

Continuing the wild goose chase: a response to d’Errico and Stringer

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In 2011 d’Errico and Stringer, former advocates of the ‘replacement hypothesis’ (aka ‘African Eve model’), published a fascinating paper in the *Philosophical Transactions of the Royal Society* entitled ‘Evolution, revolution or saltation scenario for the emergence of modern cultures?’. It deserves a detailed response because it addresses such an important topic. In this paper they attempted to “evaluate the scenarios proposed to account for the origin of modern cultures in the light of the earliest archaeological evidence for crucial cultural innovations, including symbolically mediated behaviours, in Africa, Asia and Europe”. In this paper d’Errico and Stringer (henceforth ‘the authors’) signal a significant retreat from the two-species model, finally admitting that recent findings refute their own “long-standing model that proposes all living humans trace their ancestry exclusively back to a small African population”. This tends to give the impression that this African Eve model had to be replaced because of new evidence, when in fact there was never any palaeoanthropological, archaeological or genetic evidence in its favour. It had simply been a hypothesis that began with the 1970s hoax of Protsch (1973, 1975), was adopted by Bräuer (1984) and popularised in the late 1980s (Cann et al. 1987; Stringer & Andrews 1988; Mellars & Stringer 1989). Despite its manifest lack of credibility it was adopted so widely that it became the de facto dogma of the discipline, opposed by very few commentators during the 1990s (Bednarik 1991, 1992, 1995 *et passim*; Brace 1993, 1999; Wolpoff & Caspari 1996; Wolpoff 1999; Eckhart 2000).

Nevertheless, from the perspective of those few, the authors’ statement “[o]nce firmly separating us from the remainder of present and past hominids, genetic and behavioural boundaries are becoming less and less well defined” has no justification. What are these genetic and behavioural boundaries? They only existed for those who had been misled by Protsch’s false model. For those embracing

Weidenreich’s model of human evolution, the boundaries introduced by the replacement hypothesis had never existed and robust and gracile forms of *Homo sapiens* had never been separate species. This is the defining error of the ‘African Eve’ theory, and while its advocates now concede that they were wrong, the model they now seek to replace it with is just as wrong. They refer to a significant interbreeding between robust and gracile *H. sapiens*, still maintaining that there were two separate populations, when the more parsimonious explanation of the genetic evidence is that robust populations were subjected to a process of gracilisation (or, perhaps more correctly, neotenisation) that is still underway today. Of course there were “intermediate” specimens and even populations, especially from c. 40 ka to 25 ka ago, as one would expect from a period of rapid somatic changes to the human species.

Those changes occurred in all human populations of the Late Pleistocene world, all during the same time interval, and without being connected to the transition from Mode 3 (‘Middle Palaeolithic’, MP) to Mode 4 (‘Upper Palaeolithic’, UP) technocomplexes. For instance in Europe, all early UP traditions (such as the Aurignacian, Châtelperronian, Uluzzian, Proto-Aurignacian, Olschewian, Bachokirian, Bohunician, Streletsian, Gorodtsovian, Brynzenian, Spitzinian, Telmanian, Szeletian, Eastern Szeletian, Kostenkian, Jankovichian, Altmühlian, Lincombian or Jerzmanovician) seem to be attributable to so-called Neanderthals or their ‘intermediate’ direct descendants (Bednarik 2008a). In the Levant, both MP and UP technologies occur with robust, intermediate and gracile groups. ‘Intermediate’ Late Pleistocene specimens occur literally in their hundreds across Eurasia, from Portugal to China (e.g. at Lagar Velho, Crô-Magnon, Miesslingtal, Mladeč, Pavlov, Předmostí, Podbaba, Dolní Věstonice, Cioclovina, Bacho Kiro, Peștera cu Oase, Peștera Muierii, Crete, Starosel’e, Rozhok, Akhshtyr’, Romankovo, Samara,

Sungir', Podkumok, Khvalynsk, Skhodnya, Denisova, Balangoda, Tam Pa Ling, Jinniushan, Red Deer (Maludong), Longlin and Tianyuan Caves; and WLH-50 from Willandra Lakes or the two very different specimens from Narmada also clash severely with the simplistic African Eve notion), and yet the promoters of the replacement hypothesis ignored their existence. Not surprisingly, they are now obliged to withdraw their model, but they are replacing it with yet another frivolous construct, again burdening the discipline unnecessarily. The notion of two populations, one robust (the 'primitive Neanderthals'), the other gracile ('anatomically modern humans', a nonsensical concept; Latour 1993; Tobias 1996; Bednarik 2011a), who 'interbred' on occasion is another falsity. Such two peoples interbred no more than great-grandchildren interbreed with their great-grandparents. One group developed gradually into the other, through a process of introgressive hybridisation (Anderson 1949), allele drift based on generational mating site distance (Harpending et al. 1998), and genetic drift (Bednarik 2011b) through episodic genetic isolation. That is precisely why, during the early UP traditions, there are so many 'intermediate' hominin specimens: because they were intermediate between the earlier more robust and the later more gracile people.

What perhaps facilitated the establishment of the replacement model is that the change, while clearly being gradual, nevertheless occurred in a geological instant, in the course of a few tens of millennia. This, perhaps more than any other factor, generated the ready acceptance of this hypothesis. The observation that during the 'transition' (in reality, every evolutionary process is a series of transitions) robust and gracile physiologies co-occurred with intermediate morphologies, and the tendency of scholars of placing these into pigeonholes of species contributed to the erroneous model. Palaeoanthropologists have now created many dozens of hominin 'species', many of which are represented by single specimens. At the rate of 'discovering' new species we will one day have as many as we once had grizzly bear species (some 300, when in fact the grizzly is not even a separate species of *Ursus arctos*). *Homo sapiens neanderthalensis* and *Homo sapiens sapiens* are obviously of one species, as it had been assumed before the African Eve interlude and as the authors have finally conceded. Where the supporters of this model probably became lost is that they assumed that only one process could logically account for the relatively swift neotenisation in Final Pleistocene hominins. This is similar to their mistaken belief that the geographical movement of genes can only mean mass movement of people.

The fact that a much better, much more robust and much more elegant solution explaining the rapid gracilisation beginning about 40 ka ago has been available for years (Bednarik 2008a, 2008b, 2011a) is simply ignored by the authors. They are not concerned with finding a rational explanation for the massive changes evident, but are captivated by rationalising why their African Eve notion was a falsity. Instead of engaging in a constructive dialogue they explain why recent genetic evidence has refuted ideas that had no justification in the first place; these ideas were always false, and that had always been appreciated by some. The authors still invoke "cultural modernity", citing clichés

such as "altruism, enhanced memory, complex language", seemingly unaware that altruism exists in insects, recursive language is demanded by maritime colonization at least a million years ago (Bednarik 1999, 2003, 2014a *et passim*), and they fail to explain what they mean with the third variable or how they propose to demonstrate it. Their list of the indications of human modernity is so naïve that one wonders why it was assembled:

Exploitation of coastal environments; greater complexity of food gathering procedures, such as the use of nets, traps, fishing gear; complex use of fire for cooking, food conservation; ecosystem management; producing and hafting stone tools; invention of specialized tool-kits to adapt to extreme environments; higher population densities approaching those of modern hunter-gatherers; complex tools, the styles of which may change rapidly through time and space; structures such as huts that are organized for different activities; long-distance transport of valued materials; formal artefacts shaped from bone, ivory, antler, shell; musical traditions; sea crossing and navigation technology; personal ornamentation in the form of body painting and personal ornaments; art, including abstract and figurative representations; evidence for ceremonies or rituals; complex treatment of the dead (d'Errico and Stringer 2011: 1061).

Since we know absolutely nothing about the exploitation of coastal environments or the food gathering of coastal people of the entire Pleistocene, because the successive sea-level fluctuations have destroyed all evidence, the first few items are simply irrelevant. Besides, a great many species have learned to exploit coastal environments; there is nothing modern about it. Complex use of fire has been demonstrated as far back as 1.7 million years (Beaumont 2011). Credible evidence for food conservation and ecosystem management is unavailable from any Pleistocene context. The hafting of composite tools predates the UP greatly, and to suggest that we know something about population densities from the entire Pleistocene is simply false. We have evidence of huts from Lower Palaeolithic sites in France, Germany, Africa and India, in one case of stone foundations of an entire Acheulian village with a cemetery and latrine (Ziegert 2010). Artefacts of bone, ivory, antler and shell have been reported from hundreds of sites of the MP and LP. Evidence of musical instruments of the MP has been reported (e.g. Huyge 1990; Turk et al. 1995; Turk & Dimkaroski 2011) but one of the authors rejects it (d'Errico et al. 1998). Evidence for early sea crossings has been tendered since the 1960s, has been subjected to considerable attention since then (e.g. Bednarik 1999, 2003, 2014a, and dozens of other publications) and extends at least one million years into the past. Personal ornaments such as beads as well as what the authors define as "art" have been found from the LP and throughout the MP. And the 80 graves of the 400-ka-old cemetery excavated at Budrinna may simply be the response of sedentary to semi-sedentary groups to the needs of disposing of cadavers so as not to attract scavengers. In short, if this list of variables is all we can come up with in defining behavioural modernity it extends into the Early Pleistocene, and it beggars the question why the subject is raised in the context of the appearance of supposed anatomical modernity. Perhaps the authors could respond to Bednarik (2012) in order to begin a more mature

discussion of the topic.

The authors ask the very legitimate question, what is the earliest evidence for symbolic behaviour in the archaeological record. Their answer, however, suggests that they are so inadequately informed about the topic that their findings are inconsequential. To begin with, they provide no proof that any of the material finds they list are necessarily symbolic: for instance why would human interment or pigment use necessarily demonstrate symbolism? They recite a list of beads and portable engravings that implies that these are all the relevant finds they are aware of. Considering that a catalogue of Pleistocene palaeoart finds of all continents other than Antarctica lists thousands of motifs or objects of Modes 1, 2 and 3 industries (Bednarik 2013a, b, 2014b, c, d), it would have been best to omit their severely limited effort.

The notion that geographical movement of genes (or memes) can only mean mass movement of people is negated by introgression and the concept of cumulative mating site distances. These apply not only in the animal world, to species that have adapted to all environments from the Arctic to the tropics; they also determine hominin genomes. The presence of robust groups within the Arctic Circle (Norrman 1997; Pavlov et al. 2001; Schulz 2002) implies that all reasonably habitable regions of Eurasia were fully occupied by them about 130 ka ago; therefore the fantasies of mass migrations into unoccupied areas never had any currency. But the greatest failure of the countless replacement advocates, including these authors, has been their faith in the belief of the sharp separation of robust and gracile species, preventing them from seeing the most rational explanation for the rapid neotenisation that led to what they regard as modern humans. Instead of asking the important questions, they focus on trying to salvage as much as possible of their refuted hypothesis.

Here are the questions they really need to ask if they are to progress past their simplistic model: why has natural selection allowed the rise of many thousands of deleterious genetic conditions, ranging from neurogenerative to Mendelian disorders, mental illnesses and many more, since the appearance of gracile traits? Why has the presumed main indicator of hominin progress for millions of years, encephalisation, suddenly been reversed in the Pleistocene's last phase to allow a rate of brain atrophy 37 times the previous rate of brain size increase? Why have neotenus traits been selected consistently that provide no benefit or are clearly disadvantageous? Why has significant loss of physical strength and skeletal robusticity, especially of the cranium, been selected for? Why have characteristics of domestication, such as smaller brain size, shortened face, abolition of oestrus, general gracilisation and neotenisation, been selected for, when none of them has any Darwinian advantage? How did such conditions as exclusive homosexuality arise in the genome?

Other questions that need to be asked by these authors, and by many others, are these: if it is true that the direction of human development is established largely by cultural determinants today (as appears to be the case), and if this was not the case in the distant past (ditto), at what time would the dysteleological process of evolution have been replaced

by the teleology of cultural development? This would be far more important than the sterile question of 'modern' origins. If it is true that 'modern humans' are the only species on the planet that has, in its selection of mating partners, distinctive preferences of age, 'attractiveness', facial symmetry, specific body proportions, gracility of bones; or hair, skin or eye colour, is it not necessary to consider at what time and why such exceptionally pronounced preferences were introduced? We know that in every extant human society males express a distinctive preference for females with marked neotenus facial features (large eyes, small nose and lower face, high forehead etc.). Since these mating preferences are among the very few substantive differences between us and other animals, and since they are absent in apes we need to assume that they were introduced at some point in time. At what time was that? These are legitimate questions if we are to consider the origins of 'human modernity' outside the simplistic and entirely sterile framework the authors have provided in the past and still pursue today. It is sterile because neither their replacement hypothesis nor their modified replacement hypothesis explains anything of importance. The domestication hypothesis explains in one sweep all of these aspects, and many more, and yet these authors make no attempt to even consider it — being interested in nothing other than to explain why they promoted the redundant idea that robust and gracile humans could not interbreed.

Planck (1950: 33–34) suggested that scientific progress is only possible when "its opponents eventually die, and a new generation grows up" that is familiar with new models. Will we have to wait decades again, as in the cases of the rejected ideas of Boucher de Perthes, Fuhlrott, de Sautuola, Dubois or Dart, before the failed hypothesis of modern human origins is laid to rest? I ask d'Errico and Stringer to respond to the questions posed in the preceding paragraph, and to tell us why they failed to consider a hypothesis that clarifies these and many other questions. A hypothesis that explains nothing of consequence can take up a great deal of space on paper, but in the end it is worthless to science, and propping it up beyond its use-by date is wasteful and counter-productive. The final issue is this: these authors are among the many that have succeeded in sending the discipline on a wild goose chase lasting a few decades. Do they want to be remembered for that by future generations?

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