

Peking Man

The Discovery, Disappearance and Mystery of a Priceless Scientific Treasure

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This is about the discovery and subsequent disappearance of some hominid fossils known as the Peking man. Sandwiched between the account of its discovery along with its subsequent disappearance, and the failed attempts in the early seventies to recapture them, there is a brief but useful survey on the rise of Darwinism and the search for missing links, and the state of the art in the early 70's, as well as speculations of what the Peking man may have been like, and some necessary anatomical background material.

The meaning of fossils was not initially appreciated, however by the eighteenth century they were a basic part of Natural History, and by the nineteenth century there was a mania for fossil hunting and collection, both on the amateur and professional scale, for the latter witness the cut-throat competition as to dinosaur remains. But for the advent of Darwin's 'The Origin of the Species' in 1859, the remains of the Gibraltar Man (1848) and the Neanderthal Man (1856), might have been dismissed as uninteresting. But with Darwin, the idea of the descent of man, and the looking for the missing link, became very topical and urgent. Darwin revolutionized man's awareness of himself as descending from the animals, but as the author points out, at least as far back as Linnaeus, goes the idea of including men among the beasts. Linnaeus did not shy away from classifying man as well giving it a name to be set along that of the (other) primates and thus suggesting the idea. Furthermore the tree of life was conceived before Darwin gave it a literal existence.

The prospect of a fossilization is unsure, the very process is haphazard, and hence the fossil record is patchy and incomplete, giving a lot of latitude for speculation. It is particularly true for human remains, which are far and few between, swamped by the relative abundance of other mammal remains, even for the appropriate time-slot. This presents a challenge for the paleontologist, as well as a dangerous temptation. Every scrap of evidence has to go a very long way. And scraps are what one mostly has to be content with. In the case of human remains, teeth constitute the key. Teeth preserve more readily than anything else and are also rather indicative. Teeth are specialized, having a lot of structure obvious to the both patient and knowledgeable observer. While a fragment of a bone, may give very little clue to what species or even order an organism may have belonged to, a single tooth can tell a detailed story and often pinpoint a species. In fact all species have distinct kinds of teeth. Thus research into the human deep past is a dental exercise, which may be somewhat ironic. What could be more boring than dentistry, but apparently teeth play a more fundamental role in general health, than is usually given credit to. They tell stories about use and abuse.

The record being fragmentary, there is room for many competing hypothesis. None may be falsifiable at the time, but invariably as the fossil record is more and more revealed, their numbers dwindle, and there is more food for necessary extrapolation as well as

interpolation. As our knowledge grows, it becomes easier and easier to fit new pieces of the puzzle together. In the beginning everything is in the dark, and hence everything is possible. Paleontology provides an excellent illustration as to how science grows.

The original finds of the Gibraltar and the Neanderthal man, were examples of close hominid relatives. More primitive ones would have to wait longer. The Dutch Dubois found primitive remains in Java in the early 1890s, baptizing them *Pithecanthropus erectus* while thirty years later Dart in South Africa unearthed what he would dub *Australopithecus africanus*, the name fragment 'Pithe' referring to 'ape'. Shortly thereafter the Peking Man *Sinanthropus pekinensis* was found at a fossil quarry in China and so named and identified as a hominid by the Canadian Davidson Black. In fact the scattered finds, mostly of a dental origin, are assumed to stem from around forty individuals. Black's identification was based on very little, originally only teeth, which provoked the ire of many skeptical colleagues, a kind of reaction, the author reminds us, is very healthy and necessary in a field such as paleontology, necessarily riddled with unsupported speculation. In due time Black would be vindicated, but the systematic study of the remains, fell upon the German-Jewish paleontologist Franz Weidenreich, who had welcomed the opportunity to leave Germany for China upon the untimely death of Black in 1934. It is due to Weidenreich that we owe the impeccable documentation, including casts, of the Peking Man. The situation became precarious in 1940 as the Japanese were about to enter. It was decided that the remains would be carefully packed and shipped away to the States for temporary safekeeping, it never being any question of them not residing permanently in China, after all at the time, the Peking Man was seen as the direct ancestor of the Chinese, which nowadays is considered a bit naive. But this was probably not a wise decision, it would have been better to have the remains stored at the institution, where it no doubt would have been confiscated by the Japanese, but at least taken well care of and then being retrievable after hostilities had ceased. As it turned out the remains were lost somewhere in transit, and seventy years after their disappearance, no traces have ever been discovered of them. True, they were carefully documented, and casts survive, but as the author ruefully acknowledges, this is not the real thing. In fact the only things left from it are a few teeth, which are to be found in Uppsala, the reason for that being that the excavations which eventually led to the find, were instigated by the Swedish geologist Gunnar Andersson and his assistant Bohlin. The former, incidentally acting as head of the Geological Survey of China.

The more fossils the better the understanding, this is admittedly an almost tautological statement. What puzzled people initially about the early hominids was that the skulls were primitives but the femurs modern. Maybe they did not belong to the same skeletons? We now assume that erect posture antedates the development of the brain, and may in fact have spurred it on. One surmises that man stems from arboreal apes, but the kind who were not yet too specialized. The Gorilla has also left the tree, but his arms are still far too long compared to his legs, so that his locomotion is somewhat intermediate between four legged creatures and two-legged ones. To adapt to the standing on two legs, crucial anatomical changes had to come about. The head will rest on the spinal cord, and the connection will be on the bottom of the cranium, not on its back, as with four-legged creatures, so a single skull can tell a lot. Furthermore the thigh muscles have to become stronger, which accounts for the buttocks of men, which hence should not be seen as the

result of sexual selection. It is in the face the most changes occur during the development of hominids to modern man. The jaw becomes less powerful, as do the teeth, which change not only size but shape as well. The big canines shrink and do not stand out, thus there is no longer the need for gaps in the denture, to accommodate them when the mouth is shut. With the diminishing of the jaw, there is a diminishing of the muscles that serve it. They do not climb the skull and end in a crest on top of the skull as in the Gorilla. The jaw juts out with a chin, something that is a crucial feature in a modern face. Furthermore the nose becomes much more prominent with a well-defined bridge. This is not due to any growth, simply because the face becomes flatter, the snout disappears, and the nose rises as the rest of the face erodes. And then of course as the skull becomes larger and vaults the brow rises, and the ridge disappears.

Concomitantly with this there is a general increase in size. While early hominids may have averaged 5 feet in height, more modern ones are more like 5 feet 8 inches. But of course the most spectacular change is in brain size. By the time of the Peking Man, now classified as a *Homo Erectus* it had reached about 1100 cc, which about touches the lower limit of modern man. The author points out that brain size alone is hardly a reliable indicator of intelligence, Anatole France is reputed to have had a brain whose size was on par with that of the Peking Man, its general increase plays an important role in the descent of modern man.

Now the matter of size is a complicated one, as the author explains in a digression. There is a well documented increase in the length of humans in just a few generations starting with the eighteenth century until today. Many explanations have been given for it, because the change is far too rapid to be an evolutionary one. The most common credits it with an improvement of diet, allowing people to reach more of their potential. The author dismisses this as unsustainable, instead he refers to inbreeding. Inbred individuals tend to be shorter than more mixed ones, and for a long period in Europe and the rest of the world, populations were stationary and hence tended to be inbred. With industrialization communities were broken up and people became more migratory and mating opportunities widened. An interesting idea. Nomads are on the move and hence not as liable to inbreeding. Would that mean that stationary populations throughout history would have a tendency to decline, maybe even going extinct, being replenished with Nomads? To many romantics, Nomadism is the natural state of man.

How smart and advanced was the Peking Man? The question can hardly be answered in any definite way at present knowledge. In particular did he possess language? Now it is reasonably possible to infer from the anatomy of the larynx, the possibility of articulation, in particular of the ability to form the basic vowels, without which human speech would not take off. Such studies have concluded that not even Neanderthal man would have been capable of speech. This seems a bit too restrictive. On the other hand language and interhuman communication clearly can take on other manifestations than human speech. As to the culture of the Peking Man, it seems that he knew how to prepare simple stone tools (a skill actually far more demanding than one would at first believe) and used fire. But of course from the scanty record there is no way of assessing how he may have clothed himself, or large a part mere decoration would have played a role.

Peking Man dates back to about half a million years ago. At the early stages of

hominid excavation the techniques of absolute dating were not developed. Modern Man seems to have appeared on the scene some 50'000 years ago. What were between? A natural guess is that of Neanderthal man. The latter was replaced by modern *Homo Sapiens* some 30'000 years ago. There seems to have been a period of co-existence, but to see the 'Classical' Neanderthal man as a predecessor of modern man appears not really feasible. Such momentous changes could not have been effected in such a short time. Then the presence in the record of 'Progressive' Neanderthal men seems more promising as an ancestor. Maybe they evolved both into Modern Man and the 'Classical' Neanderthal as a side branch. This was at least the state of 'knowledge' in the early 70's. In the last forty years there has been a lot of development, and the Neanderthal Man has been moved in and out into the vicinity of Modern Man. The prevalent wisdom is that Modern Man evolved in Africa, with the Neanderthal Man pressed out into the periphery during Glacial eras into subarctic regions of Europe, being physiologically more adapted to a harsh climate, only to going extinct as a culturally superior race returned during the more clement conditions of an Interglacial interlude. One may speculate how long the last Neanderthal Men held out maybe in Siberia. The discovery of a dwarfish hominid population on an Indonesian island co-existing until fairly recently is tantalizing, but of this the author had no inkling while writing the book, neither afterwards as he died back in 1990.

And the remains of the Peking Man are still at large, probably thrown away and destroyed by ignorant Japanese soldiers, one of many countless victims to war.

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