

# Uprooting the human family tree

**Our place in nature, seemingly partly settled last year in Ethiopia, is likely to be looked at again and again. No happy ending is yet in prospect.**

In palaeoanthropology, at least, the biggest headlines of 1994 were reserved for the discovery and naming of *Australopithecus ramidus* which, at 4.4 million years old, took on the mantle of earliest-known hominid (White, T. D. *et al. Nature* 371, 306–312; 1994; WoldeGabriel, G. *et al. Nature* 371, 330–333; 1994).

The creature widely named as the Missing Link was seen within the community more as cause for quiet satisfaction than wild consternation. There was, indeed, a morphological gap between apes and known hominids that was waiting to be filled, and the hominid from Aramis in Ethiopia fitted the bill nicely. The easy placement of *A. ramidus* in the human family tree was a sign of maturity in a field usually distinguished by discord (Wood, B. *Nature* 371, 280–281; 1994).

Famous last words? Already, there are signs of disquiet. The next few years could see violent upsets in our understanding of human origins, and there are few clues about how a new consensus will turn out. Fossilization is a matter of chance — discovery hardly less so, and the cautious will say (with reason) that consensus is a consummation more to be wished than expected. But in the parlour-game spirit of seasonal prophecy, one can be forgiven for the casting of a few runes.

Those responsible for *A. ramidus* are at present out in the field, and only the most pessimistic will suppose that they will return empty-handed. They will be on the look-out for pelvis and leg bones, as these are absent from the published collection, and would confirm or refute the supposition (from the shape of the basicranium) that *A. ramidus* walked erect. This is especially important, because hominids are erect by definition — and erect gait is probably the only feature that *A. ramidus* shares with other hominids. The discovery in Kenya by Maeve Leakey and colleagues of material of a similar age to *A. ramidus* — and including a leg bone — has been widely reported.

If such material confirms the supposition of erect posture in *A. ramidus*, then so much the better. But if it turns out that *A. ramidus* is erect, but in other respects closer to the chimpanzee lineage, then the Hominidae will have one of its primary supports kicked out from under it.

Comparisons of the fossils from Ethiopia and Kenya will be necessary to establish whether *A. ramidus* is one species or more, to measure the degree of variation in the sample that can be attributed to sexual di-

morphism, and to assess whether the bones represent a hominid. If more than one species is present, some may be hominids, others not — but with creatures as primitive as *A. ramidus*, it will be almost impossible to tell the difference.

Debate over *Australopithecus afarensis* (the previous holder of the earliest-hominid title) offers a guide to the issues *A. ramidus* workers will face in the years to come.

Some continue to maintain that *A. afarensis* is a single species, if a highly dimorphic and variable one (White, T. D. *et al.* 366, 261–265; Kimbel, W. *et al.* 368, 449–451; 1994). Others suggest that it represents two or more, each with its own distinct relationship with later forms (see Aiello, L. C. *Nature* 368, 399–400; 1994).

It is therefore possible that *A. ramidus* is neither an ancestor of humanity, nor of chimpanzees, but the first known representative of a hitherto undiscovered radiation of pre-hominid creatures (the 'ramidopithecines', for want of a better word) which might include the ancestors of both.

This group could be seen as a grade intermediate between the Miocene apes and australopithecines. The solution adopted by White *et al.* — that *A. ramidus* is a hominid — is the right one given present evidence, but clearly its status is provisional.

The Miocene apes that lived between 20 and 10 million years ago provide another model for how the debate might turn out. Although known to be widespread and diverse (Andrews, P. *Nature* 360, 641–646; 1992), there is no agreement about which of these primitive creatures (if any) lies closest to the combined hominid-chimp lineage than to (say) that of the orang-utan (see for example Moyà Solà, S. & Köhler, M. *Nature* 365, 543–545; 1993; Martin, L. & Andrews, P. *Nature* 365, 494; 1993). And with every new discovery producing a new candidate, the debate is likely to get more complicated, rather than less.

Given this unpromising start, here are a few predictions about how our understanding of human origins will look in the year 2000. It is rash, naturally, and should be viewed wholly as seasonal entertainment.

The identity of the Miocene ape closest to the hominid lineage will still be unresolved, although opinion will be edging towards *Ouranopithecus* (also known as *Graecopithecus*) as a promising candidate.

The inclusion of *A. ramidus* within the genus *Australopithecus* is regarded as moot, not least by White and his colleagues. By 2000, *A. ramidus* will have been removed to

a new genus, and regarded as a member of what we have dubbed the ramidopithecines. This group will also include material of a similar age from Kenya, and doubtless other sites in East Africa. But arguments will fester about the number of ramidopithecine species, their degree of sexual dimorphism, and which fossils should belong to what species.

The ramidopithecines will be seen as a paraphyletic group, defined on the basis of erect posture, but including within it the ancestors of australopithecines, *Homo* and *Pan*, though possibly excluding *Gorilla*. Erect posture will thus be seen as a primitive feature that chimpanzees have lost, rather than an advanced feature that hominids (*sensu* 1995) have acquired.

The fate of the Hominidae as a concept is less clear. Either it will fade for want of recognizable, definable character states, or it will re-emerge as a larger group that includes *Pan* as well as *Homo* as its living representatives.

As for *A. afarensis*, this will have dissolved into two or possibly three different species, each of greater or lesser kinship to creatures such as *Australopithecus africanus* (Dart's 'Taung baby'), the 'robust' australopithecus such as Louis Leakey's 'Zinj', and the lineage of *Homo*.

Agreement about the division of the spoils of *A. afarensis*, if such agreement is possible, will precede consensus on which of these lies closest to the ramidopithecine ancestral root.

At this point, the debate will impinge on a set of arguments running in parallel about the meaning and status of the genus *Homo* itself. The earliest representative, *Homo habilis*, has already proved somewhat fissile, and some fossils of early *Homo* have been removed to a new species, *Homo rudolfensis* (see Wood, B. *Nature* 355, 783–790; 1992), including arguably the earliest-known representative of the genus (Schrenk, F. *et al.*, *Nature* 365, 833–836; 1993).

The referral to *H. habilis* of the diminutive hominid OH62 from Olduvai (Johanson D. C. *et al. Nature* 327, 205–209; 1987) only heightened long-held suspicions that *H. habilis* may be a conflation of several quite different creatures (Wood, B. *Nature* 327, 187–188; 1987). More recent work suggests that at least some of these had an inner-ear morphology more like that of apes — or even monkeys — than modern humans (Sporer F. *et al. Nature* 369, 645–648; 1994). *Ecce Homo?* No doubt there will be an answer, sometime.

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