ANTHROPOLOGY:
IT’S RELATIONSHIP WITH LIFE SCIENCES, EARTH SCIENCES, MEDICAL SCIENCES, ENVIRONMENTAL SCIENCES.

Introduction:

Today anthropology has become a broad-based study much more than any other scientific discipline as it has to deal with a wider variety of problems. Anthropology includes a broad range of approaches derived from both natural and social sciences.

Anthropology and Life Sciences:

Anthropology is closely related to several of the natural sciences: zoology – in terms of the relationship to other animals and the overall places of the human species in the process of evolutions; biology- in terms of the evolution of humans from early pre-human forms; anatomy and physiology; - in its concerned with the structure of the human body, the relationship of the various parts and the operation or function of these different parts ; genetics – concern with variation in the world to-day.

Anthropology studies the physical characteristics of man. It uses the general principles of biology and utilizes the findings of anatomy, physiology, embryology, zoology palaeontology and so on. Paul Broca (1871), the famous biologist defined physical anthropology as the “Science whose objective is the study of humanity considered as a whole, in its parts and in relationship to the rest of nature”. Although it is related to the biological sciences like anatomy, physiology etc., it does not restrict itself to the study of “contemporary average man”. Rather it is interested in the comparative study of man considering the past, present and even future. Actually, physical anthropology is more elaborate and detailed than biology. For instance, when a zoologist tries to understand the biology of an animal, he never goes into the details of the length and breadth of the skull. Physical anthropology examines the skull in all its details. Thus, anthropology has a sort of specialization or sharpening of certain aspects of general biology. Still another special feature of anthropology is that it is concerned only with limited and restricted study of the human species. It never moves beyond the study of humans. Anthropology considers the human species as a biological entity. Some
anthropologists are concerned primarily with the past forms of Pre-human and early human species, an area of study known as fossil man. Others concentrate on the similarities and differences between the various primate species, which include not only human, but apes and monkeys as well. This area of study is called primatology. A third area, known as the study of human variation, or anthropological genetics, deals with contemporary as well as historical variations among populations of humans. It is concerned with questions such as the adaptation of a group of people to a specific climate, the natural immunity of some peoples to certain disease.

**Anthropology and Earth Sciences:**

Anthropology and Earth Sciences have intimate relationship. The earth sciences include geology and human geography. Archaeology is closely linked to geology in analyzing the archaeological sites and in dating the past and finding out the chronological sequence. Anthropology, cutting across the barriers of time and space, naturally takes interest in men past especially prehistoric past. Thus archaeologists may be seen serving as the ‘historians’ among anthropologists involved in the cultural reconstruction of man’s past. Till sometimes back the term prehistory or prehistoric archaeology has been popular. Unlike a socio-cultural anthropologist, an archaeological anthropologist cannot observe human behavior and culture directly but reconstructs them from material remains like pottery, tools, cave/rock paintings, ruins of shelter, ornaments and so many other material remains that survive the wear and tear of climatic factors. To recreate man’s past without any written record is not an easy task. It is like a jigsaw puzzle. Interpretation of what went on in the past requires a lot of imagination and common sense.

To discover, analyze and interpret their finds archaeological anthropologists have to take the help of geologists, human geography and a host of other specialists. When one digs deep into the earth one cannot do without geology. When you date the past you require the help of human geography and others. But despite all this inter-disciplinary collaboration, the archaeological anthropologist shall always remain handicapped at least on one count. He will never be able to know as to what speech or language the prehistoric man was using. Still, reconstructing the past shall remain an anthropological preoccupation. Before launching a proper and planned investigation of the prehistoric anthropology of a selected area or region, it is quite important to study the past geography and climate besides geology. We have a fairly good account of the present day climate and geography of the world. But both these phenomena underwent drastic changes since the time when “man the tool-maker” first appeared in the beginning of Pleistocene epoch till to date the entire world over.
Hence a thorough knowledge of these changes is a matter of concern to pinpoint sites and settlements which formed the above of human groups, and their movements in search of animal and plant food. Such meaningful and objective assessment of the climatic conditions of the past mainly through geological deposits of different types and their impact on the life activities of prehistoric communities particularly with regard to their psycho-social development can be achieved with the assistance and association of a competent professional climatologist. Geology, the science of earth’s crust, provides the law of stratigraphy which as the foundation of our knowledge of chronological order of facts with the position and nature of each stratum containing prehistoric remains furnishes information as to the relative antiquity of the finds as well as the strata. Further, the interpretation of the finds can be objectively done only when one explains the manner of the deposition of different layers. The archaeological strata formed by the effects of geological processes and mechanisms can help us in understanding the environment existed in the past.

As stone is the most imperishable material, it has been extensively used in the manufacturing of tools and weapons by prehistoric communities of different times. The knowledge of different rock types in relation to different prehistoric cultures is very essential in all prehistoric investigations. For all these things it is necessary to depend on the geologist apart from the prehistoric archaeologist who possesses a fairly good idea of these aspects. Pedology, the science of soils, is another potential field with which prehistory is related. The analysis of the soil is not only used in dating but also in understanding the manner of the formation of deposits as well as about the environment at the time of their formation. With the help of the pedologist it is possible to know whether the deposits were natural or man-made because it is these deposits, if at all artificial, which contain remains of ancient people.

**Anthropology and Medical Sciences:**

Much of the development of medical anthropology has occurred since World War II. The beginning of major anthropological involvement in medical problems was cogently reviewed by Caudil (1953, ‘Applied anthropology’, in *Anthropology Today*, Edited by A.L. Kroeber, Chicago; University of Chicago Press, PP 771-806) in his landmark paper on applied anthropology in medicine. But, even at that time, involvement of anthropologists and other social scientists in health programme and medical research has changed considerably and there
has been a marked increase in the input of social scientists in medicine and medically related areas (e.g. Polgar, Steven, 1962, ‘Read the human behaviours: Areas of interest common to the Social and Medical sciences’, - *Current Anthropology*, vol. 3 ; PP 159-205 ; Scotch, Norman, 1963, “Medical anthropology’, in *Biennial Review of Anthropology*; Edited by S.J. Siegel, Stanford, Stanford University Press , PP 30-38). In recent times, there was a spurt in ethnomedical studies particularly among rural and tribal communities (e.g. Choudhury 1986, 1990). Medical anthropology, in fact, is one of the main areas where a holistic bio-cultural approach is called for. Basically, quite a few things are common in anthropology and medicine. In the proper study of mankind, anthropology aims at discovering man as a human being, so it should be the case with a physician. He should make a human approach to the patient, if he is to remain useful to them.

As a student of anthropology, we put more emphasis on the groups. We are particularly concerned about the study of human beings within the framework of a culture. Culture, in the simplest words may be defined as a set of beliefs and behaviours shared by a group of people. It is the culture that provides people with a way of perceiving the world at large and with the ways of coming into terms with the problems they face. This includes their attitudes about the body and ways in which a person should be treated when ill.

Obviously, people with different culture orientations and experiences have different notions with regard to the concepts of disease cure, treatment, and have different expectations from the physician. If this communication is impeded, the purpose of the physician is defeated.

Thus, e.g. in simple societies seven main types of disease concepts may be recognized. There are:

(i) Sorcery or Magic : Accidents, stumbling etc., among the Australian aborigines as among many other simple people. Death is never regarded as due to natural causes, but is always ascribed to sorcery. Diagnosis, treatment and prognosis are done by traditional medicine men as counter magic.

(ii) Breach of taboo: The “Voodoo death” where the victim dies of a shock is scarcely distinguishable from true wound shock.

Expiation of offence can be done by a traditional medicine man using some magical acts.
(iii) Disease – object – intrusion: Entrance of foreign object may be caused by human/super-human agency. It carries some spiritual essence which is the real cause of the illness. Object may be a pebble, splinter of wood or bone, a hair, an insect, a lizard or a worm. Extraction is the only curative measure.

(iv) Spirit intrusion: Disease, caused by a spirit, ghost or a demon intrusion.

There are 3-curate measures.

(a) exorcism – ejection by conjuration,

(b) mechanical extraction, and

(c) transference

Exorcism is nearly always practiced together with one or both of the other methods.

(v) Soul or Body (organ) loss: Among the Australian aborigines the abstraction of the kidney fat is held to be a common cause of disease. It may be removed by sorcery which may lead to death. Diagnosis and prognosis are done by divination and curative measures are suggested accordingly.

(vi) Dreaming: In the pacific and in the South Western areas of North America, one may dream that one has eaten poisoned foods or that an animal has entered one’s body and fallen ill shortly afterwards.

(vii) Independent occurrence: These kinds of diseases can be treated with domestic remedies.

This knowledge about the various concepts of disease and healing in various communities is very essential for a medical practioners. Anthropological studies provide such information to us. With regard to the direct relationship between anthropology and health, it may be specifically noted that cultural anthropology has exercised a remarkable influence upon the fields of psychiatry and psychosomatics, and many other forms of diseases.

Malinowski (1948) developed the theory of culture in terms of the operating basic and derived needs of the organism.

It appears that the structure of the ego is largely determined by the manner in which these basic needs are satisfied. The function of the ego is to secure adequate satisfaction of basic and secondary needs to maintain the organism in equilibrium. When needs are not adequately satisfied, there is a failure of ego-integration, and psychic–dis-equilibrium of one sort or another results. Similarly, anthropologists had known since long that feelings and somatic functions are closely related. Accordingly, they had been advocating for
Psychosomatic Medicine that has been recognized as a branch of Medicine only recently.

Psychosomatic functions are culturally organized. Thus, the problems of “Adolescent Sterility” came to the attention of physiologists after the publication of the *Sexual Life of the Savages* (1929). Thus, the average adolescent sterility period for the white is 3-years, for Dap (New Guinea) 5 years and for the Lepchas 9 years. Further, Margaret Mead’s *Coming of age in Samoa* (1928) demonstrates that stresses and strums during ‘adolescing’ are largely the consequences of cultural factors peculiar to particular societies. Even otherwise, health cannot be given to the people, nor can it be bought or sold as a commodity. It invariably calls for people’s active participation (e.g. life style, food, attitude towards various medical systems). Thus, anthropology can assist more clearly and satisfactorily in identifying the health needs, and in clarifying factors influencing acceptability and utilization of health services, and can also assist in showing how these health needs can be most appropriately solved.

**Anthropology and Environmental Sciences:**

Scientists of different disciplines have increasingly become interested in the study of different aspects of environment. Anthropologists are no exception to this. As a matter of fact anthropologists always attach great importance to environment, because man is regarded as product of interaction between heredity and environment.

Man as an organism is grown and developed in conformity with both physical and social environment. If he cannot meet the challenge or adapt to his environments, especially physically, man will die and would have been extinct since prehistoric times. Many creatures have been found to have become extinct being unable to bear the rigours of the environment. Being equipped with cultural means in coping with nature, human beings have been able to adjust to variety of environments including even the polar areas. As they had to depend upon their biological qualities only without having any cultural equipment, the other creatures could not live in the adverse environment and so their living is not so widespread in the world. Man, on the other hand, could alter the environmental conditions by means of his culture and making it favourable to serve his needs. If there is dearth of water, man can dig well or pond and get water. If the habitat is full of jungles and forests, man clean the
jungles and forests by his tools and implements and make it suitable for agriculture. By domestication of plants he can have variety of fruits and others. With the materials available in the surroundings man can build house to have a settled life. But, however, man has to depend partly on physical environment and natural resources as he cannot make him absolutely free from influences of environment. That is why different cultures have taken shape in accordance with different environments. Thus environment and culture have close relationship. Friedrich Ratzel, a German anthropo-geographer had opined that natural setting plays a great role in shaping the ways of life of the people but his followers emphasized that environment determines man’s way of life and sponsored the theory of geographical determinism. According to the environmentalists man is subservient to environment and culture. The contribution of environment which determines the ways of man’s living natural resources, climate, geographical situation not only control the material cultural activities but also determines the development of industry, commerce, religion, social systems and civilizations also.

The students of cultural anthropology maintain that the way in which a human group adapts to a particular environment is not determined by its geographical features alone but is also influenced by various other forces like technological, biological, psychological, historical which play on culture. To illustrate this point the following may be referred to. The American South-West was first occupied by the sparse nomadic hunting or food gathering bands. Later the Ropi and Zuni of the pueblo Indians developed agriculture and lived a permanent, closely packed community life. Still later, the Spaniards appeared there with horses, guns and metal tools and each group of them had its own particular equipment for coping with the environment and catering to the needs for living. The present day population lead a still different way of life with modern amenities including electricity, air-conditioning automobiles, television, and so forth. Again, in the small state of Swat in North-Western Pakistan among the three ethnic groups, one was found to have recourse to both agriculture and pastoralism combined. So, it is found that each human society exploits equipment to serve their different needs. Further, it has been observed that although the Eskimos of northernmost North America and the Chukchi of Siberia face rigors of arctic climate. Their cultures are different. Again, culture may be the same in different environments. In the West cultivation is generally undertaken in the plain areas and the same is found on the hills also. The Assamese people in the Brahmaputra valley do rice cultivation. The Apatanis of Arunachal Pradesh, the Nagas of Nagaland and the Ifugao of Philippines do rice cultivation on the slopes of the hills by terracing and irrigation.

From the above example, it can be concluded that no single factor can determine the ways of life of a people. So, no one of the forces that influence life should be over emphasized.
Conclusion:

Anthropology is, thus, able to relate to all of these disciplines in its quest for an understanding of human behaviours. It draws upon all of them to interpret the ways in which all biological and social factors enter to depict man’s culture and behaviour in its totality.