

Summary and Review of Ian Tattersall's article:
"Once We Were Not Alone"

pg (1) of 10

In the January 2000 issue of Scientific American, an article entitled "Once We Were Not Alone", formidably written by Ian Tattersall with exquisite illustrations by Jay H. Matternes, covers a number of key concepts in the current determinants of human evolutionary theories.

Based on archeo-paleontological records as well as on physically unsubstantiated conjecture regarding behavioural patterns, traits characteristic to particular species falling within the genus *homo*, as well as interactions between a multiplicity of hominid types, are examined.

The advent of the various stages of tool use and construction in relation to the cognitive developments of mental templates as well as plausible catalysts for the long extant use of the language ability are topics also touched on. The locations of and approximate timeline for the existence of various hominids with their related coeval and/or linear branches is sketched. The reinforcement is made that earliest human origins and the decisive step to *homo sapiens*, took place in Africa. It goes on to elucidate that the migration, in several waves out of Africa, of *homo ergaster* and later *homo heidelbergensis*, into the Levant, Europe and Asia, spawned various independent evolutionary lines including the form of *h. neanderthalensis* in Europe and western Asia and alternate forms of *homo erectus* in East

Ms. Melanie R. La Perriere
Apt 6G
244 Riverside Dr.
New York, NY 10025

© 1999

(2)

Asia.

Also given in this article are possible reasons for the ultimate reign and complete dominance, to the exclusion of all other types of hominid, of *h. sapiens*.

With an overview of the last five million years, the article provides clear support for the pattern of human evolution paralleling that of other evolutionarily successful animals. Having a conservative estimate of 20 types of hominid, many of which shared temporal as well as geographic space, this position overturns the out-moded single-species theory of a direct line of succession or sequential species rate of progression. That particular theory had been founded on the notion that ecological niche allotment did not allow for the existence of more than one type of hominid at a time.

The strongest evidence for contemporaneous existence, to date, is given by four distinct hominid representatives of 1.8 million years ago which are *paranthropus bosei*, *homo rudolfensis*, *homo habilis* and *homo ergaster* all found in the Turkana region of Kenya.

Many fossil dating techniques are used including radio carbon, thermoluminescence and potassium argon to cross support age of fossils. Coeval hominid diversity is therefore claimed practically from the inception of Australopith. Tattersall gives examples of the multiplicity of the early differing types found as long ago as 4.5KY including *ardipithecus ramid-*



Proud Supporter of the Wildlife Land Trust
Ms. Melanie R. La Perriere
Apt 6G
244 Riverside Dr.
New York, NY 10025

pg (3) of 10

(3)

us, australopithecus arramensis, australopithecus afarensis, a. bahrelghazali, a. africanus and *a. garhi*. The robusts are also mentioned as entering the scene at around 2.5 million years ago and include *paranthropus aethiopicus, p. bosei, p. robustus* and *p. crassidens*. This early list spans the time from 4.4 million years through about 1.6 million years ago covering fossils found in Ethiopia, Kenya and Chad.

The exodus from Africa is explained beginning with the pioneering *h. ergaster*. Several unique hominid species are reported as having been discovered in other parts of the world. They are obviously at variance from a direct adaptive radiation from *h. ergaster*. Indications are that many more independent evolutionary routes than previously surmised, even by liberal anthro-paleontologists, were trod. Examples are the strange jaw from ex-Soviet Georgia, separate lines of *h. erectus* in China and Java, yet another robust species in Java and the relatively young, 800,000 year old, most unusual Spanish discovery of the hominid *h. antecessor*.

All over Africa, Europe and China, between 200,000 and 600,000 years ago, there is evidence of *h. heidelbergensis* from which three main groups seem to have sprung. These groups are cited as being the famous *h. neanderthalensis* in the Levant, Europe and Western Asia, an *h. erectus* branch from the Ngandong beds in Java and *h. sapiens*, the modern human being, in Africa.

From the cranium tree illustration in the article, one can also

(4)

view that earlier on in the time frame, speciation also occurs as three distinct lines, with *a. africanus*, *a. garhi* and *p. aethiopicus* which also most likely sprang as radiating branches from the early *a. aferensis*. The article avers that biological history is characterized by sporadic events rather than slow accumulations.

The topic of why *h. sapiens* is alone in the world today is addressed by considering tool use and design as well as the emergence of language. There are a number of ideological excursions as to which gave rise to which in their proto forms, as noted in Derek Bickertons's *Language and Species*,² a reference of Tattersall's. Tattersall seems more interested in the capacities and the enabling of capacities for tool use and related cognitive functions.

There is a marked difference of view in the case of information gathered and what is considered conclusive from endocasts. Endocasts are moulds or impressions⁴ taken of the inside of the skull to reflect the shape and relative size of different parts of brain morphology. The proportions of the language centers of the brain, Broca's being the syntactical and Wernicke's being the lexical, are measurable from the external brain feature map created with the endocast. Bickerton believes that because of this, the endocast method is useful in determining if a particular species of hominid had develop-

Ms. Melanie R. La Perriere
244 Riverside Dr Apt 6G
New York NY 10025-6170

pg (5) of 10

(5)

ed language skills. Tattersall, in contrast, states that the physical capacity for language existed long before it was ever put to use or catalysed. He notes that one of the outstanding attributes of *h.sapiens* is the positioning of the larynx relative to the pharynx which allows for an immense range of vocalization. He points out that while *h.neanderthalensis* had a large brain with developed Broca and Wernicke centers, missing was the necessary specific locales of and relationship between the larynx and the pharynx as they had the flat base skulls found in other mammals. The bending at the base of the skull in *h.sapiens*, which creates the unique flexion characteristic, implies several things to the reader of this article and its references. One of the implications is that *h.sapiens* physiological evolution of this unique vocal tract met the needs for the expression of the articulate language capacity already present in a variety of hominid species.

Returning to the investigation of the rise in dominance of *h.sapiens* is the interesting set of situations involving the coeval and co-local existence of this species with *h.neanderthalensis* populations in the Levantine Mediterranean basin and Europe. Although anatomically modern at its origins in Africa, evidence of modern behaviour in *h.sapiens*, also known as Cro-Magnon, does not occur until the interactions with *h.neanderthalensis* took place. Naturally this suggests all

(6)

kinds of things to the reader. Rather than pursue those implications at this time, the focus here is shifted to the great difference between what happened during the encounters in the Levant and those that took place in Europe.

Sites in Israel and surrounding areas reveal that 100,000 years ago Cro-Magnon joined Neanderthal in habitat for nearly 60,000 years before the latter disappeared. While they had existed side by side they shared the same tool technology. To this reader, it occurred quite strange that with the disappearance of Neanderthal in the Levant there is this almost immediate appearance of Cro-Magnon in Europe 40,000 years ago. Cro-Magnon ventured onto Neanderthal turf in Europe and existed side by side with them for only 10,000 years before the latter disappeared. In Europe, on the other hand, there is no evidence of a shared tool technology and Neanderthal held the position of the significantly less advanced of the two in this respect. There is evidence that it may have learned and adopted certain things from *h.sapiens* tool technology though did not master them in the same manner. There are at least several opinions as to what might have transpired to cause the demise of *h.neanderthalensis*. Tattersall seems to consider two of these and refutes almost completely a third. The one he refutes in his book, *The Fossil Trail*, is the absorption hypothesis of the Neanderthal



Proud Supporter of the Wildlife Land Trust
Ms. Melanie R. La Perriere
Apt 6G
244 Riverside Dr.
New York, NY 10025

Pg (7) of 11

ATT.



AURIGA MUSIC PUBLISHING CO.
Melanie La Perriere
PO Box 1933 CATHEDRAL STATION
New York, NY 10025

(7)

populations into the Cro-Magnon population via interbreeding. He balances his refutation on what he deems has been the result of the majority of more recent encounters between different types of people and he concentrates more on the warring and extermination of indigenous people by invaders. It occurs to this reader that, in taking this position, he overlooks instances such as the Spanish in the Philippines who, during their conquest, exterminated the native men and interbred with native women producing a new variant. That variant, for example, incorporated the gene pool of the indigenous Philipinos into their primarily European own. The disappearance theory he considers most likely is the inability of Neanderthal to command their environment as well as their Cro-Magnon competitors. He purports that due to a physiologically 'underevolved' vocal tract, Neanderthal could not express themselves adequately to each other. He also blames the lack of a sufficiently advanced tool technology. He does not discuss fire use by both species in any detail. There were also cultural differences between these species. While Neanderthal buried their dead most likely for practical reasons, like to keep scavengers away, Cro-Magnon had ceremonial burials which also showed signs of rank classifications in their society. Neanderthal may have made music with objects in

(8)

their natural form while Cro-Magnon was responsible for crafting musical instruments and in general is considered much more advanced in the art realm because of the physical artifacts used to buoy this belief. Tattersall does not allude to any of these distinguishing culturally 'modern' features as being a factor in the destruction of Neanderthal. Indications in this article and in *The Fossil Trail*, are that he believes that they, as a species, were either or both hunted out of existence and that all their land resources were usurped. What he seems to neglect to note is that, in the scenario of *h. sapiens* being the only bipedal, upright, opposable thumb member of Homonidae still extant, this position may have been arrived at from a defensive rather than aggressive stance. Some time is spent in the article discussing how modern behaviour patterns are cognitive in terms of symbolic thought. He says that we know, as far as the development of human consciousness is concerned, that a non-symbolic state existed prior to the current symbolic state. How he justifies this as a certainty is not made clear.

The progression of using stone tools through fashioning stones into tools is connected to the stages of development of human consciousness as well as the germination and subsequent maturation of language from the ideate to conveyance as articulate speech.

The first stage of tool fashioning occurred 2.5 million years

Proud Supporter of the Wildlife Land Trust
Ms. Melanie R. La Perriere
Apt 6G
244 Riverside Dr.
New York, NY 10025

pg (9)

(9)

in what is known as the Achellean Age. Most likely invented⁵
by *h. ergaster*,⁶ the 'constructed' hand-axe came into use made by
chipping away at a stone until the core had the sought after
shape and properties. Bickerton believes this development
paralleled the emergence of proto language as both processes
function on the principle of a simple series of chained steps
which he refers to as the 'strung bead' model. Neither process
required the hierarchical arrangement that syntax and the next
major advancement in tool making require. After about 1.5
million years, the core of a stone as a hand-axe, the technology
leapt to using flakes chipped from the core of a stone as the
hand-axe. This transition involves the use of mental templates
creating formulae whereby a predetermined process was invented
to yield the same kind and shape of hand-axe from the same
kind of stone core in a predictable manner. The emergence of
flint tool flake formulae or 'blueprints' coincides with the
artifact record documenting the debut of articulate language
in the Aurignac Age.

Overall, "Once We Were Not Alone" is a comprehensive
treatment of the current state of affairs in human evolu-
tionary theory, covering a lot of ground in a condensed format.
Of the five referrals in the 'further information' section
at the end of this article, only two were readily available for
internal or external use from the New York Public Library sys-



Melanie La Perriere
PO Box 1933
New York, NY 10025

Pg(10) y

10

(10)

tem. Of the titles cited in that section, '*The Origin and Diversification of Language*' appeared with different authors, '*The Last Neanderthal*' the was on order after a seventh inquiry, '*African Exodus, The Origins of Modern Humanity*' had all it's copies out, 'of 'the title '*Getting Here, The Story of Evolution*' not a trace was found though '*Dark Caves, Bright Visions*' just became available and this reader is enroute to check it out.

Overall, the article is quite thought provoking and should prompt the exploration of the references it cites and this area topic at large, in greater depth.

Footnotes:

2,4,6

Bickerton, Derek Language and Species. University of Chicago Press, 1990

1,3,5

Tattersall, Ian The Fossil Trail: How We Know What We Think We know About Human Evolution. University of Cambridge Press, 1993