



Evolution of Humankind: A New Perspective

Nishant Kumar Singh

Assistant Professor, Department of History,

Shyam Lal College, University of Delhi

e-mail id: singhnishant1@gmail.com

The arrival of modern man on the horizon of this globe was a momentous event. It completely changed the understanding of the worldview. The term evolution was used for the first time by Herbert Spencer to define the historical development of life. Similarly, the human beings have also gone through this historical journey of development of life. The evolutionary process of human being was a very gradual and continuous. Human evolution involves two fold process – firstly biological evolution and secondly cultural evolution which started with the increase in the size of brain. Since the formation of our planet 4600 million years ago the genesis of the earliest forms of animate matter about 3500 million years ago, the evolution of humankind marked the most significant aspect of history. It opened the pandora box of innovation, discovery and development.

The exemplary work of the British naturalist and scientist Charles Darwin, "The Origin of Species", provided a proper insight of evolutionary process. According to Darwin, one species could evolve into another more fit to survive in a changed environment through a process of Natural Selection, or the Survival of the Fittest.ⁱ Thomas Henry Hexley in his book, Man's Place in Nature, published in 1863, has made a detailed comparison of human and ape anatomy that established the case for close relationship between humans and apes.ⁱⁱ Darwin in his another work 'The Descent of Man', published in 1871, pointed out the number of anatomical and embryological aspects which confirmed the closeness between humans and apes.



Humans belonged to the order Primates. Primates is further divided into two sub-orders namely Anthrooidea and Prosimii. Humans were a member of Anthrooidea along with the apes and monkeys. The suborder Anthrooidea is divided into three super-families – Ceboidea, Ceropithecoidea and Hominoidea. Humans and Apes were placed in Hominoidea. Hominoidea is further divided into two families – (i) Pongidae and (ii) Homonidae. Homonidae is generally divided into two genera (i) Australopithecus and (ii) Homo. It has been established that Australopithecus and Homo were distinct genera.ⁱⁱⁱ

It is very important to note that the human evolution took place prominently in Palaeolithic period which was a part of Prehistory. The prehistory was divided into three periods – Palaeolithic, Mesolithic and Neolithic. The term Palaeolithic and Neolithic was first coined by Sir John Lubbock in 1865 in his book "Prehistoric Times". The term Palaeolithic consists of two Greek words palaios meaning old and lithos meaning stone, thus palaeolithic connotes 'old stone age'. We need to understand archaeology and other auxiliary disciplines to discuss human evolution. Archaeology is the study of the past based on material remains. There are two major types of archaeology – prehistoric archaeology and text-aided archaeology. Prehistoric archaeology is the archaeology of non-literate ancient societies whereas text-aided archaeology is the archaeology of literate societies where archaeology is studied with the help of written documents.

Besides archaeology, anthropology, geology, palaeontology, zooarchaeology and palaeobotany are other branches of study which provides important insight on human evolution. Archaeology is the study of ancient human cultures and societies whereas anthropology is the study of ancient as well as modern societies and cultures. Geology is the study of the origins, structure and composition of the earth. Palaeontology is the study of fossils. Zooarchaeology is the study of animal bones in archaeology. Palaeobotany is the scientific discourse of ancient plants.



The knowledge of dating methodology is very significant in the course of understanding prehistory. Willard Libby, a physicist of University of Chicago developed radiocarbon (C-14) dating method in 1949 for which he was conferred with Nobel Prize in 1950. This significant development led to the spurt in the study of human evolution. The other dating methods like potassium-argon dating and thermoluminescence are also very important. There are two important anatomical changes which are very significant in the course of human evolution. The first anatomical change was the development of bipedalism and other was increase in the size of brain. *Sahelanthropus tchadensis* is the first hominid which acquired bipedalism. The skull of this hominid was found by French palaeontologists Michel Brunet and Patrick Vignaud from the Toro-Menalla region of the Djurab Desert in Chad. This hominid was dated between 6 million and 7 million years old.^{iv} This hominid of the Sahel, of Chad walked upright. *Ardipithecus ramidus* was a bipedal hominid found by paleoanthropologist Tim White at Aramis in the Awash region of Ethiopia. This hominid was considered as ancestor of Australopithecus dated back to 4.5 million years ago.^v

The first fossil of Australopithecus was found by Raymond Dart in 1924 in the town of Tuang in South Africa. Australopithecus connotes 'southern ape'. This species of Australopithecus was named as *Australopithecus africanus*. It was highly mobile and gracile hominid dated back to 3 million year ago. The oldest species of Australopithecus dates back to 4.10 mya was *Australopithecus anamensis*, discovered by M.G. Leakey and his colleagues. Allia Bay and Kanapoi on Lake Turkana, Kenya were the two important sites from where *Australopithecus anamensis* was found.^{vi} It has anatomy which resembled both ape and humans. The jaws were ape-like and the limbs are more human-like. *Australopithecus afarensis* was not only discovered from African sites like Halar region of Ethiopia and Lactoli site in Tanzania but also from Koto Toro in Chad, a central African country. Maurice Taieb and Donald Johanson discovered 'Lucy' from Hadar. Lucy was a female *Australopithecus afarensis* which was 1.2 m tall and 19 to 20 years old.^{vii} Michel Brunet found *Australopithecus afarensis* from Koto Toro in Chad. The time period of this species of *Australopithecus* found from both sites was between 3 million and 3.5 million years ago. Mary Leakey found *Australopithecus afarensis* from Laetoli site in Tanzania which dated



between 3.75 million and 3.59 million years ago. Mary Leakey also found *Australopithecus boisei* also known as *Zijanthropus boisei* from Olduvai Gorge, Tanzania in 1959. *Australopithecus garhi* was discovered from the Bouri Formation in the Afar region of Ethiopia by Berhane Asfaw and his colleagues in 1999. This species dated to 2.5 million years ago. *Australopithecus sediha* was discovered from Malapa Cave, South Africa. The first fossil of this species was found by Mathew Berger who was a 9 year old boy at the time of discovery, son of South African palaeoanthropologist Lee Rogers Berger. The fossils of *Australopithecus sediha* dates between 1.95 million and 1.78 million years ago.

The cranial capacity which is measured in cubic centimetre is a marker of the size of brain. The cranial capacity of different species of Australopithecines varied between 450 cc and 550 cc. The palaeolithic period was further divided into three sub-periods – (i) lower palaeolithic, (ii) middle palaeolithic and (iii) upper palaeolithic.

Homo habilis and *Homo erectus* were two significant species of Genus Homo evolved in Lower Palaeolithic period. *Homo habilis* meaning Handy Person was first discovered and identified by Louis Leakey and Mary Leakey from Olduvai Gorge, Tanzania in 1960. *Zijanthropus boisei* also known as *Australopithecus boisei* was also found from Olduvai Gorge, Tanzania. The age of fossils of *Homo habilis* was dated back to 2 million years ago. The fragments of *Homo habilis* fossils were unearthed by Richard Leakey, son of Lewis S.B. Leakey from Koobi Fora, near Lake Turkana, Kenya. The skull of *Homo habilis* from Koobi Fora was named as KNM-ER 1470.^{viii}

The cranial capacity of *Homo habilis* was 800 cc. Hence, the increase in the size of brain led to the increase of the conceptualization power of *Homo habilis*. Eventually, *Homo habilis* was the first tool maker. *Homo habilis* manufactured chopper-chopping tool which was a unifacial core tool. *Homo habilis* used hammer-anvil technique to make this tool. The two pebbles were struck with each other in such manner that flakes (small parts of the pebble) came out and thus core part of the pebble became unifacial. The tool culture of *Homo habilis* is known



as Oldwan culture because early tools of *Homo habilis* was unearthed from Olduvai Gorge. Sexual dimorphism was quite evident in *Homo habilis*.

Homo rudolfensis and *Homo ergaster* are placed between *Homo habilis* and *Homo erectus* meaning 'upright human' emerged around 1.9 million years ago in Africa. The early East African specimens comes from the Turkana area of northern Kenya. Skull KNM-ER 3733 from East Turkana dates between 1.6 million and 1.5 million years ago.^{ix} Richard Leakey and his team-mate Alan Walker found a fossil of an 11 year-old *Homo erectus* boy at Nariokotome on the western shores of Lake Turkana dating to 1.6 million years ago.^x Eugene Dubois found fragments of fossils of a creature in 1891 at Trinil on the Solo river in northeastern Java. He named this creature *Pithecanthropus erectus*, "ape-like human which walked upright". Thus, he was the first to discover *Homo erectus*. Furthermore, fossils of *Homo erectus* found from Modjokerto and Sangiran on Solo River in Indonesia dated between 1.8 and 1.6 million years ago.

The cranial capacity of *Homo erectus* was 1000 C.C. The most important tool made by *Homo erectus* was hand axe. Hand axe was bifacial, pear shaped core tool. Hand axe was for the first time found from St. Acheul, France. Thus, the technology of manufacturing hand axe is known as Acheulian technology. *Homo erectus* hunted large animals like elephant, rhinoceros, bison, etc. Hunting of elephants from Torralba and Ambrona in Spain is clearly evident. Boxgrove in England gives a vivid description of hunting of big animals like rhinoceros, bison, horse, bear and deer. Fire was used for the first time by *Homo erectus*. Wonderwerk Cave in South Africa; Swartkrans, South Africa; Chesowanya, Rift Valley, Kenya and Zhoukoudian Cave in Beijing, China were important settlements where use of fire was quite evident.

The first fossil skeleton of a Neanderthal man was discovered in a limestone cave near Dusseldorf in the Neanderthal Valley in Germany in 1856.^{xi} Neanderthal Man or *Homo sapiens neanderthalensis* was a subspecies of *Homo sapiens*.^{xii} The emergence of Neanderthal Man can be seen in Middle Palaeolithic period. The cranial capacity of Neanderthal Man was same as



modern man but the skull of Neanderthal man was thicker and less rounded at the top. Middle Palaeolithic period marks the beginning of use of flake tools like points which were used as projectiles attached to a wooden handle. Thus, composite tools came into being. Besides, side-scraper were used for extensive scale in Middle Palaeolithic period. This tool technology is known as Mousterian technology named after the rock shelter of Le Mousteir in the Dordogne in southwestern France.^{xiii} The most important aspect of Mousterian culture was the disposal of the dead. Neanderthal man was the first species of Genus Homo to bury their dead bodies in cemeteries. Mousterian cemeteries have been found at La Chappelle-aux-Saints in France, La Ferrassie-a rock shelter near Les Eyzies in France, Kiik-Koba in the Crimea, Mugharet es-Skhul, at Mound Carmel in Israel/Palestine and Shanidar caves in Iraq. At La Chappelle-Aux-Saints several fossils of skeletons were found which were laid in a shallow grave. Interestingly, sometimes the head rested on a stone pillow with stones above and around it to relieve the pressure of the earth.^{xiv} Neanderthal graves were prominently single burials accompanied with flint tools and food offerings.^{xv}

Homo sapiens sapiens meaning 'wise man' emerged around 100,000 years ago in southwest Asia. Qafzeh Cave in Israel was the site where *Homo sapiens sapiens* was found around 100,000 years ago. Modern humans also flourished in southern Africa at the same time. The Upper Palaeolithic period of Europe started around 36,000 years ago. Cromagnon was the rock shelter near the village of Les Eyzies in southwestern France from where the earliest *Homo sapiens sapiens* were found in Europe. That is why modern man is also known as Cro-magnons. There are prominently four Upper Palaeolithic cultures in Europe (i) Aurignacian Culture (34,000-30,000 years ago), (ii) Gravettian Culture (27,000-22000 years ago), (iii) Solutrean Culture (22,000-18,000 years ago) and (iv) Magdalenian Culture (18,000-11,000 years ago).

The tools of Aurignacian culture were sharp parallel edged blades and burins. Burins were used as chisel for manufacturing other tools. The Gravettian culture is characterized by backed knives.^{xvi} The other tools used by Gravettian were thin blades known as Gravettian



points, barbs, flat leaf shaped darts, scoops, picks and pickaxe. The Gravettians carved small female figurines known as 'Venus figurines' out of stone or ivory.^{xvii} The Solutrean culture is named after Solutré site in southwestern France. The most important tool made by Solutrean people was leaf-point. Harpoons were used by the Magdalenian people. La Madeleine is one of the important site of Magdalenian culture.

The Upper Palaeolithic period is known for cave paintings in Europe. Solutrean people were indulged in bas-reliefs. Almost 80 percent of upper Palaeolithic paintings comes from Magdalenian culture. There is a very interesting story related to the finding of Upper Palaeolithic cave paintings of Altamira in Spain. Don Marcelino de Sautuola who owned farms in Altamira was digging for some artifacts along with his 5 years old daughter Maria in the cave which was situated in his estate. Suddenly, Maria found paintings of bison and boar. In addition to this, various sites in France like Grotte de Chauvet, Lascaux and Niaux gives a vast information about Magdalenian paintings. The cave paintings according to Henry Breuil was an act of magical ritual to ensure success of hunt. In contrary to his argument, Andre Leroi Gourhan has pointed about the complexity of cave paintings. According to him, the art was manifestation of a system of meanings and an expression of a worldview that organized Upper Palaeolithic life.^{xviii}

The beginning of social organization should be seen in mother-child bond of humans. Modern Man was born prematurely due to narrower birth canal, thus the child's brain was not fully developed at the time of birth and the child needed special care. Hence, the mother child bond became the nucleus of social organisation. The palaeolithic economy was characterized by hunting and food gathering. Humans in Palaeolithic period used to live in bands of 25-60 people where sexual relationship was limited for few people. *Homo sapiens sapiens* were able to communicate among themselves by using certain language and not grunting voices because the larynx and thorax developed fully in Modern man which enhanced the ability of cooperate behaviour.



The evolution of humans was a very slow process but a complex one. This evolutionary expedition from primates to apes, apes to australopithecines and australopithecines to species of Genus Homo was quiet interesting. The adaptability of humans in any precarious and adverse environmental conditions has eventually helped them to develop anatomically as well as culturally. The detailed study of mitochondrial DNA (mt-DNA) has validated the fact that Africa was the cradle of humankind. The scholars of various disciplines have done extensive research in the field of human evolution and they provided immense information about the journey of human evolution.

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