
UNIT 15 HUMAN EVOLUTION-II

Structure

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15.1 INTRODUCTION

In the last unit we traced the human evolutionary history mostly from a palaeontological viewpoint. Although still fragmentary, the available fossil evidence makes it possible to construct a more or less coherent story of human origin and its development. Besides suggesting a primate ancestry, fossil evidence has indicated various trends in human evolution. Today the modern man is regarded as a climax of the evolutionary process. But several questions are raised as to which direction the human evolution is proceeding now and what direction will it take in the future. Is the be-all and end-all of all the evolutionary process? Or do human beings continue to evolve biologically? It may not be possible to provide a direct answer to these questions since evolution is a long term process and the effects could be visualised only after tens of thousands of years.

In this unit we will deal in detail with the cultural evolution of man. **Communication** skills and development of language have been the most important aspects of cultural evolution. This unit will also dwell on the evolution of the families and societies. There will also be a discussion on whether natural selection is active as ever on the present day man. Towards the end of the unit we will discuss the trends in the future evolution of man.

Objectives

After studying this unit you shall be able to:

- discuss the role of the language in the evolution of human culture,
- describe the evolution of various cultures in human societies,
- raise questions whether natural selection continues to act on man and what is its effect, and
- draw your own **conclusions** regarding the direction of the future evolution of man.

15.2 SYMBOLISING AND LANGUAGE SKILLS

Language, a powerful tool for communication should have played a very important part in the evolutionary history of human species. Two relevant questions that could be asked of human language in an evolutionary context are : i) when did it originate and ii) what were the selection pressures that led to its development as a powerful facility for the exchange of ideas? There cannot be definitive answers for either of these questions. Yet we can do some knowledgeable speculations.

One of the **man's** major adaptations is symbolic thinking and its expression through a symbolic language. Language is the foundation of human culture and this adaptation has distinguished man from other animals and in fact has made him superior to them. Other organisms, however, can also learn a few things, for instance birds can learn to do new things with their beaks by observing another bird. **A** chimpanzee can put together two sticks to make a long one to obtain a fruit placed out of its reach. But even here the animal can do this only if all the elements are together in one place. In other words, the chimpanzee may not be able to think **and**

go in search of the stick in order to obtain fruit. But recent studies have indeed shown the chimpanzees, our closest relatives do have the ability to symbolise to some degree.

It is a fact that ability to symbolise has made man enter a new adaptive zone. Also, it was big jump for man from the world of symbolising to a world of words. The development of a spoken language should have been a response to the direct stimuli from the external environment. We earlier raised a question regarding the time-of emergence of the language. Unfortunately the products of language facility cannot enter into the fossil record. Therefore, we have to deal indirectly with the question of when the facility arose. Human brain as distinct from those of other animals provides a reasonable answer to this question. Also, a more careful analysis of the tools and art objects, the hominid products, do indicate of the type of cognitive capabilities necessary for spoken language.

Language abilities could be directly related to the brain size. In most people language centres are located within the left cerebral hemisphere which is slightly larger than the right. The structure and the sense of human speech as well as the coordination of the throat and the mouth muscles are controlled by specific centres in the brain. Two centres, Wernich's area and Broca's area (Fig. 15.1) located in the side and front of the brain appear as slight swellings on the left hemisphere. Again it cannot be certainly said that dominance of left hemisphere and the occurrence of the centres are diagnostic of language skills, since it appears that even chimpanzees possess them, although to a lesser extent.

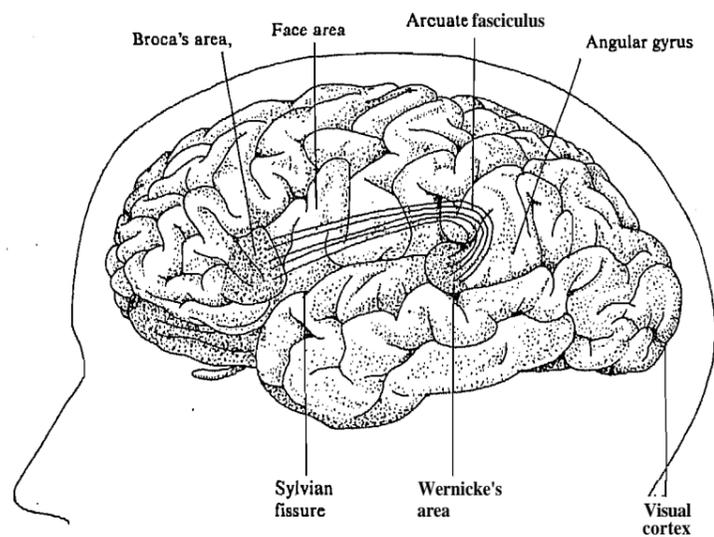


Fig. 15.1 : Language centres in the brain of humans.

Yet another anatomical feature of the modern human cranium is its flexed or vaulted appearance to accommodate the vocal apparatus. The basicranium of apes is much flatter. The basicranium of australopithecines resembles those of apes and in *Homo erectus* it is incompletely humanlike.

Two other skills, both of which are non-language products, seem to have played a significant role in the evolution of the communication abilities of humans. The first of these is the systematic and orderly progress the man-made in tool making. An analysis of the stone tool making over the past 2.5 million years suggests that there has been an increasing standardisation of tool types over the years. The transition that brought about the sophistication in tool making coincided with the dates of appearance of *Homo erectus*, Neanderthal man and modern man. In other words, the transition took place 1.5 million years, 150,000 years and 40,000 years before the Present respectively.

The standardisation of tool making is a reflection of the nature of the societies which made the tools as well as used them. Glynn Isaac, an eminent archeologist suggests that the progressive orderliness seen in stone tool kits is an expression of an increasingly ordered society. Isaac further argues that it is not possible to conceive

such well structured societies without the emergence of a complex spoken language. Fossil evidence indicate well established social relationships, an effective exploitation of the resources and a strong expression of group identity, all of which speak about highly ordered societies. Both the processes, the tool making and the spoken language involve sequential elaboration of component parts. In other words, they have to be developed in a specific order. If the order is not followed, then the final product makes no sense. Gordon Hewes, an anthropologist concurs that the speech and tool making have several things in common. The tongue and the mouth movements are commonly associated with precise hand work. Hand gestures should have pre-dated the spoken language as a form of communication. Non-verbal communication or the symbolic language should have played a vital role in the early hominid evolution and in fact this is true of even today.

The second of the non-language product of the prehuman brain is his ability to do art work. The art work should have been created with a view to symbolise and should have had a high utility value for him. The symbolic culture should have developed in relation to a cultural context. The oldest artifact available is at least 300,000 years old. It is an ox rib in which a series of festooned double arches are carved (Fig. 15.2a). A similar such pattern is available some 40,000 years before the present. In between we do not have anything comparable to such structures. From mousterian one could obtain engraved bone and ivory. And starting from upper paleolithic culture several such structures both in terms of number as well as variety have been obtained (Fig. 15.2b & c). The increase both in terms of number and elaboration is suggestive of an incremental leap in the facility for spoken language. It is not that the spoken language was the first innovation of these times but rather a substantial refinement of it. Harry Jerison a neurobiologist at the University of California is of the view that the evolution of language might have been a response to the ever expanding need to create an improved model of the world in one's brain. Language emerged specifically within the social context of an economically interdependent society.

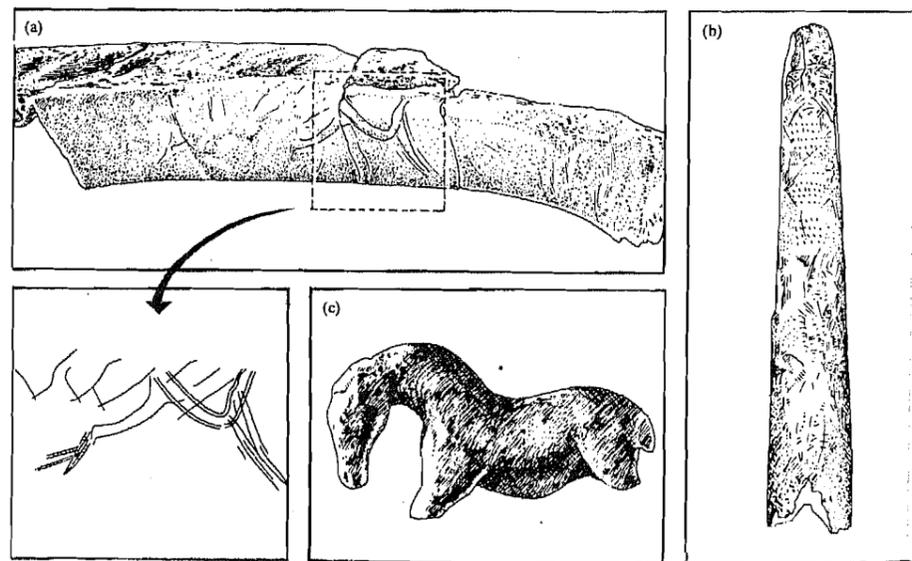


Fig. 15.2: a) Oldest art work (dating back to 300,000 years back) showing festooned arches carved on an ox rib; b) Fragment of reindeer antler (12000 years old) showing an engraved pregnant mare; c) 300,000 years old horse carving from Mammoth ivory.

Is man unique in having evolved an efficient communication system? Is he therefore, to be distanced from his biological relatives, the apes? Some evolutionists believe that language is unique to man. G.G. Simpson is of that view. Dobzhansky believes that

man has an exalted position over all other living organisms. J.C.B. Abraham (1990) refuses to accept the claims of such great evolutionists. He is of the view that if there were to be an "unbroken continuity in morphology, anatomy and physiology of apes and mankind, then that continuity must be recognised also in language, self-awareness and the higher faculties such as the aesthetics, the ethical and the behavioural — both individual and social". The Darwinian revolution, observes J.C.B. Abraham, must be pushed to its logical conclusion. Citing examples in favour of his argument, he points out that chimpanzees may not vocalise words but do use the American sign language effectively. A female chimpanzee, Washoe could use a vocabulary of 160 words by the age of 5. Washoe could even transfer her abilities to the novices who became familiar with the sign language. The situation is similar to the one witnessed in human society where the children acquire their mother tongue by imitating the parents and learning from them. Other workers have shown that these animals besides their capacity for human language with proper syntax were also capable of cultural transmission of the language. It, therefore, appears that it is not possible to maintain the hypothesis that the chimpanzees are divided by unbridgable gap from humans.

Symbolic and spoken languages most often come to be written. One advantage of writing is that things can be written down, forgotten and retrieved again. Such a methodology improves the content of any culture and promotes accuracy. With the knowledge explosion it became increasingly difficult to transmute, condense and generalise knowledge in the minds of men. Therefore, authority passes from living men to books. In fact, the creation of new knowledge itself does not depend on a single person but rather it is collective task. Writing became a significant milestone in the cultural evolution of man and the accessibility of the books to all people was responsible for the spread of the knowledge.

SAQ 1

Write (T) for true statements and (F) for false statements.

- i) Language, a tool for communication played relatively a less significant role in the evolutionary history of human species. []
- ii) Symbolic thinking and its expression through a symbolic language are one of the major adaptations of human beings. []
- iii) Chimpanzees have the ability to symbolise to some degree. []
- iv) There is abundant fossil record as evidence for the products of language facility. []
- v) Language centres are located on the right cerebral hemisphere which is slightly larger than the left. []
- vi) The modern human cranium has flexed or vaulted appearance to accommodate the vocal apparatus. []
- vii) The progressive orderliness seen in stone tool kits is an expression of an increasingly ordered society. []
- viii) Hand gestures should have predated the spoken language as a form of communication. []

15.3 EVOLUTION OF CULTURE

A general agreement among all the human evolutionists who may have a very radical philosophical background and convictions is that man is the result of an extraordinary evolutionary process. Whereas evidence is available from fossil remains of our ancestors and relatives for the comparative morphology and even anatomy to structure a biological classification, fossil forms do not record the behavioural aspects of man. Essentially the artifacts or the environment in which the fossils were found have to be examined judiciously to draw inferences, relating to the behaviour and cultural aspects. For instance, aggressiveness is a behaviour pattern but this behaviour pattern cannot be fossilised. On the other hand, the environment in which the sharp fossil tools and the fossils of big animals killed by game hunting speak

volumes of the aggressive behaviour of the men of the times. The uniqueness of man can be attributed to the instinctive culture that he has evolved. Culture is sum total of a store of information and behaviour patterns. This is inherited by one generation from the other by instruction and learning and by examples and imitation. In other words, although the culture by itself may not be controlled by genes, the capacity to acquire it is determined genetically. As we discussed in our earlier section, the symbol systems should have played a significant role in the transmission of cultures. Because of this difference that the culture is not transmitted by genes, it is called "superorganic". This notion is not necessarily true. After all it is only the possessors of the human genotype who can acquire, transmit, innovate or transmute culture. In other words, human genotypes are indispensable for culture although the genotypes themselves do not decide which one of the variants of the existing cultures they will acquire. It amounts to saying that there are no genes for Hindu, Islamic, Sikh, American, Chinese or European cultures. The acquiring of a particular culture depends on the environment in which a child is brought up. The same argument can be extended to the concept of the learning and using of a language. Such acts although are decided by genes, the genes do not decide which particular language will be learnt.

In the last unit we looked into the complexities in human evolution based on palaeontological data. The complexities manifested themselves in the morphological and anatomical details. The question is, whether the cultural evolution is as complex as other aspects of evolution. Is it possible to define progress in cultural evolution as we defined progress in cranial capacity or bipedal walking? Is there any way by which a particular culture is more or less well adapted than the other cultures? Does culture actually progress from a lower to higher state?

The answers to these questions may not be simple. What could be the possible criterion on which the culture could be measured? Western scientists have chosen the efficiency as a measure of culture. The efficiency refers to an increase in the energy gained in respect to the energy expended. Thus, when man switched from scavenging to big game hunting, there was a surplus of energy. Once the agriculture was discovered he grew more. Modern industrial technology allows greater surpluses. Future depends on the use of new fuels, solar energy and other non-conventional sources, all of which are expected to bring greater returns on the energy expended. But there is also the criticism that the trend we describe occurs only in small portion of the total culture and does not reflect the entire culture. Also, the efficiency aspect of the culture may not be the most important one in terms of survival at any moment. Also, this aspect of culture may lead itself ultimately to inadaptiveness.

Another aspect of cultural evolution is that it could potentially be self-destructive if the adaptation is to the culture itself and not to the external environment. For instance, with all the modern industrial and technological development man of today is besieged with major ecological and emotional problems. The factors which led to such situation involved appropriate adaptations to the changed cultural conditions. The acquired cultural adaptations may in turn bring further critical problems. What we are trying to impress upon here is that man's adaptations to changing culture may not have any relevance to his biological needs and his associated flora and fauna. As a matter of fact the newly acquired cultural adaptation may be limited by his biological needs. For instance, man may become adapted to an ever expanding automobile culture, but the biological adaptation (need) namely the ability of the lungs to withstand pollution may be limited. However, it should be conceded that there is a definite advantage by replacing the biological evolution with cultural evolution in that it leads to a faster rate of change.

Biological evolution is a slow and tedious process as compared to cultural evolution which at times progresses by quantum leaps. The differences in the rates of the two evolutionary processes allows man to adjust temporarily to temporary changes in climate and other environmental parameters. It could even be argued that in case of man the biological evolution could not keep pace with cultural evolution. If a cultural adjustment is made before a biological one, the latter has no way of occurring. It could be said that culture has very subtly delinked the genome of man from his geophysical environment.

We shall discuss this aspect further in detail when we are to discuss natural selection and man in our next section.

Fill in the blanks with suitable words.

- i) The uniqueness of man can be attributed to that he has evolved.
- ii) Culture being not transmitted by genes is called
- iii) The acquiring of a particular culture depends on the in which a child is brought up.
- iv) If the adaptation is confined to culture and not to external environment, then it would prove to be
- v) In man evolution could not keep pace with evolution.

15.4 NATURAL SELECTION AND FUTURE OF MAN

Natural selection is a process which directs all biological evolution. It is a process that directs genetic changes which when proved to be adapted to the environment are retained in the genome. In other words, man like any other organism may have to passively adapt to changing ecological circumstances through a slow, generation by generation change in gene complexes. The question is, does natural selection act in the same way in man as it is acting on other organisms. The major difference between man and other organism is that man is capable of steering his own evolution whereas the other organisms cannot. Teilhard de Chardin, an eminent human paleontologist and anthropologist says "the evolution of life on earth, far from having come to a stop, is on the contrary now entering a new phase. The Darwinian era of survival by natural selection is thus succeeded by a Lamarkian era of super life brought about by calculated invention". Such a statement gives credence to the hypothesis that man can monitor his own evolution in future.

There is evidence to suggest that man through the technological revolution has modified the role of natural selection. As an example one may mention the cancer of the eye, the retinoblastoma caused by a dominant mutation. The disease develops as a tumor in one of the eyes of the affected child, spreads to the other eye and then extends to the brain causing the death before the individual reaches the adulthood. Today, if the condition is detected sufficiently early, it is possible to remove the tumor surgically despite the loss of one eye. The child can grow into a near normal adult, marry and give birth to children. But there is a 50% chance for his children to be born with retinoblastoma. And in turn they have to be treated for the disease. Here is an instance where, through a surgical treatment a lethal gene is permitted to be preserved and passed on to the subsequent generations. Natural selection in normal course would have aimed to eliminate the gene from the population. But if the lethal condition were to be completely cured in every patient the frequency of the gene would increase slowly in the population.

Certain authors advance the argument that there is a deterioration in the genetic endowment of man. This may be due to ever improving conditions of life as well as to the improvements made in modern medicine. For example, the availability of insulin inexpensively allows the diabetic genotypes to breed although they would not have done so in the past. Similarly, the invention of eye glass has allowed the accumulation of those alleles which are inimical to good vision. These are the cases where the improvement in the quality of life has led to the accumulation of unwanted genes in the population. In other words, certain alleles have their selection coefficients reduced on account of improved medical practices. At the same time the modern civilization has also increased the selection coefficient of certain other alleles. For instance, as the civilised life became more faster, predisposition to tendencies like schizophrenia greatly increased. All these examples are suggestive of an increasingly modified role of natural selection in the future evolution of man.

There is some truth in the statement that the progress in health care is responsible to a certain extent for the rate of genetic deterioration of mankind. Can this genetic decay be stopped? The answer to this question lies in the science of eugenics, the science that seeks to improve the genetic stock of mankind. While the positive

Genetic counselling is a practice which informs prospective parents about the genetic nature of a given condition that may exist in one of them or in the families, and about the chance of its transmission to the offspring. Genetic engineering is a method of direct manipulation of genetic material. Germinal selection is a technique that involves the use of sperm and egg cells from individuals with desirable genetic constitutions through artificial fertilisation. Cloning is a process that ensures that an offspring is a true genetic copy of an individual. Cloning has been successful in frogs and toads.

eugenic aims at the multiplication of desired alleles, the negative eugenics is concerned with avoiding the spread of undesirable genes.

There are four different ways by which the improvement in the genetic endowment of man is attempted to be made. They are; genetic counselling, genetic engineering, germinal selection and cloning. Without going into the details we may mention here that the eugenic procedures have enormous ethical and sociological implications. No all the four methods we mentioned here could be put into practice. Methods like genetic counselling are quite desirable and the genetic engineering techniques to correct serious genetic defects appear to be socially and ethically unobjectionable. Anyhow the human species will continue to evolve genetically whether the man chooses to interfere in the process or not. Both positive and negative eugenics will be put to test in the process. It is only for the future generations to say whether the man has acted correctly or not in steering his own evolution.

One other aspect of future evolution of man relates to the pathway in which his culture would evolve because human experience is now within the realm of culture and not in basic biology. As far as the change is concerned, the human experience has telescoped it to be measured in hundreds of days, what was once measured in hundreds of million years ago. Further, as compared to many organisms, the human being has become one of the least specialised of the species. In other words, in terms of habitat and food specialisation man has adapted himself to varying conditions. He feeds on a broad diet and has distributed himself worldwide. The technology that he has evolved has taught him to dive beneath the oceans, fly successfully and even burrow under the ground. In short, man is a supremely adaptable species and this has been the reason for his enormous success on this planet.

Further, the continuous learning process which is an element of his social and economic activities has made man extremely different from all other organisms. Clifford Geertz observes that man is extremely dependent on "a certain sort of learning; the attainment of concepts, the apprehension and applications of systems of social meaning". It is these aspects that have led to the evolution of culture, a trait about which man alone can be proud of. Geertz further observes, "Man without culture is like apes who had somehow failed to find themselves". Man without culture "would be unworkable monstrosities with very few instincts, fewer recognisable sentiments and no intellect". Tautomerically, one could ask whether humans produce culture or the culture produces humans. The sociobiologist E.O. Wilson in a landmark study believes a kind of coevolution between genes and culture as a result of which virtually every wrinkle in human behaviour is explicable in terms of genetics.

SAQ 3

Choose the correct answers.

- i) Man is **capable/incapable** of steering his own course of evolution.
- ii) Technological advances may lead to a **deterioration/an improvement** in the genetic **endowment** of man.
- iii) Availability of insulin **allows/does not allow** diabetic genotypes to breed successfully.
- iv) **Positive/negative** eugenics is concerned with avoiding the spread of undesirable genes.
- v) Genetic engineering techniques developed to correct serious, genetic defects are socially and ethically **objectionable/unobjectionable**.
- vi) Every wrinkle in human behaviour could **be/could not** be explained in terms of genetics.

15.5 SUMMARY

In this unit you have studied the following:

- The concept of symbolising and the evolution of language skills in human societies. The symbolic language found its expression through symbolic thinking. The language has been the foundation of human culture. Ability to symbolise and develop language skill have led man to a new adaptive zone. The evolution of the

language facility in human species is closely related to the evolution of human brains and the specific centres located in the brain. Also, the anatomy of the human cranium is adapted to accommodate the vocal apparatus. Tool making abilities and ability to do artwork appear to be two other skills that have played a significant role in the evolution of communication ability in humans. Controversy still exists as to whether man is distinct from his biological relatives because of the efficient communication abilities. Ability to write seemed to have followed the symbolic and spoken language ability.

- Behaviour and culture are two other domains which are unique to man. Culture is something instinctive and is sum total of a store of information and behaviour patterns. Environment along with the genotype plays a significant role in the evolution of culture. Although it is difficult to quantify and measure culture, efficiency which refers to an increase in the energy gained in respect to the energy expended is regarded as a measure of culture. Switchovers from scavenging to big game hunting to agriculture and to modern industrial technology — all have led to an increase in the energy and thus inefficiency. Future evolution depends on the use of solar and other nonconventional sources of energy.
- Natural selection which is concerned with the nature of the genetic change through time and specifically with the differential survival of genotypes continues to act on man. But man responds to the challenges posed by the environment by changing his behaviour or by changing the environment itself. It appears that man has started to steer the course of his own evolution. Various eugenic processes such as genetic counselling, genetic engineering, gerin selection and cloning may he attempted to improve the genetic endowment of man. Although some of these processes may have ethical and sociological implications, it appears that the future genetic evolution of man may depend in the application of such procedures. The present human evolution can be measured in much shorter time element as compared to his past evolution. Also the present day man is a supremely adaptable species mostly because of the extensive technologies that he has evolved. Only man could be identified as having evolved the learning process, a special sort of learning process namely the attainment of concepts. Man is endowed with the unique trait, the culture, which distinguishes him from all other species, more particularly his close relatives. There appears to have been a coevolution between human genes and the cultural process.

15.6 TERMINAL QUESTIONS

1) Do you think that ability to express has distinguished man from other animal groups and made him superior to them? Briefly substantiate your claim.

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2) How is the tool making ability linked with the development of communication abilities in humans?

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- 3) The answer appears to be yes. While biological evolution is strictly regulated by the changes in gene frequencies, the culture it appears is not transmitted by genes and therefore, superorganic. But it remains a fact that it is only the possessors of human genotype who can acquire, transmit, innovate or transmute culture. Also, the cultural evolution could be potentially self-destructive if the adaptation is to culture itself and not to the external environment. To distinguish cultural evolution from biological evolution it could be said that man may become adapted to an ever expanding automobile culture but at the same time he should also evolve the biological adaptation of his lungs withstanding the pollution problem.
- 4) It appears that the present day man is capable of steering the course of his own evolution. More particularly at a time when he is capable of improving his genetic endowment by phenomenon such as genetic counselling and genetic engineering. (The student may list his own conclusions on the possible role of natural selection and the extent to which it plays a role in evolving adaptations in man).

GLOSSARY

Acheulian industry : this stone tool industry presents a slight advance over the Olduwan tool industry and dates back to 1.5 million years. The industry is characterised by the presence of tear drop shaped hand axes.

Allopatry : organisms belonging to same species are separated by space and occupy different territories.

Altruism : a behavioural trait probably genetically controlled responsible for the benefits provided to the other members of the species.

Basicranium : the region relating to the underside of the cranium:

Carrying capacity : the capacity of the environment to sustain an optimal population size.

Character displacement : the tendency of the two species of organism to evolve differences in their characters when there is a broad **niche** overlap. To begin with the two species may share a larger area of the niche but with the action of natural selection the niche overlap diminishes.

Coadaptation : adaptations evolved by two different species occupying the same niche to specific needs from the environment that minimises the interspecific competition.

Coevolution : simultaneous evolution of two or more ecologically related species.

Conspecific : individuals belonging to same species.

Directional selection : selection favouring adaptations to **new** environmental conditions so that change is produced.

Genetic drift : changes in gene frequency in small populations because of random processes.

Genetic repatterning : the mechanism by which a new population develops from **the** early colonisers of a habitat by various genetic mechanisms that break the genetic cohesiveness. This results in a plastic and pliable population that could be moulded into a new species.

Group selection : a selection which aims the extinction of certain populations so that other populations could be propagated. This concept of selection suggests that population is the unit of selection and not the individual.,

Hybrid sterility : the sterility of the offsprings of the interspecific crosses.

Interspecific sterility : failure in mating because of the inability of the **sperm** of one species to reach the egg of another species in animals and that of pollen to reach the ovules in plants.

Kin selection : selection favouring the altruistic behaviour of an individual towards its own relatives or individuals having some of its own gene.

Mousterian industry : the products of the *Homo sapiens neanderthalensis* culture. The **mousterian** culture continued through to around 35,000 to 40,000 years ago and led to the emergence of fully **modern** humans *Homo sapiens*.

Niche : the sum total of the ecological requirements of a species.

Olduwan industry : the earliest stone tool industry discovered from Ethiopia dating back to 2.5 million years. They are a collection of extremely crude scrapers, choppers and flakes.

Peripatry : populations living in isolation at the peripheral territory of a parent population.

Post-mating isolating mechanism : the isolating mechanism taking effect after mating.

Pre-mating isolating mechanism : the isolating mechanism taking effect before mating.

Rassenkreis : the mechanism by which a sub-species slowly evolves and becomes a new species by geographical isolation.

Speciation : formation of new species from parent population.

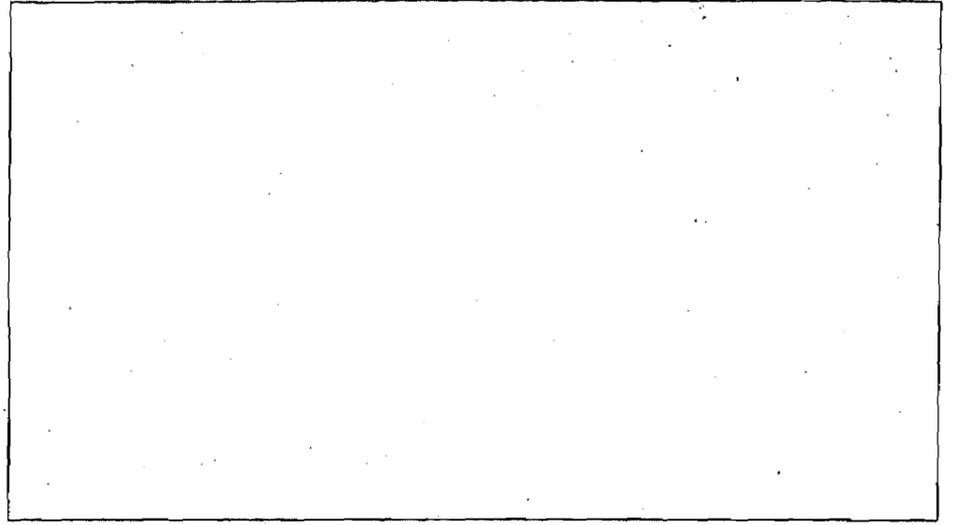
Stabilising selection : natural selection which maintains a well-adapted condition by eliminating any marked deviations from it (it is also called normalising selection).

Sympatry : individuals belonging to a species living in the same area.

FURTHER READINGS

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6) Any other suggestion(s)



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18	0521	Sindri College, P.O. Sindri-828122, Dhanbad, Bihar
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24	0707	MCCRC, Jamia Millia Islamia, Jamia Nagar, New Delhi-110025
25	0711	Gargi College, Siri Fort Road, New Delhi-110049
26	0715	Acharya Narendra Dev College, Kalkaji, New Delhi-110019
5. DELHI REGION (2) (North and East Region including Meerut, Modinagar and Ghaziabad Districts of Uttar Pradesh)		
27	0728	Bhaskaracharya College of Applied Sciences, Veer Savarkar Complex, Pusa New Delhi-110012
28	0729	Kalindi College, East Patel Nagar New Delhi-110008
29	2713	Lajpat Rai (P.G.) College, Sahibabad-201005, Uttar Pradesh
6. AHMEDABAD REGION (Gujarat, Daman & Diu, Dadra & Nagar Haveli)		
30	0901	L.D. Arts College, Navrangpura, Ahmedabad-380009, Gujarat
31	0902	General Education Building, P. S. University, Vadodara-390002, Gujarat
32	0906	H B Thacker Commerce College, Bhuj-370001, Gujarat (Lalan College, Bhuj, Gujarat)
33	0909	New Progressive Education Trust, Mehsana-384002, Gujarat
34	0922(R)	Shree Gattu Vidyalaya, Plot No. 91B, GIDC Estate, Ankleshwar, Gujarat
35	0928(R)	National Institute of Management and Information Technology (NIMIT) Cho Parag Ad., Jansatta press, Rajkot-5
36	2901	Govt. Arts College, Daman and Diu (U.T.)-396210
7. KARNAL REGION (Haryana and Punjab)		
37	1001	Mukammlal National College, Yamuna Nagar-135001, Haryana
38	1005	Chhotu Ram College of Education, Rohtak-124001, Haryana (All India Jat Heroes Memorial College, Rohtak, Haryana)
39	1008	Govt. College, (Girls Wing), Sector-14, Railway Road, Karnal-132001, Haryana
40	1009	Govt. P.G. College, Hissar-125001, Haryana
41	1017	Markanda National College, Shahabad, Kurukshetra, Haryana
42	101	Government P.G. College, Jind 126102, Haryana
43	2201	D A V. College, Jalandhar-144008, Punjab
8. SHIMLA REGION (Himachal Pradesh and Chandigarh)		
44	1101	Government Boys College, Sanjaula, Shimla-171006, Himachal Pradesh
45	1105	Government College, Dharamshala-176215, Himachal Pradesh
46	1113	Govt. P.G. College, Bilaspur-174601, Himachal Pradesh
47	1115	Govt. Degree College, Recong Peto, Kinour Dist., Himachal Pradesh
9. JAMMU REGION (J&K)		
48	1201	University of Jammu, Department of Management Studies Jammu Tawi-180001, J&K (Gandhi Memorial Science College, Jammu Tawi, J&K)
49	1206	Govt. Degree College, Kathua, J&K
50	1207	Govt. Degree College, Rajouri, J&K
51	1208	Govt. Degree College, Poonchi, J&K
52	1223(P)	Gandhi Memorial College, Camp Raipur, Bantialab, Jammu-181123, J&K
10. BANGALORE REGION (Karnataka and Goa)		
53	0802	Dhemp College of Arts & Science, P.O. Box No. 222, Panjim, Goa-403001
54	1303	ISS College, Dharwad-580004, Karnataka
55	1320	Govt. Science College, Nirupathunga Road, Bangalore-560001, Karnataka
11. COCHIN REGION (Kerala and Lakshadweep)		
56	1401	Institute of Management in Govt. Vikas Bhavan, Thiruvananthapuram-695011 Kerala, (University College, Thiruvananthapuram, Kerala)
57	1403	J D T Islam, Calicut 673018, Kerala
58	1404	Catholicate College, Pathanamthitis-689645, Kerala
59	1405	Shri Narayan College, Kannur 670007
60	1417	St. Alberts College, Eruakulam 682018, Kerala