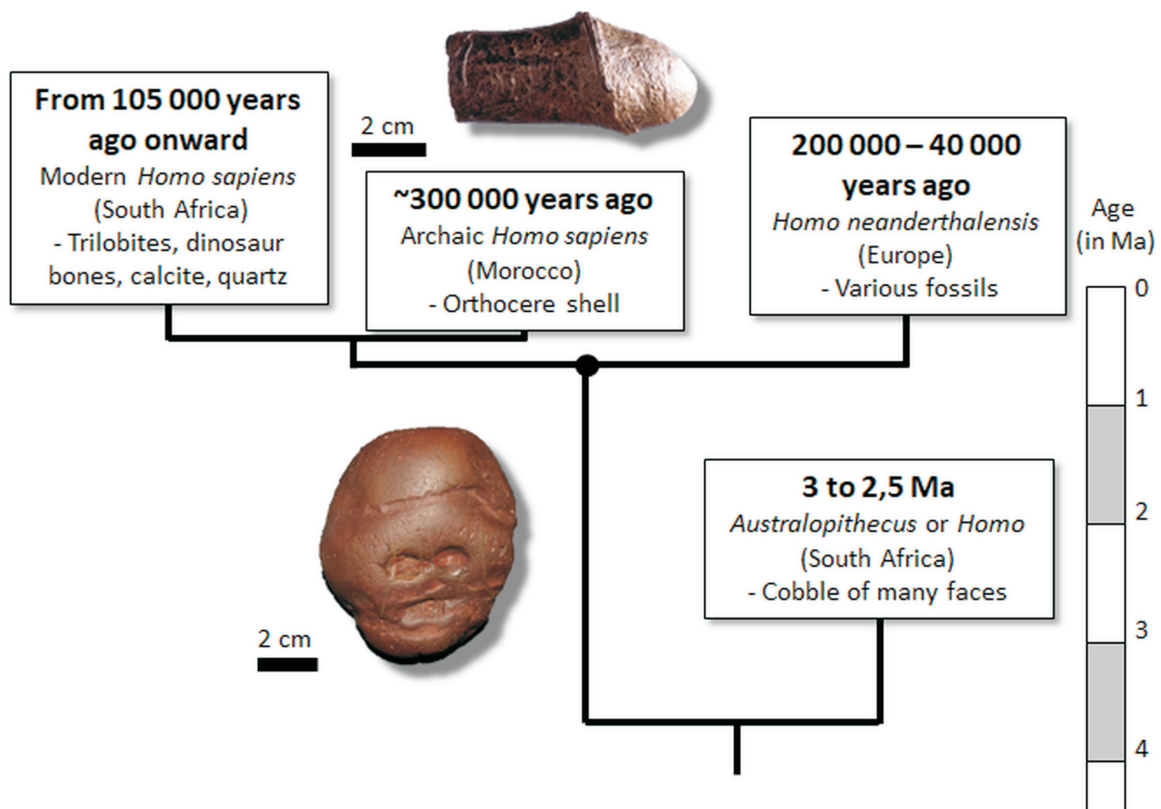


FIG. 1. The deep phylogenetic antiquity of non-utilitarian collection of geological items. Phylogeny and divergence ages after Prüfer *et al.* (2014). Photographs: top: the Erfoud manuport; bottom: the ‘Cobble of Many Faces’ (courtesy of Bernhard Zipfel, ESI, University of the Witwatersrand).

suggests that an anatomically archaic form of *Homo sapiens* or perhaps another species of archaic human (*H. rhodesiensis*/*H. helmei*/*H. heidelbergensis*) was the most likely occupier of these sites (Hublin *et al.* 2017; Helm *et al.* 2019; Grün *et al.* 2020). These two manuports suggest that the symbolic interpretation of geological items predates the origin of modern *Homo sapiens*, especially the Tan-Tan proto-sculpture which was seemingly intentionally modified to look more human-like and painted red (Bednarik 2002, 2013b; Helm *et al.* 2019) (but see Moncel *et al.* [2012] and references therein).

Furthermore, clusters of small water-worn pebbles and quartz crystals in the Wonderwerk Cave, another inland site less than 60 km from the Ga-Mohana Hill site, must have been collected a considerable distance from the site (Bednarik 2013a). They were found in a number of levels dated from ~276–500 ka (Horwitz & Chazan 2015). Additional southern Kalahari sites with petroglyphs suggest human occupations during three favourable, widely spaced intervals, i.e. from 8 to 2 ka, 130 to 115 ka, and the oldest from about 410 to 400 ka (Beaumont & Bednarik 2015). These sites and the Wonderwerk Cave support that the Kalahari was populated and that manuports were transported there before the origin of modern *Homo sapiens* (Hublin *et al.* 2017; Schlebusch *et al.* 2017). Wilkins *et al.* (2021) and other authors (Bednarik 2017) list other similarly old, inland sites predating the Middle Stone Age. Despite their debatable age and often lack of taphonomic details, we argue that these lines of evidence should not be left aside, *contra* Wilkins *et al.*

In Europe, northern Africa and Israel, there are countless occurrences spanning the Acheulian and Mousterian archaeological record of fossils and other geological items that were intentionally collected and manuported by various hominin species to, for example, make beads (Rigaud 2009; Caron *et al.* 2011; Bednarik 2013b), create ‘decorated’ stone tools (Odin *et al.* 2006; Soressi & d’Errico 2007), or collect as curios (Oakley 1965; Moncel *et al.* 2012). The earliest manuported crystals occur in Zhoukoudian Site 1 (China), and Singi Talav (India), and are attributed to Asian *Homo erectus* (Moncel *et al.* 2012; Bednarik 2013b; Harrod 2014). Again, this indicates that symbolic thinking and manuport collection are not unique to modern *Homo sapiens* (Soressi & d’Errico 2007; Caron *et al.* 2011).

Other possible collection of non-utilitarian-use geological items, though less well-supported or dated, has been recorded for *Homo habilis*, *H. erectus*, *H. antecessor* and *Australopithecus* (Oakley 1981; Bednarik 2009, 2013a,b; Moncel *et al.* 2012; Harrod 2014), the oldest and most intriguing being the ‘Cobble of Many Faces’. This is a jaspilite river cobble naturally displaying a face pareidolia (Fig. 1), which was manuported to the Makapansgat cave by, presumably, an australopithecine (Dart 1974; Oakley 1981), although early *Homo* was contemporaneous with the deposit too (Bednarik 1998; Villmoare *et al.* 2015). The cobble comes from member 3 of the Makapansgat cave (Dart 1974), which is dated between 3.03 and 2.58 Ma (Edwards *et al.* 2019; Pickering *et al.* 2019), thus pushing the possible origin of manuporting behaviour as far as the late Pliocene (Fig. 1).

Regardless of such arguments, questions can be asked about the level of evidence presented by Wilkins *et al.* (2021), and whether the calcite crystals were indeed manuports that were introduced from elsewhere, given that such crystals occur naturally in the shelter. In our view, based on the information presented, it is not inconceivable that crystals of high quality could have occurred in pockets along the seams of the shelter, and that their gradual erosion could account for their vertical distribution. With regard to the second implied ‘innovation’ identified at the Ga-Mohana Hill site, namely the presence of fragments of ostrich eggshells, we note that although flasks are

mentioned, no evidence is presented that the Middle Stone Age fragments were collected for either utilitarian or non-utilitarian purposes.

Our understanding of the coastal model referred to by Wilkins *et al.* (2021) is that it involves a composite of many adaptations to a coastal existence that together form evidence for cultural complexity (Marean 2010), some of which may have been true ‘innovations’, some of which may apparently have no known precedent due to bias, and others which may have been elaborations of human behaviour that have been reported from older sites. Examples include the production of bladelets (Brown *et al.* 2012), sophisticated heat treatment of lithics (Brown *et al.* 2009), production of bone tools (Henshilwood & Sealy 1997; Henshilwood *et al.* 2001; Wurz 2008), palaeoart in the form of engravings in ochre (Henshilwood *et al.* 2002; Watts 2010) and a drawing using an ochre crayon (Henshilwood *et al.* 2018), use of jewellery in the form of perforated shells (Bednarik 2005, 2017; d’Errico *et al.* 2005), the regular use and modification of pigments as early as 162 ka (Marean *et al.* 2007), and early evidence for dedicated (as opposed to opportunistic) coastal foraging for seafood (Marean *et al.* 2007; Marean 2010). The identification of these multiple lines of evidence is remarkable, given the substantial Pleistocene sea-level oscillations which have presumably destroyed nearly all Pleistocene coastal sites (Roberts *et al.* 2012). The evidence for these behaviours can be contrasted with the evidence presented by Wilkins *et al.* (2021) that allegedly challenges the coastal model. Our vision does not preclude a non-coastal origin of modernity as it implies that the innovations advocated by Wilkins *et al.* (2021) were already widespread in Africa and the Old World well before the origin of modern *Homo sapiens*, and were likely not unique to this taxon.

In summary, Wilkins *et al.* (2021) have thoroughly documented and dated an interesting southern African site from the Middle Stone Age. If the argument is accepted that the calcite crystals are manuports, then they form the oldest known example of calcite manuports currently known, and this would incidentally draw much-needed attention to a hitherto largely neglected aspect of African indigenous knowledge of geology (Helm *et al.* 2019). These authors have also conducted a thorough literature review of other southern African manuports. Our review of the literature supports the view of Wilkins *et al.* (2021) that the behaviour associated with the intentional transport of non-utilitarian geological items was not limited to coastal populations of anatomically modern *Homo sapiens* in South Africa. However, we argue that far from being an ‘innovation’ as advocated by Wilkins *et al.* (2021: 248), such behaviour predated the occupation of the Ga-Mohana Hill and all Middle Stone Age coastal sites, and was in fact widespread temporally, spatially, and across hominin taxa. Definitive occurrences of manuports are documented in *Homo neanderthalensis* (Oakley 1981; Soressi & d’Errico 2007), whereas tentative ones are hypothesised in archaic *Homo sapiens* (Bednarik 2013a; Helm *et al.* 2019). Although collecting and transporting objects of a certain shape, lustre or colour is not uncommon in the animal kingdom (e.g. in Ptilonorhynchidae) (Solomon *et al.* 1986), manuporting is unknown in non-hominin Great Apes (Borel *et al.* 2016).

The extreme antiquity of manuports demonstrated here implies that they cannot provide evidence of a modern behavioural trait, and we contend that their possible presence at the Ga-Mohana Hill, or any other Middle Stone Age site, does not constitute an innovation unique to *Homo sapiens*. The cultural and cognitive roots of manuporting behaviour – and the possible origin of symbolism inferred from it – are, to us, much deeper than this (Fig. 1).

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