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Paper-CC12 (*U-III*)

Human and Social Geography

Major Human Races in The World

(Definition, Formation and Criteria of its Classification)

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Major Human Races in The World

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Definitions of Races: Race refers to classification of humans into relatively large and distinct population groups based on appearance through heritable phenotypic characteristics, often influenced by and correlated with culture, ethnicity and socio-economic status. Race is a concept, applied in various senses, even by human biologists. In the present context we are concerned with anthropological or biological concept of race. As a biological term, *Race denotes genetically divergent human populations that can be marked by common phenotypes.* Among humans, race has no cladistics significance- all human beings belong to the same hominid subspecies, 'Homosapiens, each differing from other populations in the relative commonness of certain hereditary trait.

Hooton (1926) has defined race in essentialist concept as *"A great division of mankind, characterised as a group sharing certain combination of features, derived from their common descent, and constitute a vague physical background, usually more or less obscured by individual variations, and realised best in a composite picture." Mayr* (1969) has given the taxonomic concept of definition as "*A subspecies is an aggregate of phenotypically similar populations of a species, inhabiting a geographic subdivision differing taxonomically from other populations of the species."* Dobzhansky (1970) has defined race in population concept as *"Race are genetically distinct Mendelian populations. They are neither individuals nor particular genotypes; they consist of individuals who differ genetically among themselves."* Montagu (1972) has defined race in genetical context as *"a population which differs in the frequency of some gene or genes, which actually exchange or capable of exchanging genes across boundaries and separate it from other populations of the species."* Templeton (1998) has given the lineage concept of definition as *"A subspecies is a distinct evolutionary lineage within a species. This definition requires that a subspecies, genetically differentiated due to barriers occurring in genetic exchange that have persisted for long periods. The subspecies must have historical continuity in addition to current genetic differentiations."*

In short, the term 'race' is applied to a physically distinctive groups of people, on the basis of their difference from other groups in skin colour, head shape, hair type and physique. Anthropologists take the word 'race' in its zoological sense. *"If the people of one race may be distinguished by physical markings, then they constitute a race."* While dealing with the definition of race anthropologists have considered few related facts. For example, national, religious, cultural and geographical inhabited human groups should not be confused with racial groups. The Indians or Pakistanis do not form a race, nor do the Persians or the Germans. These are national or religious groups. In the same way the Dravidians do not constitute a specific race, they are linguistic groups. Therefore one should be cautious enough in applying the term race to a particular human group. On the other hand, the concept of racial 'superiority' or 'inferiority' has created various problems in human society. This concept is not based on any scientific or anthropological facts. The scientists and anthropologists have never accepted the misconception related to superiority and inferiority of races. In anthropological sense, the word 'race' should refer to those human populations, who possess well developed, primarily heritable physical differences from other human populations.

Formation of races: Race formation is a complex process where several factors are involved. These may be summarized as:

1) Mutation: The basic mechanism by which genetic variability is introduced is through mutation. Mutation is a sudden change in genes resulting in hereditary variation. As soon as a new mutant gene appears, it multiplies from one generation to another and becomes a distinctive characteristic of the particular population, provided other conditions are favorable. In this sense mutation is an important process through which races are formed.

2) Natural selection: Natural selection is an important factor that operates to pattern and maintain inter and intra specific variability, when applied at the genetic level to the alleles operating at individual loci, as it predicts the behavior of genes under specific conditions. Selection moulds the genotypes of an organism such that they produce phenotypes fitting to the environment in which organism lives. But natural selection does not operate directly on the genotypes; it acts through the phenotypes of the individuals and their gametes. With natural selection advantageous genes are multiplied more rapidly than the disadvantageous genes, as the latter will be eliminated by nature.

3) Genetic Drift: Chance fluctuations of gene frequencies may lead to appreciable genetic differences between completely isolated sub-populations. This effect becomes stronger, if the effective breeding size of population is small. There may be lessened variability owing to the random loss of alleles for a predictable proportion of genes. In this process, increase or decrease of the frequency of a gene in a certain population does not depend upon advantageous or disadvantageous conditions of life in a particular locality, but happens merely as an accident or chance. The different frequency of gene for tasting or not tasting PTC in different populations forms a good example of accidental fluctuation of genes.

4) Migration: Migration plays an important role in racial differentiation. It helps in isolation, hybridization and mixing of different populations with the migrants. Groups of people migrate from mother population to different directions from the common centre and become isolated from one another and due to endogamy, pressure of natural selection and process of hybridization may cause formation of races.

5) Isolation: Isolation may be geographical or social and is considered to be a great race maker. The natural selection and genetic drift, will act effectively only when a particular population is isolated from the neighbouring populations. On the other hand, people migrated in groups acquire new traits that appear Racial Classification through mutation. Some of the traits being selected by nature become adaptive to particular sets of conditions, thus forming new gene pools. As isolation increases, the possibility of intermarriages among groups' decreases, thus introducing new genes transmitted from generation to generation by the process of heredity resulting in new racial strains.

6) Hybridization: Hybridization is a process by which genes within a species are introduced into other populations resulting in genetic combinations which are entirely new. Through hybridization, genetic variation is introduced in a population called as gene flow that leads to the formation of new race. For example, the mingling of Americans and Negroes has produced a new racial population, an ongoing process.

7) Sexual selection: It is a process of selecting mates on the basis of some preferred qualities, as a result of which the sexually preferred type would become the dominant variety of the individuals. For example, in a population where blue eye colour was preferred to brown colour, the brown coloured

individuals would get lesser and lesser number of mates. Ultimately the gene of brown eye might be eliminated by this process or, the blue-eyed would marry blue eyed and brown-eyed would marry brown-eyed. In such case two distinct types of subgroups would be formed.

8) Social Selection: In social selection, breeding is regulated by artificially instituted barriers between socially approved individual and groups within a population, so that mating occurs between individuals preferred by such social standards rather than at random. In such situations strong isolating mechanisms are developed which in due course may produce modifications in a population. Thus, it may be stated that mutation, natural selection, genetic drift, migration, isolation, hybridization, sexual selection and social selection, etc., are the main processes responsible for the formation of racial strains.

Basis/Criteria of Classification of Races: Racial classification is given to a group of individuals, who share a certain number of anthropological traits, which is necessary such that they are not confused with others. There are two aspects to distinguish people based on phenotypic and genotypic traits.

1) **Phenotypic Traits:** Phenotypic traits are those physical characteristics of an individual, which may be examined: These are of two types:
   • Indefinite Physical (Phenotypic) Traits and
   • Definite Physical (Phenotypic) Traits

Indefinite Physical (Phenotypic) Traits: Those physical traits which are observable but immeasurable to any measurement are called indefinite physical traits, such as the colour of skin, hair and eyes. Hence they can only be described. Following are some of the indefinite physical traits:

- **Skin Colour:** From the very beginning, anthropologists have used skin colour as one of the most important distinguishing characteristic. Usually, on the basis of skin colour people differentiate between the white, yellow and black races. Recently, Spectrophotometry has been made as the basis of an objective and accurate measurement of the colour of the living human skin. Of the colour of the skin the following distinctions are made:
  - White skinned people or Leucoderms, e.g. Caucasian
  - Yellow skinned people or Xanthoderms, e.g. Mongolian
  - Black skinned people or Melanoderms, e.g., Negroes.

- **Hair:** In racial classification, the characteristics of hair, viz., hair form, colour, texture and abundance have been most frequently observed. Besides, cross section and hair whorls have also been used in certain studies. All these hair traits are well defined and classified by anthropologists.
- **Eye:** The characteristics of the eye, particularly the eye opening, eye fold and eye colour have been utilised in distinguishing the racial groups.
- **Nose:** Nose is an integral part of the face and an independent entity whose attributes are comparable. Mainly, the descriptive elements of the nose may be observed and recorded in the following manner:

  Nasal depression: None, shallow, medium, deep.

  Nasal bridge: Straight, concave, convex, Concave-convex.

  Nasal tip: Sharp, Medium, thick, bulbous.

  Nasal septum: Sloping upward, horizontal and sloping downward.

  Disposition of the nares: High and narrow, medium broad, broad and flaring.

- **Lips:** In humans, lips bind the oral fissure or the mouth opening. This trait is peculiar in man. It is generally observed that changing moods affects the position of the lips in four different ways: open and shut, foreword and backward, up and down, tense and slack on the basis of thickness of the lips, anthropologists distinguished humans into four groups, viz., thin, medium, thick and very thick lips.
- **Face form:** Human face has distinguishable characteristics, which help us to identify individuals. On the basis of conformation of the face, predominantly the hair line, the form of the jaw and the forehead, the form of the face may be determined. Poch has distinguished ten facial types, viz., elliptic, oval, reversed oval, round, rectangular, quadratic, rhombic, trapezium, inverted trapezium and pentagonal (quoted by Comas, 1960).
- **Ear:** Ears are individually characteristic and have a number of Racial Classification peculiarities in ear forms. The external ear form may be classified into six types, viz., macaques form, cercopithecinae form, Darwinian point, Darwinian tubercle, vestigial Darwinian tubercle and without Darwinian tubercle. The ear lobes are one of the most important features of individual characteristic. The ear morphology varies on the

basis of ear lobe. The ear lobe is much developed in European and Mongoloids. The attached ear lobe is more primitive feature than the free lobe.

Definite Physical (Phenotypic) Traits: Definite physical traits are those, which can be measured with the help of anthropological methods and instruments. In brief, the following are definite physical traits:

- **Stature:** Different races are distinguished on the basis of differences in stature. Martin has classified stature in the following manner:

Pygmy	**Upto**		**129.0 cms.**
Very short	**130.0**		**149.9 cms.**
Short	**150.0**		**159.9 cms.**
Below medium	**160.0**		**163.9 cms.**
Medium	**164.0**		**166.9 cms.**
Above Medium	**167.0**		**169.9 cms.**
Tall	**170.0**		**179.9 cms.**
Very tall	**180.0**		**199.9 cms.**
Giant	**200.0**	**and**	**above**

- **Head form**: Anthropologists have adopted a method for classifying the head form based on the ratio of the maximum breath and maximum length expressed as *cephalic index*. On the basis of cephalic index, head is classified into three classes, i.e.,Dolicocephalic, Mesocephalic and Branchycephalic.

  CEPHALIC INDEX= (width of head/ length of head) * 100

  a) Long headed (DOLICHOCEPHALIC) below 78.5

  b) Medium headed (MESOCEPHALIC) 78.5- 82-5

  c) Broad headed (BRACHYCEPHALIC) more than 82.5

- **Nose form:** The *nasal index* is a good indicator to know the dimension of the nose. It is the proportion of the width of the nose to its length. ***Broca*** consider it as the best indicator in racial determination. Human population may be conveniently classified on the basis of nasal index as follows:

  An index of the ratio of (nose width at the nostril/nose length)* 100

  a) Leptorrhinae upto 70.9

  b) Mesorrhinae 71 to 84.9

  c) Chamaerrhinae/Platyrrhine 85 to 99.9

d) Ultra Chamaerrhine 100 and above

- **Face form:** The proper evaluation of the face form can be possible with the help of *Facial Index.* It is an indicator of the proportion of the facial length to its breadth. The human populations may be conveniently classified on the basis of facial index as follows:
  - ***Hypereuryprospic*** ***upto 78.9***
  - ***Euryprospic*** ***79 to 83.9***
  - ***Mesoprospic*** ***84 to 87.9***
  - ***Leptoprospic*** ***88 to 92.9***
- **Ear form:** On the basis of the ratio between ear length and breath the ears has been classified into long and narrow in Mongoloid, short and wide in Negroes. The majority belongs to the intermediate type. Few other biometric measurements are also applied in racial classification.
- **Other definite traits**: There are various anthropometric measurements, which are used in racial classification, viz., bizygomatic breadth, proportion of limbs, chest and thigh circumference, etc.

2) Genotypic Traits: A new approach to classify human races is based on some genetic traits. The genotypic traits are as follows:

- **Blood Groups:** The Blood groups (ABO, MN, Rh, Lutheram and Kid blood groups, Duffy Blood Group, P Blood Group and ABH secretor status. etc.) are used in racial classification. There are about a dozen blood group systems known to us, each inherited independently. Their frequencies vary in different populations all over the world; these are used as genetic markers.
- **Dermatoglyphics:** The dermatoglyphics traits are used in racial classification. Each dermatoglyphic trait is inherited independently or polymorphically. These traits are not modified by environmental factors. In fact, Dermatoglyphics (Derma=skin; Glyphic=Carve) is the study where the ridge patterns on the skin of the fingers, palms, toes and soles are considered. The Dermatoglyphics trait include finger pattern types, Pattern Intensity Index, Pattern size, Palmar main line formula, Configurational area (Thenar interdigital area, Hypothenar area, Second, third, fourth, interdigital areas), Main Line Index, Palmar and finger - ridge counts, atd angle, etc.
- **Hemoglobin variants:** The hemoglobin within the red cell also has its own variations in different populations of the world. The sickle-cell hemoglobin or hemoglobin S, Hemoglobin C, Hemoglobin D,

hemoglobin E, Glucose-6-phasphate dehydrogenase (G-6 PD), Haptoglobins, Transferrins may be used in racial classification.

- **Some other variants:** The ability to taste phenyl thio-carbamide, colour blindness, sweet glands, etc., are used for the racial classification.
- **DNA finger prints:** The proper evaluation of racial classification can be possible with help of DNA finger printing. The genome of various populations may be used for such purpose.

Conclusion: To sum up that the word 'race' is applied for human classification on the basis of biological characteristics. Race is genetically divergent among human populations, which is marked by common phenotypes. In other words, race refers to those human groups, which exhibit heritable physical differences from other human populations. Race formation is a complex process where more factors, viz. mutation, natural selection, genetic drift, migration, isolation, hybridization, sexual selection and social selection are involved. The basis of racial classification is various phenotypic traits, viz. anthropometric measurements, somatoscopic observations, etc., and genotypic traits viz. blood groups, dermatoglyphics, hemoglobin variants as well as DNA finger prints.

Model Questions:

Q1. What is Races? Discuss the factors responsible for race formation.

Q 2. Define Races and describe the basis of classification of Races.

Suggested Readings

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