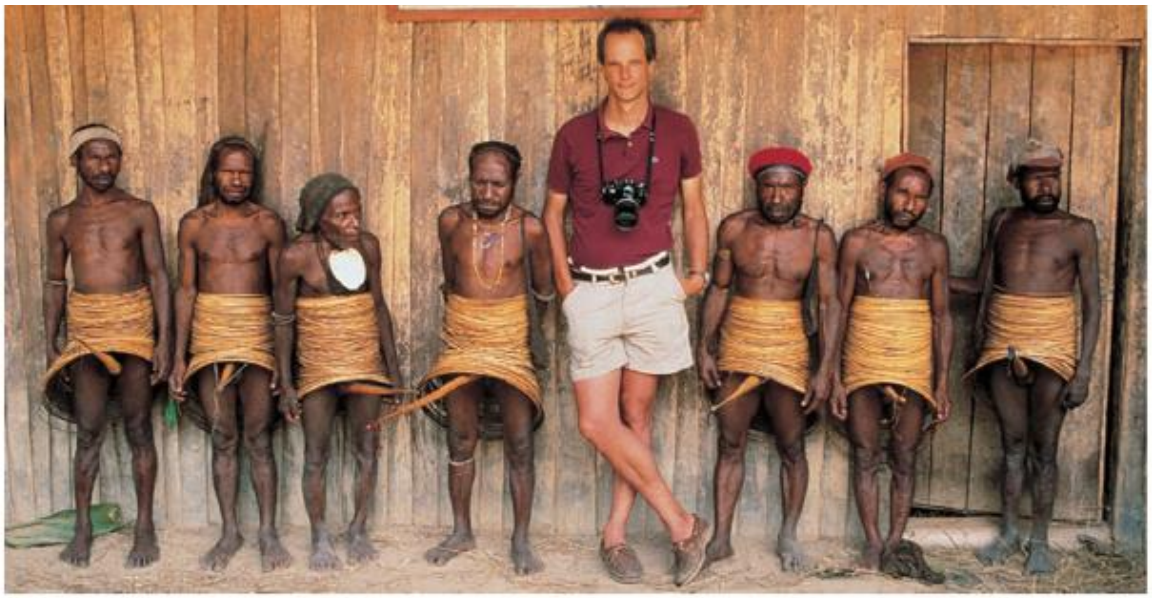
RACE AND RACISM



A European man stands among the group of Yali men from highlands of Western Guinea

SEX AND GENDER

Most human beings are unambiguously either biologically male or female. The biological differences between male and female begin at the genetic level. Two of the human chromosomes are sex chromosomes, X and Y. Females have two X chromosomes; males have an X and a Y. Although the Y chromosome is smaller than the X and carries far fewer genes (several dozen compared with the X's 2,000 to 3,000), it apparently carries a single gene that determines maleness. This gene codes for a protein that triggers the formation of the testes by activating genes on other chromosomes. Products of the testes, including testosterone, then make the developing embryo a male.

Human males, on average, have more body and facial hair and are larger and more heavily muscled than females. They have relatively larger hearts and lungs, a faster recovery time from muscle fatigue, higher blood pressure, and greater oxygen-carrying capacity. Males are more susceptible than females to disease and death at all stages of life. During the first year of life, one-third more males die, mostly from infectious diseases. Males are also more likely to have speech disorders, vision and hearing problems, ulcers, and skin disorders.

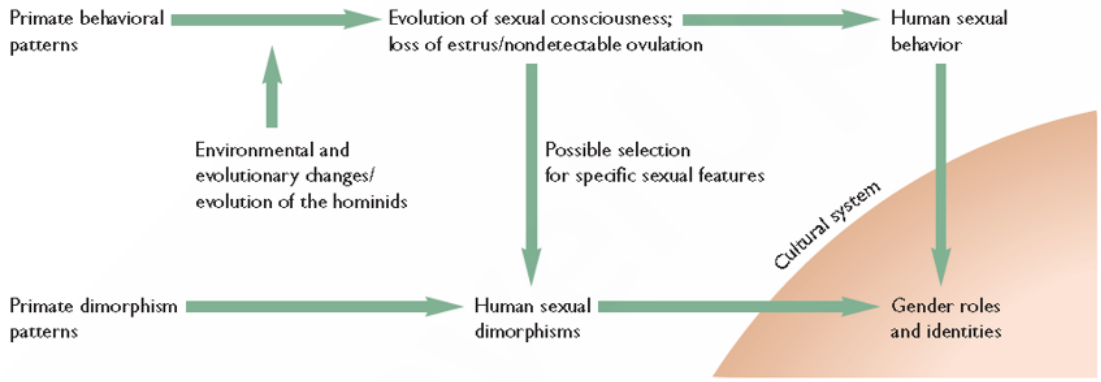
Females have a greater proportion of body fat than do males. They mature faster at almost all stages of life, most notably exhibiting earlier puberty and adolescent growth spurt. They are less likely than males to be thrown off their normal growth curve by disease or other factors and, if they are, will recover more quickly than males. Although females appear to have a greater tendency than males to become obese, males suffer more from the effects of obesity—strokes, for example. Females seem to be more sensitive to touch and pain and perhaps to higher sound frequencies, and they are said to be better at locating the sources of sounds. Smell sensitivity is about the same in both sexes, but females seem better at identifying smells.

Although there is some individual and regional variation in the degree and nature of our sexually dimorphic traits, in general we rarely have any difficulty telling the sex of another human being. Male and female are two biological categories that are objectively real and are common to all human groups.

As these two real categories of sex—male and female—are incorporated into various cultural systems, however, differences arise. The identity, place, and role of males and females under different cultural systems vary according to the nature of those systems—their economies, politics, family organizations, and abstract beliefs. Thus, males and females of the human species become the men and women of a particular society practicing a particular culture. We refer to the cultural interpretation of biological sex categories as gender.

From cultural anthropology we acquire data about the incredible range of variation in gender identity and gender roles among the world's cultures. The variable factors include the roles of genders in economic activities, differences in political and other decision-making power and influence, and expected norms of behavior. All these may change over time within a single culture.

For example, in the United States only a century ago, men were educated because they were seen as the gender that properly had political, economic, and social power. Women were far less likely to receive a college education, seldom held any sort of management position (if they did any work outside the home at all), and until 1920 were not allowed to vote in every state. Women were sometimes thought of as "the weaker sex." Obviously things are different now, at least to a degree. As our culture has changed over the past hundred years, our gender roles and identities have changed to fit our evolving cultural system.



The evolved sexual identities and roles common to all members of the human species are translated by individual cultural systems into gender identities and roles.

We refer to culturally defined categories as folk taxonomies, or cultural classifications. Folk taxonomies for gender differ to a great degree among the cultures of the world, even to the point of having more than two gender categories. In part, this is because biological sex is not always unambiguous. There are people born with underdeveloped sexual characteristics, sometimes as a result of having too many or too few of the sex chromosomes. About 1 in every 3,000 female births has a missing or defective X chromosome, and 1 in 500 male births has one or more extra X chromosomes. An estimated 2 percent of humans are intersexes, born with characteristics (including genitalia) of both sexes. There is a movement in the United States to recognize such individuals as belonging to categories other than male and female/men and women (Fausto-Sterling 1993, 2000).

Some cultures already recognize more than two genders. Take, for example, the hijras of India (Serena Nanda 1990). The word means "not men," and, indeed, hijras are men who have been voluntarily surgically emasculated. They make up a third gender and have very specific identities and roles within the culture of Hindu India. Although often mocked and ridiculed because of their exaggerated feminine expressions and gestures, they are also in demand as performers at important rituals such as marriages and births.

Another example comes from a number of traditional Native American cultures in which some men dressed as women and assumed the occupations and behaviors of women. Such men have been referred to by the term berdache (a French term with derogatory implications but still in common use). In some cases, they engaged in sexual relations with other men, and certain rituals could be performed only by them. Within their respective cultures, berdaches were not considered abnormal but were thought of as a separate gender. It appears, then, that various societies acknowledge that some of their members are, or think of themselves as, ambiguous with regard to the two standard sex categories. These societies have evolved third or even fourth gender classifications to accommodate them, and these classifications have assumed defined places, identities, and roles within these societies' cultures. Sex is biological. Gender is a folk taxonomy; so, as we will see, is race.

DEFINITIONS OF RACE

Some definitions on races that came up in the mid of the 20th century were viewed from an evolutionary perspective and with an assumption about the role of geographic distribution in race formation and second on the importance of breeding populations in forming a collection of traits which sets the groups apart. Scholars such as Hooton, Dobzhansky and Garn in their definitions have explicitly mentioned that these breeding or Mendelian populations can change in time and are not like water tight compartments.

Hooton (1946) defined race 'as a group whose members present individually identical combinations of specific physical characters that they owe to their common descent.'

Dobzhansky (1944) said 'Races are defined as populations differing in the incidence of certain genes, but actually exchanging or potentially able to exchange genes across whatever boundaries (usually geographic) separate them. He further added that race differences are objectively ascertainable facts; the number of races we choose to recognize is a matter of convenience (1962).'

Boyd (1950) defined race as a population which differs significantly from other human populations in regard to frequency of one or more of the genes it possesses. It is an arbitrary matter which depends on which, and how many gene loci we choose to consider as a significant 'constellation'.

The definition of races underlines following ingredients:

1. **Group of Population:** All population have their own genepool with differing gene frequency. If race is defined in term of gene frequency all population would qualify to be called as race. Race is higher in hierarchy than populations and consists of many populations that have gene frequency related to one another.
2. **Genetic Differences:** the group of population forming race have some genes in very high frequency and some in very low frequency and these genetic difference characterize a race. Such difference in gene frequency arise partly as a result of selection and partly as a result of chance.
3. **Reproductively Isolated:** The groups forming races are reproductively isolated. This reproductive isolation, in fact maintains the genetic difference between the races. The reproductive isolation, however, is not complete. Whenever races expand their range and come into contact of other races, they potentially hybridize and a new gene frequency is set up.
4. **Biological Concept:** Race is projected to be a biological concept. It is a social stratification based on biological criteria. Race is different from national, religious and cultural groups. Indians, Germans are not racial groups, they are national groups.

CLINAL MODEL

By the time of 1950s scholars were able to generate a large genetic data base of human groups distributed across the world. This made clear that a clinal model would more accurately reflects the true nature of human biological variation. This is the first model which did not attempt to compartmentalize human population into distinct groups. It says that closer the spatial distance between the human groups, the chance of mating with the neighbouring groups increases compared to the ones who are distantly placed. Thus, the people whose ancestors have lived close to ours for many generations are more likely to share genetically inherited traits with us than are people who live further away. Further, the model states that genetically inherited traits most often gradually change in frequency from one geographical area to another.

Thus, one can find different frequency zones, or clines for a particular genetic trait. For example, the frequency of B blood allele generally increases from southeast and northeast Asia to central Asia. Within this more or less continuous cline, there are isolated pockets of relatively low B allele frequency. Therefore, the distribution of this genetically inherited trait appears to be mostly clinal but, in part, it is also discontinuous (O'Neil, 2010).

FORMATION OF RACES/ CAUSES OF VARIATION

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 favourable. 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 behaviour 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** 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.

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.

5) **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) **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.

7) **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.

RACIAL TRAITS IN RELATION TO HEREDITY AND ENVIRONMENT;

Four Factors

- Climate
- Nutrition
- Culture
- Genetic

MAJOR RACES OF THE WORLD

A number of racial classifications of human population have been given but at the same time there seems to be no agreement about these classifications. Majority divide human being into races like the Caucasoid, Negroid, Mongoloid and Australoid. This division is usually on the basis of origin and the variations found among them. But again clear cut demarcating line doesn't exist and there are always intermediate types possessing combination of characteristics. So every race has some overlapping traits.

CAUCASOID are the inhabitants of Europe, America (White), Australia (White), New Zealand (White), South Africa (White), West Asia, South Asia and parts of Central Asia. They are usually **medium to tall**

in stature with a **skin colour which varies from light reddish white to olive brown**. Some are brown as well. The **head hair is light blond to dark brown** in colour. It is **fine to medium** in texture and **straight to wavy** in form. They have moderate to profuse quantity of body hair. **Head form ranges from broad (brachycephalic) to long (dolicocephalic)**. They have **narrow to medium broad face**. Jaw is not projecting forward, i.e. **prognathism is not present**. They have a **leptorrhine to mesorrhine nose with a high nasal bridge. Lips are thin to medium** and **the colour of their eyes** is usually of lighter shades ranging **from light blue to dark brown**. There is a relatively **high incidence of A blood group with highest frequency of Rh-ve.**

NEGROIDS are divided into **African negroid and oceanic negroid**. They are the inhabitants of Africa, America, New Guinea and the neighbouring islands, Andaman Islands, Malay Peninsula, east Sumatra and Philippine Island. Their height ranges **from very short to tall** with a **skin colour which is dark brown to black**. Some are yellow- brown. **The head hair is dark brown to black** in colour which is **coarse in texture** and **curly to frizzly or woolly in form**. Body hair is slight in quantity. The **head form is predominantly dolichocephalic** with **protruding occiput and rounded head**. Face is medium broad to narrow**. Prognathism is very often present**. **Their nose is platyrrhine** and the bridge and root is usually low and broad. **The lips are thick and everted**. The **colour of their eyes is dark brown to black.**

MONGOLOIDS are the inhabitants of China, Mongolia, Tibet, Siberia, North America, Greenland, Burma, Thailand, Malay Peninsula, Philippines, Japan and North-East India. They are **medium to short in stature**. Their **skin colour ranges from yellow to yellow-brown**, sometimes reddish brown. **The hair is coarse in texture**, **straight in form** and **from brown to brown black in colour**. They have a sparsely distributed body hair**. Their eyes are brown to dark brown** in colour, the eyes are oblique with narrow slit-like opening and mongoloid eye fold is often present. They have a medium broad to very broad face form with high and flat cheek bones. Their **head form is predominantly brachycephalic** with a medium head height. The **nose is mesorrhine to platyrrhine**. The bridge is usually low to medium. Cheekbones are high and flat. The **lips are thin**.

THE AUSTRALOIDS include two main groups- the Australian aborigines and the pre-Dravidian or Australoid or Veddoid. They are small statured people with an average height of 165cms for the Australian aborigines and 157cms for the Veddoid. The Australian Aborigines have a **skin colour varying from medium to dark chocolate brown** and hair form is curly, sometimes wavy, and rarely straight and the **hair colour is from medium brown to black**. Veddoids of Malay Peninsula have a skin colour varying from yellowish to dark brown. Hair colour is black with reddish tinge which is wavy or curly. Their head is mesocephalic and nose is of medium breadth and flat i.e. mesorrhine, approaching platyrrhine. The Australian Aborigines have a very platyrrhine nose with a markedly depressed nasal root. Their head is usually dolichocephalic and the brow ridges are extremely large and the forehead is receding. Their face is short, showing medium to pronounced prognathism, lips are full and the chin is receding. The Veddoids have an orthognathous face, **lips are of medium thickness** and chin is somewhat weak.

RACIAL ELEMENTS IN INDIA

The racial classification of Indian people was attempted first by **Sir Herbert Risley** and findings published in a book **'The Peoples of India'**. The lists of various classifications given on the people of India by different authors are as follows:

1) Risley's classification (1915)

2) Haddon's classification (1925)

3) Guha's classification (1935,1937)

4) Roy's classification (1934-38)

5) Sarkar's classification (1958)

Classification of A.C. Haddon

Haddon has divided India into three main geographical regions, viz., the Himalayas, the Northern plains or Hindustan and the Southern plateau, the Deccan; and has dealt with the racial elements in each of these regions separately.

1. Deccan

Haddon has observed the following racial elements in this region.

(i) **Negrito**. A Negrito element is suspected among some populations like the Kadirs.

(ii) **Pre-Dravidian**. They form the oldest population. They are dolichocephalic, short stature, platyrrhine people. Their skin colour is dark brown to nearly black. Some of the representatives are: Bhil, Gond, Oraon, Santal, etc.

(iii) **Dravidian**. Head is dolichocephalic, nose is mesorrhine, and stature is medium. Skin clolour is brownish black, e.g., Tamil, Malayalam, Telegu, Canarese, etc. speaking people.

(iv) **Southern Brachycephals.** They have mesocephalic to brachycephalic head and medium nose. This type is represented by the Panyan in the Tamil district and the Pavara, fishermen of the Tinnevelly coast.

(v) **Western Brachycephals**. They are occupying the regions extending from Gujarat to Coorgs along the western coast. They are the Scytho-Dravidians of Risley. They have brachycephalic head, almost leptorrhine nose, light brown complexion and tall stature. The examples are: the Nagar Brahmins of Gujarat; the Prabhu, etc.

2. Hindustan

The Indo-Afghan appears to be the predominating type in this region. They are characterized by dolichocephalic head; finely cut, straight or convex, prominent nose; long face; regular feature; medium to tall stature; dark eyes; light brown complexion and black wavy hair. The typical representatives are Jats, the Rajputs, etc.

In some places, the members of the Indo-Afghan type have mixed with the aboriginal people. The intermixture is more apparent in the lower caste people.

3. The Himalayas

Haddon observed the following racial elements in this region:

(i) **Indo-Afghans**, represented by the Balti.

(ii) **Indo-Afghan**, e.g., the Kanets. The Kanets of Kulu Valley exhibit a trace of Tibetan blood among them while the Kants of Lahoul also have some Mongoloid traits.

(iii) Mongoloid, this is the dominating element in Nepal, Bhutan, Sikkim, etc. Assam has been dealt with separately by Haddon. The Assam tribes are mostly Mongoloid. He has included the Khasi, Bodo, Mishmi, Arleng, etc. in his Protomorphus division of the Mesocephalic Asiatic Xanthoderms.

CLASSIFICATION OF H.H. RISLEY

Risley divided the peoples of India into the following types. He excluded the Negritos of Andaman Islands, as they had, according to him, little to do with the peoples of India.

1. The Turko-Iranian. The Turko-Iranians have broad heads and fine to medium nose, which is long and prominent. They are fairly tall, the average stature varying from 162 cm. to 172 cm. They have plentiful hair on the face. Their eyes are generally dark, though grey eyes are also not uncommon and the complexion is fair. These people live in the Baluchistan Agency and Frontier Province, which are now in Pakistan. The type is represented by the Balochis, the Afghans, etc. Risley suggests that this type was formed as a result of a mixture of Turki and Persian.

2. **The Indo-Aryan**. They have long heads and in this character they markedly differ from the Turko-Iranians. Nose is long, narrow and prominent; complexion is fair; eyes have a dark colour. They have plentiful facial hair. They are tall-statured people. This type is found to predominate in Rajputana, the Punjab, and the valley of Kashmir. The Jats, the Khattris are some of the examples of this type.

3. The Scythio-Dravidian. This type has medium to broad head, medium nose, fair complexion and scanty hair on face and body. They are medium-statured. They differ from the Turko-Iranians in having larger heads, flatter faces, higher noses and shorter stature. This type is the result of an intermixture of two distinct racial elements, the Scythians and the Dravidians. They are distributed in the region extending from Gujarat to Coorgs. The Dravidian element is more prominent in the socially lower groups of these regions, while the Scythian elements predominate among the higher groups of people.

4. The Aryo-Dravidian of Hindustan Type. Their heads are long with tendency towards medium. Nose is generally medium but broad noses are also not unknown. The skin colour is also variable; it varies from light brown to dark. Stature ranges from 159 cm-166 cm. Thus they are differentiated from the Indo-Aryans in shorter and broader nose. This type is found in the Uttar Pradesh and Bihar, As the name implies, this type is a result of an intermixture of two distinct racial types- the Aryans in the male and the Dravidians in the female line.

5. The Mongolo-Dravidian or Bengali Type. The members of this type have broad head with a tendency to medium nose which tends towards broad in some cases. Skin colour is dark with plentiful facial hair. Stature is generally medium, but short stature also occurs quite frequently. They inhabit Bengal and Orissa. Some of the representatives of this type are Bengali Brahmins Bengali Kayastha, etc. They differ from the Aryo-Dravidians and the Indo-Aryans in having broader heads. Risley suggests an intermixture of the Mongolians and the Dravidians in this type, to which some Indo-Aryan strains were also added.

6. The Mongloid Type. Head is generally broad; Nose shows a wide range of variation being fine to broad. Stature is short or below medium. They have characteristically broad Mongolian face with oblique eyes showing epicanthic fold. Skin colour is dark with yellowish tinge. Hair on the face and the body is scanty. This type is found in Assam, Nepal and Burma.

7. The Dravidian. They are short-statured people. Head is long. Nose is very broad and sometimes a depression is seen at the root of the nose. Skin colour is very dark; eyes also have a dark colour. Hair is also dark, it is plentiful and occasionally it tends to curl. They are found in the region extending from Ceylon to the Ganges covering the whole of South-Eastern-India. Madras, Hyderabad, Central Province and Chota Nagpur. The Paniyans of South India, the Santals of Chota Nagpur, etc. are some of the best example of this type. According to Risley they are the true aborigines of India, and now they have been modified by an infiltration of Aryan, Scythian and Mongoloid elements.

CLASSIFICATION OF B.S. GUHA

B.S. Guha has found the following racial elements, which have entered into the population of India:

1. The Negrito. They are considered to be the first comers and the true autochthones of India. Their physical characteristics are- head is small; it is round, medium or long; nose is straight, flat and broad; stature is very short or pygmy stature; skin colour is dark brown to dark; hair is woolly; forehead is bulbous; supraorbital ridges are smooth. This type is represented by the Kadars, Pulayans (Cochin and Travancore), Irulas and primitive tribes of the Wayanad. In respect of the head from and hair structure the Indian Negritos are more close to the Melanesian Pygmies than to the Andamanese.

2. The Proto-Australoid. They are characterized by dolichocephalic head; markedly Platyrrhine nose, which is depressed at the root; short stature; dark brown skin colour; wavy or even curly hair. Their limbs are delicate. The forehead is less developed and slightly retreating. Supraorbital ridges are often Prominent. They are closely akin to the Australian tribes. They markedly differ from the Negritos in having wavy hair instead of the frizzly or woolly of the latter. This element is found in the Pulayan women (Travancore), Urali (Travancore), Baiga (Rewa), etc. The tribes like the Male Chenchu, Kannikar, Kondh, Bhil, Santal, Oraon, belong to this group.

3. The Mongloid. The Mongoloids are distinguished by scanty growth of hair on body and face; obliquely set eyes showing epicanthic fold, flat face with prominent cheek bones and straight hair. The Mongoloid peoples entered India probably through the north-eastern routes in successive waves of migration. The Mongoloid comprises two types namely, the Palae-Mongoloid and the Tibeto-Mongoloid. The Palaeo-Mongloids have again been subdivided into long-headed type and broad-headed type. The long-headed type possesses long head, medium nose, and medium stature. Their cheek bones are prominent; skin colour is dark to light brown; face is short and flat; supraorbital regions are faintly developed. They inhabit the sub-Himalayan region. This type is found in the tribes of Assam and Burma Frontier. The Sema Nagas of Assam and the Limbus of Nepal are said to be true representatives of this type.

The other sub-division of the Palaeo-Mongoloid, the broad-headed, is represented by the Lepchas of Kalimpong. This type is found in the hill tribes of Chittagong, like the Chakmas, the Maghs, etc. Their characteristic feature are: broad head, round face, dark skin colour, medium nose, obliquely set eyes which show marked epicanthic fold. Among the Tibeto-Mongoloids, the head is broad and massive; face is long and flat; stature is tall; nose is long or medium; eyes are oblique having marked epicanthic fold; body hair and facial hair are markedly absent; skin colour is light brown. The Tibetans of Bhutan and Sikkim have these characteristics.

4. The Mediterranean. They comprise three distinct racial types. These are:

(i) The Palaeo-Mediterranean. They are the most ancient people and in many characters they resemble The Proto-Egyptian type. Their distinctive characters are; long and narrow head with bulbous forehead projecting occiput and high vault; small and broad nose; medium stature. Face is narrow; chin is pointed; body is slightly built. Their skin colour is dark and hair on face and body is scanty. The human skeletal remains found at Aditanallur show this type of characteristics. These people probably introduced Megalithic culture to India. At present the Dravidian-speaking people of South India show the preponderance of this type. The Tamil Brahmins of Madura, Nairs of Cochin and Telugu Brahmins form the best example.

(ii) The Mediterranean. They are characterized by long head with arched forehead; long face; narrow and prominent nose; tall to medium stature; light skin colour. Chin is well developed; hair is dark; eyes also have dark brownish to dark colour. They possess plentiful facial and body hair; and slenderbuilt

body. They are found in Uttar Pradesh, Bombay, Bengal, Malabar, etc. The true representatives are the Numbudiri Brahmins of Cochin, Brahmins of Allahabad, and Maratha ladies of Indore. The Bengali Brahmins of Allahabad and Maratha ladies of Indore. The Bengali Brahmins also show this type of characteristics. Probably this type was responsible for the building for the building up of Indus Valley Civilization.

(iii) The Oriental. They very closely resemble the Mediterranean in almost all the Characters except the nose which is long and convex in the former. This type is found in the Punjab, Sind, Rajputana, etc. The typical representatives are the Punjabi Khattris and the Pathans.

5. The Western Brachycephals. They have been divided into three types:-

(i) The Alpenoid. Characterized by broad head with rounded occiput; prominent nose; medium Stature; round face. Skin colour is light; hair on face and body is abundant, body is thickly set. This type is found among the Bania of Gujarat, the Kathi of Kathiawar, the Kayastha of Bengal, etc.

(ii) The Dinaric. Amongst these people the head is broad with rounded occiput and high vault; nose is very long and often convex; stature is tall; face is long; forehead is receding; skin colour is darker, eyes and hair are also dark. This type is represented in Bengal, Orissa and Coorgs. The Brahmins of Bengal and the Kanarese Brahmins of Mysore are also some of the representatives. The Alpino-Dinaric people entered India through Baluchistan, Sind, Gujarat, and Maharashtra into Kannada, thence to Ceylon. The presence of this type is found in the Indus Valley site, Tinnevelley Hyderabad.

(iii) The Armenoid. In most of the characters the Armenoids show resemblance with the Dinarics. In The former the shape of occiput is more marked and the nose is more prominent, narrow and acquiline. The Parsis of Bombay show typical Armenoid characteristics.

6. The Nordics. Their head is long with protruding occiput and arched forehead; they are tall statured People with long face, strong jaw and powerfully built body. Nose is fine, narrow and straight; complexion is fair. Eyes often have bluish tinge. This element is found sporadically in different parts of Northern India, especially in the Punjab and Rajputana. The Kho of Chitral, the Red Kaffirs, and the Khatash are some of the representatives of this type. The Nordics came from the north, probably from Southeast Russia and South-west Siberia, through Central Asia to India.

CLASSIFICATION OF S.S. SARKAR

According to S.S. Sarkar six ethnic elements constitute the main types of the population of India. These are as follows:

1. Australoids: The Australoids are known by different names, like Proto-Australoid, Pre-Dravidian, Nisad, and Veddid. Certain types of South India, e.g., Urali, Kannikar, Malapantaran, Paniyan, Kadar and such other tribes, are to some extent preserving the original form of the Australoids. According to Sarkar at one time the Australoids were widely distributed throughout India and they form the earliest substratum of the population of India. Sarkar is of opinion that the Australoid make –up is present among all castes of India though its greatest concentration is found among the lower castes.

The Australoids are short statured people having dark complexion. Their head is dolichocephalic and nose is platyrrhine. Their hair is wavy.

2. Indo-Aryan: The physical type of the Indo Aryan is quite distinct from that of the Australoid. The Indo-Aryans are tall in stature, lighter in skin colour and eye colour and even the head hair is not as dark as that of the Australoid. Their head is also long but massive. Their cranial capacity is higher than that of the Australoid. The whole physique of the Indo-Aryan is most robustly built than the Australoid. The Baltis of the Hindukush Mountains are the best representatives of the Indo-Aryan. The Indo-Aryan

are frequently met with in the Indus and the Gangetic valley in Western India. Their extension in an almost unbroken manner is seen up to Western Bihar. Beyond that region towards east the Indo-Aryan type is sporadic in distribution in eastern Bihar, Bengal and Assam. In these regions this type is mostly confined among the higher castes only.

3. Irano-Scythian Almost at the same time during the Indo- Aryan migration to India, another ethnic element entered India from north –west and that is Irano-Scythian. The Irano-Scythians are medium statured people. Their head is Mesocephalic and by that they are different from the dolichocephalic Indo- Aryan. Otherwise the two elements are more or less similar to one another. In eastern Bihar, Bengal and Assam the long headed Indo-Aryan element is replaced by the medium headed Irano-Scythian. Among the Indo-Aryan the cephalic index vary round 73, while among the Irano-Scythians it ranges between 77 and 79. The Irano-Scythians appear to be more variable in physical features than the Indo-Aryans. After entering India the Irano-Scythians moved southward along the valley of the Indus to arrive at Gujarat, Bombay and Maharastra. Their extension is seen upto northern Mysore, Deccan, etc.also. Therefore, in the population of these regions this element is frequently observed. From the Western littoral the Irano-Scythians migrated to eastern India following the river valleys of the Narbada and the son.

4. Mundari-Speakers: The Mundari speaking people are confined to the river valleys and plateaus of eastern central India, i.e., Chota Nagpur, Orissa hills and Madhya Pradesh. They migrated from east and they appear to have some sort of affinities with the Mongoloid. “The Mundari- speakers “ as described by Sarkar “are a stucky, thickset people with short stature and robust constitution, long head and skin colour somewhat lighter than the Australoid. Their head hair is not the usual thin curly or wavy hair of the Australoid rather their thick straight lank hair is nearly similar to those of the Mongolians.”

5. Far Eastern: It is established fact that from the ancient times India had connection with the islands of south-east Asia. Cultural relationship continued till historical times. Therefore, some amount of MalayaPolynesian element is observed in certain populations of eastern littoral , more particularly along the Tuticorin- Tinnevalley coast at the extreme south and along the coast of Chittagong hill tracts. Sarkar writes that “the Malayam racial strain is distinct from the ethnic elements, mentioned before in having a darker skin colour, broad to wavy broad head hair, short stature with tendency to obesity in general”.

6. Mongolian: The Mongoloids are distributed in the north-eastern borders of India and the foothills of the Himalayas. The skin colour of the Mongoloid is yellowish. Hair is sparsely distributed in their face and body. They exhibit Mongolian eye fold. By these and such other criteria the Mongoloids are easily distinguishable from the other populations of India (Das, 1980).

In today’s world the racial classification is hardly meaningful as the barrier between populations no longer exists. The gene pools are broken down continuously by the forces of migrations, genetic drift, mutation and selection. It is also proved that “The concept of race has no genetic or scientific basis” when the completion of a draft sequence of the human genome was announced at a June 2000 Rose Garden Ceremony, Venter (then President of Celera Genomics) and Collins (head of the National Human Genome Research Institute) emphasized that their work confirmed that human genetic diversity cannot be captured by the concept of race, and also showed that all humans have genome sequences that are 99.9% identical.

MORPHOLOGICAL TRAITS/CRITERIA OF RACE

SKIN COLOR

The most visible characteristic is skin colour and has been extensively used as a racial characterisation. Skin colour determines the amount of skin pigments like melanin, melanoid, carotene and factors like haemoglobin, oxyhaemoglobin and optic effect due to scattering. The amount of melanin present is the major factor for the colour of skin, hair and eye, produced by specialised cells called melanocytes. In skin, after formation, most of the melanocytes come to rest in the germinative layer of the epidermis where they form melanin and distribute to the numerous cells around them. Spectrophotometry technique is used as an accurate measurement of reflected skin colour. One can use colour charts available with paint companies and dyers for subjective skin colour determination. Body parts exposed to direct sun light will result in tanning of pale skin. A number of genes are known to determine skin/hair/eye pigmentation and these genes are: Albino - TYR, Brown TYRP1, Pink-eyed dilution- OCA2, under white -SLC45A2, Ocular albinism - SLC24A5, Extension/recessive yellow - MC1R (melanocortin 1 receptor), Agouti - ASIP, Steel - KITLG, IRF4, SLC24A4, TPCN2.

Global distribution of skin colour reveal that different human populations of the world may be classified into three major groups:

• White Skinned People or **Leucoderms**: This category includes Europeans, some groups of Western Asia or Near East, Polynesians, North Africans, where the skin colour varies from white to light brown.

• Yellow Skinned People or **Xanthoderms**: They exhibit yellowish tinge in their skin. They include Asiatic Mongoloids, Bushmen, Hottentots and Armenoids.

• Black skinned People or **Melanoderms**: They are characterised by black skin colour and are represented best by Negroes

HAIR COLOR, TEXTURE AND FORM

Human populations vary significantly in the color and form of the hair.

The color

Majority of people have darker shades of hair colour. Different shades of colour for hair range from jet black to iron grey and snow white. Blonde and red shades are predominantly found in the Western Europe. There is a gradient of increasing blondness from South to North Italy. Red hair varies from a deep orange-red through burnt orange to bright copper. It is characterised by high levels of the reddish pigment pheomelanin and relatively low levels of the dark pigment. Scotland is the country with the highest content of red haired people, as about 13% of them have red hair. The genetics of red hair was first discovered in the year 1997. It has been discovered that the changes in the gene melanocortin-1 receptor (MC1R), found on chromosome 16 is responsible for producing this hair colour. The MC1R is a recessive variant gene. The dark hair colour shades vary from various shades of brown to black.

Form

There are about 12 types of head hair forms: Straight, slightly wavy, long wavy, wide wavy, narrow wavy, curly, crinkly, loose woolly (matted), tight woolly or frizzly, tufted, peppercorn, spiral. These categories have been broadly categorized under three major groups:

• **Leiotrichous**: These are further of three types:

a) stretched- thick straight hair;

b) smooth- thin straight hair;

c) flat or slightly wavy- waves having wave length between 5.5 and 6 cm.

Such hair are found in the Mongoloids, Amerindians and Eskimos, Polynesians and Ainus.

• **Cymotrichous**: These can be categorized into:

a) Broad wavy- having smaller radius varying from 3.5 to 4 cm.;

b) Narrow wavy- short and strongly curved waves having wave length of about 2.5 cm.;

c) Curly- broad spirals having waves in different planes.

These types of hair are found among people from Western Asia, The Veddas of Sri Lanka, Australians, Indo-Afghans, Indonesians, Ethiopians and Europeans in general.

• **Ulotrichous or Woolly Hair**: These comprise frizzly, pepper corn and spirals. These can be divided into five categories:

a) Frizzly- irregular waves in different directions;

b) Loose frizzly- circular or flat spiral of about 1.5 cm. in diameter;

c) Thick frizzly- circular and flat spirals having about 7-10 mm. diameter;

d) Pepper Corn: This type has knots of thick rolled hair;

e) Spiral: This type consists of hair having very narrow spirals of thick twisted hair of small length.

It is generally difficult to distinguish between the last two categories. Such types of hair are found among the Negroes, Andamanese, Bushmen, Papuans, Melanesians, Sudanese and Bantus. The curliest hair is found in the Khoisans whose hair is often so tightly curled that it is called peppercorn hair because it looks like pepper corns placed on their heads. Christiano et al. (2008) have recently demonstrated that mutations in a **gene, known as P2RY5**, cause hereditary “woolly hair”- hair that is coarse, dry, tightly curled and sparse. Incidentally, it is the first discovery of the new gene whose primary function seems to be the determination of hair texture in humans.

There are no generally accepted functional explanations for why hair color, form, or thickness varies. It is clearly a polygenetically inherited trait. Hair color is determined in part by the same substance as skin color (melanin), so it is no surprise that the two are correlated. However, some dark-skinned Australian aborigine populations have a large number of individuals with blond hair, especially when they are children. This may indicate that a different set of alleles may be governing hair color in these populations than in others (Molnar, 2002). Hair form varies from straight to tightly spiralled or woolly. Again, although there may be differences in the insulation properties of straight and spiralled hair, arguments can be made that this would be an advantage in either warm or cold climates. African and Melanesian populations both have woolly hair, but at a microscopic level their hair forms are quite different, indicating separate genetic origins.

EYE FORM

North and East Asians, as well as some of their descendant populations in the New World, have a high frequency of a morphological feature known as an epicanthic fold. This is the classic racial marker of “Oriental” or “Mongoloid” populations, although it can appear in individuals from other parts of the world. The epicanthic fold is a small flap of skin extending from the eyelid to the bridge of the nose. It

has no known biological function. **Alice Brues** (1977) suggests that it is a secondary anatomical feature that results from a combination of a fatty eyelid and a low nasal bridge, both of which, she argues, may reflect adaptations to cold climates. She points out that epicanthic folds are more common in women than men in some Native American populations and in children rather than adults in European populations; both patterns may be a function of the relative development of the nasal bridge.

EYE COLOR

The color of eye varies from light blue to brown black and is due to pigments on both back and front side of the iris. If pigments are only on the back side, blue eye color results. Color appears due to different refractive index of the deposited pigment and there is no blue, green pigment. The dark eye color is dominant in areas of great sunshine to absorb light and protect the retina from U-V rays.

Caucasoid- Light blue to light brown

Mongoloid- Light brown to dark brown

Negroid- Dark Brown to Brown black

LIPS

Human lips are a peculiar trait that gives an enormous range of oral expressions brought by a complex set of muscles. Human lips are different from those of all other animals because they are everted. Everted lips seem to have a slight ability to help cool the body because capillaries run very close to the surface of the lips, and the slight moistness of the lips helps in cooling by evaporation. The most everted lips are found on the faces of Negroids and the least everted lips on the faces of some Europeans. On the basis of thickness of the lips, these can be divided into four categories: thin lips, medium lips, thick lips, very thick everted lips. African Negroes usually have the last type of lips.

METRIC FEATURES

CEPHALIC INDEX

In the 1840s, Swedish anatomist Anders Retzius (1796–1860) introduced a statistic, the cranial or cephalic index (CI), to characterize the shape of the human skull. The CI is simply the width of the skull divided by the length multiplied by 100. Skulls that are narrow, or dolichocephalic, have CIs in the 70s, whereas those that are rounder, with CIs in the 80s, are called brachycephalic. Despite the fact that the CI was used to categorize skulls (and people) as “long-headed” or “round headed,” all normal skulls are longer than they are wide. Retzius’s work introduced cranial shape as a marker of racial affiliation, which some late nineteenth and early twentieth century scientists enthusiastically adopted as a “scientific” way to measure race.

Dolicocephalic- Cranial index less than 76 – Negroid, Caucasoid

Mesocephalic or medium- Cranial index in the range of 76 to 81- Mongoloid, Negroid, Caucasoid

Brachycephalic- Cranial index greater than 81- Mongoloid Caucasoid

FACIAL INDEX:

There are about ten facial types that have been reported: elliptic, oval, reverse oval, round, rectangular, quadratic, trapezium, inverted trapezium and pentagonal. The face usually harmonizes with the form of the head, so that a narrow face accompanies a narrow head. There are notable exceptions, however; for broad faces with long heads occur among sonic Eskimos. Facial form is

determined with the help of facial index. Facial Index = Morphological facial height/ Bizygomatic breadth × 100 This index is divided into five categories:

Face Form	Index Range
Hyper euryprosopic (Very broad face)	upto 78.9
Euryprosopic (Broad face)	79.0 - 83.9
Mesoprosopic (Medium face)	84.0 – 87.9
Leptoprosopic (Narrow face)	88.0 – 92.9
Hyper leptoprosopic (Very narrow face)	93.0 and above

NOSE FORMS:

It is a ratio of nasal breadth to nasal length multiplied by one hundred. P. Paul Broca emphasised the importance of nasal index as the best indicator for ethnic description. Nasal shape is determined from the nasal index value as follows:

Nose Form	**Index Range**
Leptorrhine (Narrow nose)	< 70
Mesorrhine (Medium nose)	70.0 – 84.9
Platyrrhine (Broad nose)	85.0 – 99.9
Hyper Platyrrhine (Very broad nose)	100 and above

Anthropometric studies have shown that Negroes have a broad and short nose; the Mongoloids have short and moderately broad (mesorrhine) nose. Australoids possess excessively platyrrhine nose. The Whites usually exhibit leptorrhine type of nose. Studies have shown that nasal proportions do vary between ethnic groups but the size and shape of the nose does not define precisely Caucasian, Mongoloids and Negroid races respectively. Anthropologists agree that the nasal variations are due to man's adaptation to the environment. The shape of nose seems to be an adapting feature because condition seems to be heat adaptation because the broad nostrils seems to permit exit of greater quality of warm air from lungs thereby providing a cooling effect.

Leptorhine condition seems to be cold adaption because the narrow elongated nostrils provide long surface area for incoming air to be warmed.

STATURE:

Influenced by both paratypical factors (Local Environment, Nutrition, Physical and Psychological Stress) and Diatypical factors (Genes and heredity). Paratypical factors for stunted stature includes forest and mountain habitation, living in excessive cold, low nutrition whereas for tallness includes living in open wandering habitat, free air and excessive sunshine, high nutrition.

Though the stature shows wide intra-population variation it is widely used as a criterion for classifying primary races.

Ranges from VERY SHORT to VERY TALL

GENETIC CRITERION OF RACE:

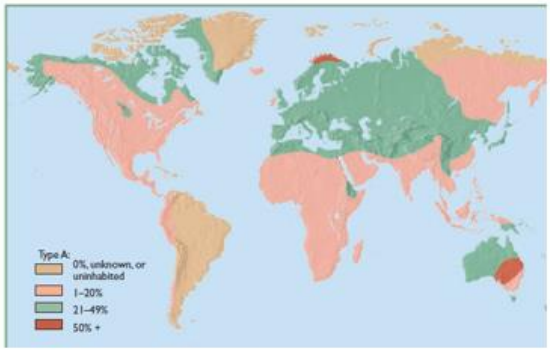
After the rediscovery of Mendelism, it was observed that inheritance of traits in human follow Mendelian laws. Morphological traits were found to be adaptive, and hence human taxonomists started using genetic traits to study variations among human populations. The gene frequencies at various polymorphic genetic loci were used to supplement definition of race from morphological characters.

Blood Groups

The antigens that express on the red blood cell determine an individual's blood group. On the basis of these antigens, a number of blood group systems have been identified.

ABO BLOOD GROUP SYSTEM

ABO blood group has four phenotypes (A, B, AB, and O). The genes for O and A are widespread among all groups of people on the globe, while B is the rarest allele. 16% of humanity has B allele and about 21% have the A allele and O blood type is very common and about 63% of humans share it. The highest frequencies of A are found in small, unrelated populations, especially the Blackfoot Indians of Montana (30-35%), the Australian Aborigines (many groups are 40-53%), and the Lapps, or Saami people, of Northern Scandinavia (50- 90%). The A allele apparently was absent among Central and South American Indians. Type O is particularly high in frequency among the indigenous populations of Central and South America, where it approaches 100%. It is also relatively high among Australian Aborigines and in Western Europe (especially in populations with Celtic ancestors). The lowest frequency of O is found in Eastern Europe and Central Asia, where B is common. Blood type B is relatively common in Chinese and Indians in about 25% of the population whereas it is less common in European countries and Americans of European origin, being found in about 10%. Blood type AB is the least common.



RH BLOOD GROUP SYSTEM

From the clinical point of view the Rhesus or Rh system is the most important system other than ABO. Rh D blood group has two phenotypes: Rh D positive (Rh+) or Rh D negative (Rh-). Studies have shown that most African populations are around 75% Rh+. Europeans have the lowest frequency of this blood type for any continent; Rh+ is around 60%. The lowest known frequency is found among the Basques of the Pyrenees Mountains between France and Spain where it is only 47% Rh+.

Frequency distribution of various Rh haplotypes among different races is as follows: Rh haplotype DCe: most common in Caucasians (42%), Native Americans (44%), and Asian Mongoloids (70%); Rh haplotype Dce: most common in Blacks (44%); Rh D-negative phenotype: most common in Caucasians (15%), less common in Blacks (8%), and rare in Asian Mongoloids (1%).

DERMATOGLYPHICS

Dermatoglyphic patterns of fingers, palms and soles have been extensively analysed to study racial variations. Dermatoglyphic patterns are present at birth and do not change throughout the remainder life. The patterns present on finger tips are loops, arches and whorls. The similarity of patterns of two individuals can be used as an index of similarity. The data in Table shows preponderance of loops in Caucasoids and African populations, while Mongoloids have more whorls than loops.

loop whorl arch

Frequency of Fingerprint patterns in different populations

Population	Arches	Loops	whorls
European	0- 9	63- 76	20- 42
Negroes	3- 12	53- 73	20- 40
Bushmen	13- 16	66- 68	15- 21
Mongoloids	1- 5	43- 56	44- 54
Australian aborigines	0- 1	28- 46	52- 73
Micronesians	2	49	49- 50

Race: Is Race a Valid Concept?

Race as a Biological concept

To understand why the racial approach to human variation has been so unproductive and even damaging, we must first understand race in strictly biological terms. Biologists define race as a sub species, or a population of a species differing geographically, morphologically, or genetically from other populations of the same species. As simple and straightforward as such a definition may seem, three factors complicate its use.

First, it is **arbitrary**; no scientific criteria exist on how many differences it takes to make a race. For example, if one researcher emphasizes skin color while another emphasizes fingerprint differences, they will not classify people in the same way.

Second, **no single race has exclusive possession of any particular variant of any gene or genes**. In human terms, the frequency of a trait like the type O blood group, for example, may be high in one population and low in another, but it is present in both. In other words, populations are genetically "open; meaning that genes flow between them. The only reproductive barriers that exist for humans are the cultural rules some societies impose regarding appropriate mates.

A third problem is that the vast majority of genetic variation exists within a so-called racial group. In the 1970s, right on the heels of the civil rights movement, evolutionary biologist Richard Lewontin demonstrated that a mere 7-10 percent of human genetic variation exists among racial groups. As the science writer **James Shreeve** puts it, "most of what separates me genetically from a typical African or Eskimo also separates me from another average American of European ancestry" (Shreeve , 1994, p. 60).

The processes of evolution ensure that each species of living thing possesses genetic variation and displays some degree of phenotypic variation. Some species are more variable than others, depending on the nature of the species' geographic distribution and the variety of specific environments to which its members are adapted.

To remain a single species, of course, all males and females of the group must be capable of interbreeding. Furthermore, there must be sufficient gene flow to prevent one or more groups from becoming completely isolated. Gene flow, however, is not always even. Members of a species may be clustered into breeding populations More genes are exchanged within a single breeding population than between different breeding populations, often because some geographic barrier prevents extensive gene flow or because the environments to which the species are adapted come in clusters themselves with gaps between them that limit steady genetic exchange.

Thus, breeding populations may represent phenotypically distinguishable regional populations within the same species. Such breeding populations have been referred to as subspecies, or races. But all the populations are still members of a single species that maintains its species identity through the flow of genes among those populations. Thus, these subspecies distinctions are artificial. The variable traits grade into one another over geographic space. This gradual variation is known as a **cline**, a continuum of change from one area to another, as opposed to a sudden and distinct change.

Recent books on evolutionary biology, in fact, indicate that the concept of race or subspecies is generally falling into disfavour except in special and rare cases. Caribou and reindeer, for example, are able to interbreed but do so only under artificial conditions. In nature, they are isolated in two hemispheres and have been for 10,000 years, developing genetic and phenotypic differences that make them distinct. Thus, they could be considered races or subspecies within their single species.

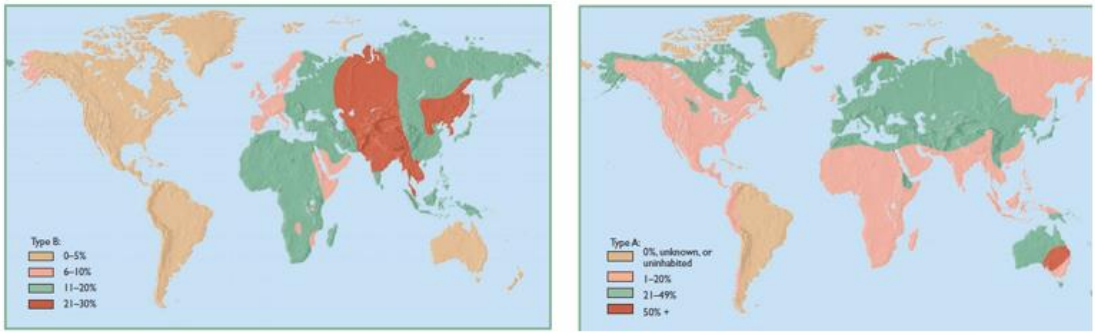
In Mark Ridley's Evolution (2004), for example, neither term appears in the index or glossary, nor is either used formally in the discussions of species variation or formation. In Population Genetics and Evolution, by **Lawrence Mettler** and colleagues (1988), the term race is said to be "a subjective convenience."

Human Phenotypic Variation

Given the perceived wide range of human phenotypic variation, could it be that at least some of our populations were isolated long enough to have become distinct enough to warrant subspecies status?

Although skin color varies by latitude and ranges from very dark to very light, in no way does this variation assort itself into distinct geographic groups. Human skin-color variation is distributed as a cline—gradually going from dark to light or light to dark across geographic space—and is not limited to any one traditional racial population. Dark skin, for example, typically associated with Africa, is an equatorial trait that is also found almost halfway around the world in New Guinea. Clearly, skin color is of no use in defining subgroups within the human species that have any biological meaning.

Skin color, of course, doesn't come in nice, neat categories. It is said to be a continuous trait. So how about traits that do come in discrete, either/ or categories? Maybe these would better describe discrete biological populations. Blood type is a good example as everyone on earth falls into one of four groups for the ABO system. There are no intermediates.



These maps show the approximate frequency distributions of type A and type B blood, demonstrating the lack of an obvious explanation in the distribution of this variation

The percentage categories on the maps are arbitrary. We could have divided them into more groups or fewer. Each category is a range and, thus, a generalization. For instance, across Africa, type A is shown to appear in 1 to 20 percent of the population in some areas and 21 to 49 percent of the population in other areas. With more detail, in fact, we would see the distribution of blood-group percentages as **clinal**, just as we would with skin color. And notice that the distribution of type A is very different from that of type B. In other words, blood-group percentages are of no more use than is skin color in pointing out and defining discrete sub-specific human groups.

Nor will such a division show up if we use combinations of traits, because the distributions of traits are discordant—that is, a particular expression of one trait does not necessarily predict a particular expression of another. The nature and distribution of human variable traits, then, is like that of most other species—varying as clines with no precise boundaries, despite an often predictable pattern to our biological diversity. Clearly defined biological groups below the species level are not Scientifically supported for Homo sapiens by the data.

Genetic Variation

Of the 3.1 billion base pairs in the human genome, only 10 million show any regular variation at all. Variable base pairs are called single nucleotide polymorphisms (or SNPs , pronounced snips , for short). Because many of these SNPs are rare, the average difference between any two individuals on earth is 3 million SNPs. That's less than 0.1 percent variation at that level. And recall that most of the genome is noncoding, so most of those SNPs probably have no phenotypic effect. Moreover, perhaps half of those that do have an effect are involved in the differences between females and males. **All the phenotypic variation that we try to assort into race is the result of a handful of genes, the ones that influence traits we notice.**

We can look at combinations of linked **SNPs called haplotypes** . These do, as you would expect, show patterns of variation around the world. (This is not surprising. Phenotypic traits show patterns.) But there are few haplotypes that are characteristic of some population or are exclusive to that population. The differences are in frequency of certain haplotypes, such that one might be very common in, say northern Europe, but it would not be exclusively found there. Nor would all northern Europeans possess it. The variation is statistical and varies gradually across space. In other words, **genetic variation is distributed as clines.**

And, finally, when we look at an overall pattern of genetic variation for our species, we find something very interesting indeed. The genetic variation within sub-Saharan Africa is greater than that for the entire remainder of the human population. Moreover, the variation in the rest of the

world is, for the most part, a subset of that of sub-Saharan Africa. Thus, on a broad genetic level, our familiar racial designations don't make sense. "African" is not a genetic race, because there is almost no set of African genetic variation not shared by some other populations in the world.

Thus, as with phenotypic features, variation and regional differences in genes do not translate into support for biologically meaningful racial groups.

Evolutionary Theory

We are a populous species; we live in widely varied environmental conditions, sometimes in fairly isolated regions; and we further isolate our populations through cultural boundaries. These would seem to be the perfect circumstances for creating definable races.
However, one noteworthy feature of our species for its entire biological history has been mobility. We evolved first in Africa and then spread with amazing speed all over the Old World, despite mountains, oceans, and other barriers. And when we reached the far corners of Africa and Eurasia, we did not stay put. We continued to move around in search of resources and space. As we evolved, we acquired increasing ability to move around (with the domestication of the horse and with inventions such as boats and navigation instruments), and we found increasing motivation for doing so. Such mobility leads to extensive gene flow, and it's fair to say we tend to exchange genes at nearly every opportunity.
Gene flow, then, is the norm for our species, and as widespread as we are, we still manage to exchange enough genes—through intermediary populations—to prevent any group of humans from being isolated long enough to evolve the differences sufficient for subspecies status.

Finally, what about all the different environments our species inhabits? Couldn't natural selection have led to differentiation of some populations? Certainly, the variation and distribution of some of our traits—skin color, for example—can be attributed to natural selection. But our major adaptive mechanism is culture, with its values, social systems, and, especially, its technologies that have increasingly buffered us against the constant editing of natural selection. Adaptively, we evolve culturally. Culture and the big human brain that makes culture possible are species characteristics, shared by all of us. They are the basis of our modern identity. Culture, in a sense, is our environment, and we may say that, for some time, our species has experienced little of the kind of environmental variation that would lead to the development of distinct, isolated subpopulations.

Race as a Social concept:

Although biologically separate human races do not exist, race remains a significant cultural category. Human groups frequently insert a false notion of biological difference into the cultural category of race to make it appear more factual and objective. In various ways, cultures define religious, linguistic, and ethnic groups as races, thereby confusing linguistic and cultural traits with physical traits.

Like gender categories, human races are folk taxonomies.

Against a backdrop of prejudice, the conflation of the cultural with the biological has historically provided a "scientific" justification for the exclusion of whole categories of people from certain roles or positions in society.

The Nazis in Germany elevated a racialized worldview to state policy, with particularly evil consequence. Hitler's agenda was inspired by the American eugenics movement of the early 20th century. The Nuremberg race laws of 1935 codified the superiority of the Aryan race and the inferiority of the Gypsy and Jewish races. The Nazi doctrine justified, on supposed bio logical grounds, political repression and extermination. In all, 11 million people (Jews, Gypsies, homosexuals, and other so-

called inferior people, as well as political opponents of the Nazi regime) were deliberately put to death or died from starvation, disease, and exposure in labour camps.

Debunking the myth of race

Franz Boas, the founder of American anthropology, was among the first scientists to challenge the taxonomic approach to human biological variation. Specifically, he wanted to test the widely held notion that head shape and other so-called racial markers were static entities, essentially unchanging through time. In the early 1900s, he and his researchers studied some 18,000 immigrant families, calculating the cephalic index—the ratio of head length to head breadth—of parents born in Europe and their children born in the United States. Their results revealed that the adults' and children's head shapes differed, not by a lot but by a degree that could be expressed mathematically. This finding undermined the idea, prevalent at the time, that racial types were innately stable. Because the differences that had been cited among various races were not immutable, Boas concluded, the race concept was invalid.

In the early 1970s, the American Geneticist R. C. Lewontin (b. 1929) tested the race concept by studying global genetic variation. If human races existed, most genetic diversity would be accounted for by them. Focusing on blood groups, serum proteins, and red blood cell enzyme variants, Lewontin found that the so-called races accounted for only about 7% to 10% of the genetic diversity. In other words, most variation occurred across human populations regardless of "racial" makeup.

Subsequent studies by other scientists—of wide-ranging characteristics such as genetic traits and cranial morphology—have all shown the same thing: so-called races account for a very small amount of biological variation. Multiple biological traits do not lead to clear-cut racial classifications because traits simply do not agree in their frequency or distribution. One trait might cut across human populations in one way, but another trait cuts across them in another way.

Craig Venter and Francis Collins jointly made an announcement of the mapping of human genome in 2000. Upon examining the data from the genome mapping, Venter realised that although the genetic variation with human species is on the order of 1-3% (instead of the previously assumed on 1% per cent), the types of variations do not support the notion of genetically defined races. Venter stated that 'Race is a social concept and not a scientific one. There are no bright lines to compare all the sequenced genome on the planet". When we try to apply science to sort out these social differences, it all falls apart.

Stephan Palmie' asserted that race is not a thing but a social relation or in the words of Katya Gibel Mevorach, "a metonym", "a human invention whose criteria for differentiation are neither universal nor fixed but have always been used to manage difference". As such, the use of the term "race" must be analysed. Moreover, they argue that biology will not explain the reason behind the idea of race.

The 'Aryan race' was supposed to be the group of blond haired, blue eyed, white skinned people, whom Hitler wanted to dominate the world. Technically, Aryans are any people who speak one of the Indo-European languages as Greek, Hindi, Polish, German, Gaelic and English. Aryans speaking these languages have neither blond hair nor blue eyes. On the other hand, Jews do not form a race but a religious group like the Buddhists or the Protestants.

Racial stereotypes persist largely because the skin colour can be recognised and used to classify people and to attribute certain biological factors to all members of a supposed race. In classifying human races most of the anthropologists do not consider the mental characteristics, viz. IQ. Klinberg has very clearly stated that 'the scientists know no relation between race and psychology'.

The term 'race' has often been used by certain individuals to justify their exploitation of other groups. A blatant example of how racism is linked to inaccurate concepts of race was found in the treatment accorded to American blacks because of a belief in blacks' inherent (genetic) inferiority to whites. The concept of racial superiority and inferiority is not based on any scientific facts. This racist outlook may be a remnant of slavery days.

UNESCO STATEMENT ON RACIAL CLASSIFICATION

The definitions related to race strike a note of discord and there is no opinion expressed in them. Experiencing this difficulty UNESCO organised a conference of all the prominent and eminent anthropologists, sociologists and psychologists in order to determine a single conception of race. The conference proposed the following recommendations related to race:

Fundamentally, the entire human species has one origin and all men are Homo sapiens.

National, religious, geographical, cultural and linguistic groups are entirely unconnected with and unrelated to race. These groups do not give indication of any race.

The differences that exist between the physical characteristics of men are due both to heredity and to environment. Differences in heredity arise due to the processes known as mutation and inbreeding.

Human races if classified but these classifications are based solely on physical traits. They have no relation of any kind with mental or intellectual superiority or inferiority.

The inner capacity for the development of mind and culture is found equally in every race. Hence distinction between races cannot be based on cultural differences and levels of intelligence.

That from the biological view point, mixing of races in deleterious, is an essentially incorrect and invalid belief.

In this way, the race is a group of intermarrying individuals, born to common ancestors that possess similar physical traits and a 'we feeling'. Inbreeding renders permanent the physical characteristics of the race and due to them one race can be distinguished from another. One major cause of inbreeding is geographical isolation. Beside geographical isolation a race originates due to mutation, migration, selection and adaptation.

The scientific controversy over race will fade as we enhance our understanding of the genetic diversity (and uniformity) of our species. Given the rapid changes in genome studies, and because very few genes actually contribute to outward expressions of phenotype, dividing the human species into racial categories isn't a biologically meaningful way to look at human variation. But among the general public, variations on the theme of race will undoubtedly continue to be the most common view of human biological and cultural variation. Keeping all this in mind, it's up to anthropologists to continue exploring the issue so that, to the best of our abilities, accurate information about human variation will be available to anyone who seeks informed explanations of complex phenomena.

THE CLASSIFICATION OF HUMAN VARIATION

People are natural classifiers. They see nature as being composed of types of things rather than individual entities. If every rock, tree, or animal had a unique label attached to it, effective communication would be impossible. Therefore, people speak in categories; they talk of igneous rocks, pine trees, and mammals.

Each group of people classifies the world around it. Any human group has an answer to the question "What kinds of rocks, trees, or animals are there?" but the categories expressed by people do not necessarily describe the world as seen by objective science. These categories reflect specific cultural

traditions and differ from society to society. Anthropologists refer to such classifications as **folk taxonomies.**

Categorization or classification is necessary in everyday communication as well as in science. Without the ability to generalize, conversation would be difficult and laws and theories could not exist. Nevertheless, folk taxonomies do not always correspond to reality. When the inaccuracies apply to categorizations of people, they often mirror hatred and mistrust.

Folk Taxonomies of Race

In coping with the world, people visualize human variation in terms of categories. The simplest type of classification is one in which a particular people will classify themselves as "human" and everyone else as "less than human." For instance, the Navahos of the American Southwest call themselves diné, which, roughly translated, means "the people." This label implies that the Navaho see themselves as set apart and distinct from the non- Navahos they encounter. This frequently encountered type of conceptualization also existed among the ancient Greeks, who divided humankind into two categories: Greeks and barbarians. Some Greeks believed that the barbarians just made noises or babbled.

In urban centers, and to a lesser degree elsewhere, a person encounters daily a variety of people of different statures, skin colors, and facial features. If people at an American suburban shopping center were asked to list the different types of people in the world, the most frequent answers would probably be Caucasoid, Mongoloid, and Negroid; or Black, Brown, Yellow, Red, and White; or African American, Indian or Native American, Hispanic, and Asian; or some other combination of terms.

Such classifications are examples of folk taxonomies that reflect how many Americans perceive human differences. Do they also reflect reality? The answer is both yes and no. Folk taxonomies do have a social reality in that many forms of behavior are determined by them. In a situation requiring interaction with another person, an American of European ancestry may behave differently if the other individual is perceived as "Hispanic" or "African American." On the other hand, physical anthropologists deal with biological reality, and here folk taxonomies do not reflect what we know about human variation.

A Brief History of Classifications of Human Variation

Carolus Linnaeus (1707–1778) was perhaps the first person to apply systematic criteria in a uniform way in classifying humans. His contribution, the first scientific taxonomy of the living world, included people. Linnaeus labeled all humans Homo sapiens and then divided the human species into four groups based on the criteria of skin color and geographical location. These four categories are H. sapiens Africanus negreus (black), H. sapiens Americanus rubescens (red), H. sapiens Asiaticus fucus (darkish), and H. sapiens Europeus albescens (white).

Johann Friedrich Blumenbach (1752–1840) was a German physician and student of comparative human anatomy. He divided the human species into five "races": Caucasian, Mongolian, Ethiopian, Malayan, and American. The term Ethiopian was later changed to Negro.

Anders Retzius (1796–1860) noted many variations within the ve types proposed by Blumenbach. Deciding that the shape of the head was an important criterion for classifying people, Retzius developed the cephalic index as a means of comparing populations. The cephalic index is the breadth of the head relative to the length, as given by the formula

$$\frac{\text{Head breadth}}{\text{Head length}} \times 100$$

These early attempts set up two criteria for the classification of human variation: outward physical characteristics and geographical origin. With the development of genetic theory, anthropologists began to question the use of the traditional criteria of classification. Some anthropologists turned to the blood-type systems as a basis for classification. Blood type is easy to determine; in most cases, blood typing can be done in the eld. A given blood type is either present or absent, and it is not affected by environmental factors. Finally, the mechanisms of inheritance of blood types, for the most part, are known. **William Boyd** published in 1950 the following classification based on an analysis of the frequencies of specific blood types:
(1) Early European (hypothetical category, represented today only by the Basques of Spain), (2) European (Caucasoid), (3) African (Negroid), (4) Asiatic (Mongoloid), (5) American Indian, and (6) Australoid.

A classification based on the fossil record is that of **Carlton S. Coon**, who in his 1962 book The Origin of Races divided the human species into five categories: Australoids, Mongoloids, Caucasoids, Congoids (dark-skinned Africans), and Capoids (the San and Hottentots of southern Africa).

Coon postulated that humankind separated into his five divisions before the evolution of our species, Homo sapiens. To him, human fossils represented early stages in this pre-sapiens development. An early fossil found in Java would be an early Australoid, while a fossil from China would be an early Mongoloid, and so on. Coon also proposed that hominins in each of the five evolutionary lines evolved into Homo sapiens at different times, and, hence, different living races have developed on a Homo sapiens level for differing amounts of time, which accounts for differences in cultural development. This clearly racist conclusion is not consistent with the evidence.

Another approach to the classification of human variation is the 1961 scheme of **Stanley Garn**. He observed that people living in the same large geographical area tend to resemble one another more closely than they do people in different geographical areas. Of course, this is a generalization with many exceptions. Garn divided the human species into nine large geographical races. Geography alone is the major criterion for classification, not an arbitrarily chosen trait such as skin color, blood type, or cephalic index. Since gene flow does take place more frequently within a major geographical zone than between adjacent zones, populations in the same major geographical areas generally show some similar gene frequencies.

The Changing Nature of Human Variation
A problem with dividing humanity into any finite number of races, at any level, is that human variation is dynamic, and the shape of clines changes constantly. Old populations are broken down, and new ones are established. Between 1845 and 1854, 3 million people migrated to the United States. Between 1881 and 1920, 23 million people entered the United States from such countries as Great Britain, Italy, Germany, Spain, Russia, Portugal, and Sweden. Some of these people formed partial isolates, such as Germans in Pennsylvania, Welsh in upper New York, and Scandinavians in Wisconsin and Minnesota.

The Nature of Human Variation and Its Classification
In traditional systems of classification, particular traits are used to divide humankind into a finite number of categories. Most often one or a few traits are used to de ne each cate gory, one of the most frequently used being skin color. If a classification based on skin color is valid, these categories would be real, natural units. These natural units would differ from one another in a number of ways since natural groups are characterized by clusters of traits. In other words, when a few traits are used in such classifications, the underlying assumption is that groups so classified will be different from each other in traits not used in the classification.

When we plot the distribution of different traits on a map, we are struck by the fact that the patterns of the distribution more often than not do not correspond with one another. For example, the distribution of skin color in Europe changes from light to dark from north to south, while the frequency of blood type B roughly decreases from east to west. Some populations characterized by very dark skin also are associated with curly hair, and others with straight hair; some are tall, others are short; some have thick lips, others have thin lips. Populations living in Australia, southern India, and Africa may share skin color but differ considerably in other traits. Even in Africa the physical differences among populations differ as much as, or even more than, the populations of Europe.

The Genetic Relationship between Human Populations

With the publication of the complete human genome, scientists are starting to compare the genomes of several individuals in order to estimate the variation that exists within the human species. If we look only at differences in individual nucleotides, we find a variation of approximately 0.1 percent.

Other types of variation exist within the genome other than differences in nucleotides. These include deletions and duplications of DNA segments, which account for another 0.4 percent variation. Combining these two factors we can say that the worldwide human genome exhibits about 0.5 percent variation or, to put it another way, all humans share 99.5 percent of their genetic code.

If we look at the variation among human DNA throughout the world, we immediately note that there is a much higher degree of variation among the populations living in Africa compared with populations found elsewhere on the globe. This diversity strongly suggests that the species Homo sapiens arose in Africa. Because humans have occupied Africa longer than any other place on earth, there has been more time for diversity to develop within the genome. This origin may go back to 200,000 years ago. Migrations of H. sapiens out of Africa may have begun roughly 100,000 years ago.

DNA studies have contributed much to our knowledge of the migrations and differentiation of human populations. The study of the genome of a species is the eld of genomics. Scientists focus on mitochondrial DNA and the Y chromosome, because these are not subject to recombination. Within the DNA one can identify blocks of nucleotides that arise through mutation in noncoding regions and tend to be inherited together. These segments are called **haplotypes;** they can be thought of as markers.

Once such a marker arises, it is faithfully copied and passed down through the generations. Studies of haplotypes have enabled anthropologists to trace the origins and migrations of specific human populations. **One fact that has emerged from these studies is that there are no natural groups based on haplotypes that correspond to the traditional concept of "races."** There is more variation for any specific haplotype within a continental group than there is between groups.

For any haplotype, a person from one continent is likely to be more closely related to a person from another continent than to a person living on his or her own continent. Also, haplotype similarities or differences do not correspond well to phenotypic traits used in Western folk taxonomies such as skin color and hair type.