

[Before I continue on and start my presentation, I would like to add that there is someone special to me who could not be here today, my fiancée Isabelle. I am dedicating this talk to her.]

[Slide 1]

Archaeology, as has been aptly demonstrated by John Wall, is as prime a target as any other discipline, if not more so, for mis-representation, distortion and sometimes abuse for personal and/or religious agendas. Pseudoscience transcends country and continental boundaries. While creationism is regarded primarily as a North American phenomenon with little or no potential or real impact upon Europe and the United Kingdom in particular, I would argue there is a bigger picture at stake and one which raises fundamental issues regarding scientific and educational literacy which need to be dealt with.

For the purposes of this presentation, I will focus upon an unusual sect of creationism which has arisen in the past decade: that of Hindu creationism. The best known proponent of Hindu creationism is an individual named Michael Cremo who, in conjunction with his colleague Richard Thompson, co-authored the mammoth book "Forbidden Archeology". "Forbidden Archeology" was shortened for the general public in the form of "The Hidden History of the Human Race".

[Slide 2]

This photograph is taken from Cremo's website.

[Slide 3]

Born in New York in 1948, Cremo made a study of the Hindu text and joined a Hindu institution in New York in order to devote himself to the Lord Krishna. His co-author, Richard Thompson, is also a member of the same institution. Their research has one purposeful aim: to show that the archaeological and palaeoanthropological ivory towers have deliberately suppressed the evidence for anatomically modern humans having existed for hundreds of millions of years. To this end, Cremo adopts a strategy rarely utilised and seen by creationists: he is a member of academic organisations and he attempts to present his viewpoint in legitimate forums. For instance, he presented papers at the 1994, 1999 and 2003 World Archaeological Congresses on the antiquity of anatomically modern humans and the "knowledge filter".

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Aside from "Forbidden Archeology" and "The Hidden History of the Human Race", Cremo has a publication due out later this month entitled "Human Devolution". There is a statement on the

Human Devolution website where Cremo openly admits that his earlier works, i.e. “Forbidden Archeology”, are creationist.

A fundamental question, posed to me by a prominent British biologist during the course of the writing of my book, strikes at the heart of not only my paper but indeed the essence of this congress: Why should we care. Why give him air and publicity. His ideas are nuts and aren't taken seriously by professionals.

As I have already mentioned, Cremo has presented papers at the last three World Archaeological Congresses. This provides him with legitimacy in the eyes of the general public and, in particular, his followers. What is not recognised and generally widely appreciated is that anyone can join and become an ordinary member of the World Archaeological Congress organisation. Cremo has also presented papers at other archaeological congresses and has had a paper published in the British Archaeological Reports.

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The rise of Hindu creationism is documented by a school in India adopting Forbidden Archeology as the scientific textbook for their curriculum. Christian creationists have also been enormously influenced by Cremo. Time and time again I've come across his “evidence” cited either directly or indirectly and always indiscriminately.

At the Darwin Day celebration here in London earlier on in the year, Dr Stephen Law documented the rise of Young-Earth creationism in the UK. An example of this in the British education system is the infamous Gateshead school, whose headmaster has links to the American YEC organisation “Answers in Genesis”.

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I have thrown around particular viewpoints of Hindu creationism, yet I haven't fully justified the stance I am taking and I will attempt to do so over the course of the next few minutes by focusing on four topics: the Paluxy and Laetoli tracks, the Kanjera skulls and the Kanapoi humerus.

[Slides 7 and 8]

Slide 7 gives an overview shot of a portion of the Paluxy dinosaur tracks in America, while Slide 8 shows a dinosaur print on the left and a natural depression in the rock on the right which can easily be mistaken for a human footprint.

In spite of this, Cremo made the following statement on 16 March 1996, which was posted by John Cole to the Anthro-L mailing list on the same day:

“I have studied the case of the Paluxy man tracks and decided it is not possible to conclude whether or not they are genuine human tracks.”

(<http://www.anatomy.usyd.edu.au/danny/anthropology/anthro-l/archive/march-1996/0397.html>)

[Slide 9]

The next slide contains shots of the famous site of Laetoli, where the hominin tracks were discovered at Locality 8 in Tuff 7 by Paul Abell in 1978. The hominin tracks are dated to 3.5 million years.

[Slide 10]

Upon preliminary analysis, Louise Robbins (who was the footprint expert accompanying the expedition) tentatively concluded that they were two bovid prints super-imposed upon each other, whereas the impression given by Cremo & Thompson in “The Hidden History of the Human Race” is of Robbins supporting their belief the prints were made by *Homo sapiens*.

Russell Tuttle has had the dubious distinction of creationists pouncing on his work because he disagrees with palaeoanthropologists such as Tim White and Suwa that the tracks were made by *Australopithecus afarensis*. Indeed, Cremo utilises Tuttle's work to claim that the tracks were made by anatomically modern humans. However, what Tuttle really states is the following: “*If the Laetoli hominid G prints were undated or were dated 1 Ma younger, they probably would be acceptable as Homo sp. because of their striking humanness. Because genus Homo is based primarily on craniodental traits, I recommend against this. It is reasonable to expect that open-country ancestral species of Homo sapiens would have evolved feet like ours before they achieved craniodental traits that define our species or even our genus.*”

Ron Clarke undertook an experiment in 1985. He got two chimpanzees to walk over wet sand. The result was revealing: the footprints left behind by the chimpanzees bore a strong correlation with Clarke's own observations of the Laetoli footprints. The female walked with her big toe spread out, while the male drew it closer to his other toes. The difference between the two is likely to have been a consequence of confidence in walking over the surface. With regard to Laetoli, Clarke (1999: 480) states: “*In the footprints of the larger individual there was, at a regular distance behind the tip of each big toe, another toe-like impression that I interpreted as left by the metatarso-phalangeal*

*joint. Subsequent study by Yvette Deloison (of the Natural History Museum, Paris) of detailed casts that I had made of the prints led her not only to agree with my conclusions concerning divergence of the big toe but also to make observations of her own that indicated a foot with ape-like characteristics.”*

When taken in totality, the available evidence shows that the Laetoli hominins in all probability possessed the ability to diverge its big toes. Further supporting Clarke’s findings is the distinct lack of toe impressions in the Laetoli prints, aside from the hallux. Clarke & Deloison regard this as a consequence of their toes having being curled underneath the feet.

Only skeletal remains of *Australopithecus afarensis* have been excavated at Laetoli.

The pelvic shape of *Australopithecus afarensis* indicates that this hominin was bipedal and this interpretation is strongly supported by the Laetoli footprints; both indicate that they had a bent-knee, bent-hip bipedal gait.

[Slide 11]

Kanjera is a site found near Lake Victoria and the hominin skeletal remains were excavated by Louis Leakey in the mid-1930s, with the Third and Fourth African Archaeological Expeditions. Subsequent expeditions were undertaken by the National Museums of Kenya and the Smithsonian Institution in the 1980s. In total, 7 hominins have been uncovered with one of those, Hominin 3, too fragmentary for definitive attribution.

The geology at Kanjera is complex. Cremo and Thompson claim an age of 400 – 700 000 years for these *Homo sapiens* crania. However, they ignore Plummer & Potts' (1995: 14) analysis which states that the crania differ in thickness in important aspects from Neanderthal, *Homo erectus* and *Homo heidelbergensis* crania. The cause of the thickness, they conclude, is due to hereditary and/or acquired anaemia.

The Kanjera remains are likely shallow Holocene burials into older deposits. The modern morphology puts it within the past 150 000 years and deliberate burials are most frequent from the Holocene period. Holocene burials with similar morphology were made by the 1974 Yale Expedition at Kanam which strengthens the argument that the skeletal remains at Kanjera were intrusive Holocene burials.

[Slide 12]

The 4.2 million-year old Kanapoi humerus, named after the site of Kanapoi in Kenya, was discovered in 1965 and was described by Patterson and Howells. At the time of its discovery, the sample of known comparative *Australopith* remains were very small and this remained the case until the uncovering of Lucy, in 1974, and the First Family, in 1975, at Hadar, Ethiopia, by Don Johanson.

Cremo & Thompson attribute the humerus to *Homo sapiens* on the basis of Patterson & Howells' 1967 study, which found the humerus to be humanlike. However, Patterson & Howells merely assigned the humerus to the genus *Homo*. Furthermore, the increase in *Australopith* sample size subsequent to Patterson & Howells and Charles Oxnard's studies have resulted in comparative analyses concluding there are great similarities between the Kanapoi humerus and those of *Australopithecus afarensis*.

Mark Leakey and co. have subsequently found remains of *Australopithecus anamensis* at Kanapoi. Considering the likely evolutionary descendant relationship between *Australopithecus anaemensis* and *Australopithecus afarensis*, it is not surprising to see the humeri showing the close relationship.

Furthermore, there is an anatomical feature which makes its attribution to *Homo sapiens* impossible: the humerus lacks a medullary cavity in its distal section, whereas modern human humeri have a thin layer of compact bone with the internal cavity filled with lighter, spongy bone.

[Slide 13]

Cremo & Thompson take the Hindu Vedic Texts as the fundamental basis for their arguments and attempt to weave the hominin fossils and artifacts around it. Their religious document cannot be altered, for to do so would be admitting their personal faith is partly in error. No evidence whatsoever can shake their religious basis. By contrast, mainstream palaeoanthropology and archaeology are constantly constructing new hypotheses based upon recordings and observations.

Scientists conduct research and publish their results in peer-reviewed journals. They are therefore part and parcel of the research community. By contrast, Cremo & Thompson come from a religious institution that has no real anthropological research program and their work is intended to attack evolution and to support their religious doctrine.

Alternative proposals use the logic that "Science is in disarray, therefore science is wrong, therefore

X is the truth". This is also seen within Hindu creationism with their unshakeable, untestable personal beliefs in a belief system that is only overlapped by other belief systems.

[Slide 14]

It is all well and good going on and on about fundamental errors in pseudoscientific works. Except you can continue blowing hot air until you are blue in the face. It raises the fundamental issue of what can be done, particularly as this problem is most certainly not confined to the works of Hindu creationism alone.

There are a number of suggestions which I would like to put forward to the Congress:

- Less expensive academic books and journals
- Better written books aimed at the public
- More aggressive marketing of specially commissioned scientific series
- More archaeological expeditions offering places for paid volunteer participation
- Dissemination of websites on the nature of science and anti-pseudoscience to students: many students learn more about how not to conduct science by reviewing crank writings
- Improve the scientific curriculum in schools, from junior to high schools, with a mixture of learning the fundamentals as well as engaging pupils through hands-on experiments

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- Broader introduction of critical thinking courses at 1<sup>st</sup> year university level
- Introduction of outreach programs whereby science students, as part of their university program, interact with high school students at various institutions. There is nobody who knows the mindset of school pupils like those who were in school themselves until recently.
- Closer interaction between school bodies and the relevant university departments, through seminars, workshops and presentations.

[Slide 16 – last slide]

A certain current runs underneath everything which has been heard through this presentation:

It is a fascinating story and one that will continue to attract talented researchers dedicated to furthering our understanding of the hominin record, many of whom I am honoured and humbled to know.