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President of the Congress

## OPENING ADDRESS

*On behalf of the Organising Committee of the International Anthropological Congress "Anthropology and Society", and especially its President, Professor Pavel Bláha, Professor Ivan Mazura, the European Anthropological Association, the Czech Anthropological Society, the Charles University, the National Museum, and the Town Agencies of Humpolec and Mělník, it is my great pleasure to greet all participants in this Congress. Allow me to express my appreciation to Professor Bláha and the Organisers for having, once again, invited me to serve as President of this International Anthropological Congress to honour the name of the great Czech-American anthropologist, Aleš Hrdlička.*

*A special word of thanks is due to them for holding the fifth Hrdlička Congress only four years after the fourth. This was in response to my closing remarks last time, in which I begged the Organisers not to wait ten years before the next meeting: as a senior citizen, I stated, I could not be at all sure that I would still be available to attend a meeting only in 2009!*

*There is another advantage in the earlier date of this Congress: while the last meeting marked the 130th anniversary of his birth, the present meeting commemorates the 60th anniversary of Hrdlička's death – on 5th September 1943.*

### FOUR REVOLUTIONARY YEARS IN HUMAN EVOLUTION

A remarkable revolution in anthropology has transpired in the four years since we last met.

At that time, I drew attention to the fact that discoveries made in the dying days of the twentieth century by Meave Leakey *et al.* (1995) in Kenya and by Tim White, Gen Suwa and Berhane Asfaw (1994) in Ethiopia, had taken the catalogue of known fossil hominids back to 4.2 and 4.4 Myr respectively (Wolde-Gabriel *et al.* 1994). These finds and datings, I pointed out, were very close in time to the 5–7 Myr date that molecular biologists had calculated was the likely period for the dichotomy of the last common ancestors into the lineages leading to modern humans and to chimpanzees. So the fossil discoveries at that time were on the brink of the *moment critique* provided by the molecular evolutionists (Tobias, 2002)! A frisson of excitement ran through the scientific community,

Since then, from the dawning of the 21st century, staggering discoveries have come out of Africa. These are forcing a re-think of the 5–7 Myr paradigm that had previously been accepted by many evolutionists.

It is interesting to mention that a new dating has just been reported for our nearly complete skeleton, known as "Little Foot" from Sterkfontein (Partridge *et al.* 2003). This has been effected by a new burial dating technique using cosmogenic nuclides, aluminium-26 and beryllium-10. This technique has been applied to the breccia adjacent to the Little Foot skeleton, by Darryl Granger and M.W. Caffee of the U.S.A., working with Tim Partridge and Ron Clarke of our Sterkfontein research team at the Witwatersrand University, Johannesburg. The date they found is 4.17 Myr, the same as the oldest date furnished by Meave Leakey for her *Australopithecus anamensis* of northern Kenya. A similar date has been assigned by the same technique to some other new hominid remains from Jacovec Cave, part of the Sterkfontein Complex. So, from four different sites in Africa, separated by thousands of kilometres, have come indications that *Australopithecus* was present in Africa about 4 Mya.

Still greater surprises followed.

The Awash River snakes its way down the Rift Valley and there Yohannes Haile-Selassie (2001) found hominids dated to between 5.2 and 5.8 million years ago. They were assigned to the same species that, several years before, had been called *Ardipithecus ramidus* by Tim White and his colleagues (1995). The earlier examples had been dated back to 4.4 million years ago, so Haile-Selassie's finds pushed back the frontier of that kind of ape-man beyond the almost mystical 5 million year mark. Its claim to be the oldest hominid was short-lived: within a year the spotlight moved down to Kenya.

In central Kenya, west of Lake Baringo in the Rift Valley, are the Tugen Hills. Ancient rock strata there were known to be fossil-bearing. In 2002, in the Lukeino Formation – which in 1974 had yielded a single, probably hominid, lower molar tooth – Martin Pickford and Brigitte Senut found a cluster of reputedly hominid remains dated to about 6 million years ago: they named the species represented *Orrorin tugenensis* (Senut *et al.* 2001, Deino *et al.* 2002). Some colleagues are arguing over whether it is truly a hominid, but on the very ancient date there is general agreement. It seems clear that Pickford and Senut have pushed back the frontier of claimed hominids even further than Haile-Selassie had done in Ethiopia.

Before the dust had settled, an even more astonishing find was made in the Chad Republic: this was in the Sahel belt of Africa, just south of the Sahara Desert. For those who had begun to think of the Rift Valley as the spawning ground of the hominids, it was sobering to realise that the Chad fossiliferous area of Toros-Menalla in the Djurab Desert was 2,500 kilometres west of the Rift Valley! In this inhospitable terrain, Michel Brunet and his Chadian and French colleagues (Brunet *et al.* 2002) brought to light a group of finds including a nearly complete cranium and fragmentary lower jaws, which they claimed to be hominid. Not only was its geographical location a surprise, but its dating was an even greater shock: it had lived between 6 and 7 million years ago!

So within less than two years, the frontier of fossilised humanity has been pushed back from 5 to 6 to 7 million years before the present. Once again, there is caution by some anthropologists about whether the Chad specimen – named *Sahelanthropus tchadensis* – is truly a hominid and most of Brunet's colleagues have not yet had the opportunity to see his new finds. To say the least, his case is very suggestive.

If these hominid roots were of such high antiquity, what happened to the DNA clock, whose hands pointed to 5 to 7 million years ago? The new finds necessitated a re-examination of the old "molecular clock".

At this critical juncture, and even before these new iconoclastic finds were uncovered, some molecular scientists at Lund, Sweden, had quite independently come to the conclusion that the "clock" had been wrongly calibrated (Arnason *et al.* 1996, 1998, 2000). Using new paleontologically-derived dating points, Ulfur Arnason and his colleagues had found that the old clock was out by a factor of two: instead of 5–7 Myr, the time for the splitting of the last common ancestors of chimpanzees and humans should on the re-calibrated clock be 10–13.5 million years ago! If this proposal is confirmed, it should not be surprising to find hominid fossils at 6 and 7 million years ago, and even older ones.

Is there any evidence of yet older fossil roots? Well, there are some claimants in the 9–12 million year range – from the Samburu Hills in Kenya, and from Turkey and Macedonia. Fossils from these areas show features that are suggestive of their being hominid, but the jury is still out on this question.

Our journey has taken us from South Africa to East Africa and to Central Africa, and perhaps even out-of-Africa to south-eastern Europe and south-western Asia. The plot thickens as the roots deepen. We do not yet have final answers – are there ever "final answers" in science? But at least we can say that for 80% of the time of the hominids on earth, humanity has been a child of Africa. How excited Ales Hrdlička would have been at these new developments! Hrdlička who had been the first foreign scientist to see the Taung skull in 1925 and the first to make a small excavation there himself on that visit to South Africa.

So, Ladies and Gentlemen, this Congress assembles at a time when the world of paleo-anthropology is struggling to assimilate the exciting new developments of the opening years of the 21st century. This is a very good time to gaze into the fire, stir the coffee and cogitate – as Emil Holub did in southern Africa 130 years ago, and Aleš Hrdlička 78 years ago.

I wish you a successful Congress.

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