



Why Is It Important to Teach about Race, Caste and Gender? An Anthropologist's Viewpoint

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Abstract: This paper deals with the question of why it is important to teach about race, caste, and gender, when so much has already been written. I have attempted here to emphasize more the biologically-based, underlying mechanisms with regard to ethnicity, caste and gender. They are not so clearly understood, though these are simply variations in nature, which produce diversity in morphology and health patterns, allowing the human genome to be analyzed at all these levels. Therefore, it helps in the understanding of the phylogeny, patterns of migration and disease associations, and gene-environmental interactions. On the one hand we humans have so much diversity, but on the other a commonality, so that we can be useful to each other as members of the same species, the *Homo sapiens*. Scientists of repute have also not dealt with these concepts well. Therefore, the "race" word has to be dropped and ethnicity embraced. All humans irrespective of ethnicity, caste, gender and class should be at par with each other. Because class has less biological connotations, it has not been included in this paper. Therefore, imparting the knowledge that would make the seeker wiser is the goal of teaching about the above concepts. I hope that one day we all will feel connected.

INTRODUCTION

Race, caste, and gender are concepts that everyone in general is aware of. Being an anthropologist, teaching biological anthropology, human origins, human genetics, developmental biology and biochemistry, why do I also think that students should be made aware of race,

caste, gender and other controversial topics? For ages, these topics have been dealt with in great length in the literature, in panel discussions and in many other forums. So, one would think that by now all of us would be on the same page about these topics. That has not happened yet; even today we use the word race, instead of the long-recommended word "ethnicity."

Tara Devi S. Ashok has a PhD in Anthropology from India, with a specialization in Human Genetics. Her passion has been teaching and research, which she has carried out in India, Europe, and the U.S. for more than two decades. The genetics of mental retardation was the starting point of her research in human genetics, followed by the study of hemoglobinopathies both at clinical and population levels. In the U.S., she started work on mitochondrial DNA. Tara's later research experience in cancer genetics at the Harvard School of Public Health, Boston (1997-2003), was of great importance for understanding not only the genetic aspects of cancer but also human suffering both at the physical and mental levels. Teaching and research are what she does presently at the University of Massachusetts Boston's Departments of Anthropology and Biology. The use of technology in teaching has become second nature to her as that helps to impart knowledge in a different way. Having had the opportunity to closely look at health from various angles, she is both an anthropologist and a molecular biologist, and above all a keen observer of the mind. She seeks to impart the knowledge that she has gathered over the years in a very simple and direct way, so that all can benefit from her learning.

Gender and caste issues continue to be major problems in societies. Because these concepts are often not well understood by all students, I try, in my courses, to offer some basic biological information that will offer the basis for a richer understanding. In this paper, I will review some of that information.

In the recent past, I had to encounter a situation where my gender and ethnicity came under discussion by a student who wanted to work with me as a Technical Assistant for one of my courses. I saw that on the very first day, even before knowing me and understanding the work involved in the course, the student reprimanded me many times. Being a teacher, I thought everyone can be changed, but the semester became harder as the weeks passed by. Talking to other colleagues and administrators, I was told that it was a gender issue and nothing to do with me personally. At that moment I felt like what Mahatma Gandhi must have felt in South Africa. This was the first time I was seen as a person of different ethnicity and of a female gender. This was the reason I wanted to present this paper at the 2011 Annual Teaching for Transformation Conference organized by CIT (the Center for the Improvement of Teaching—now, the Center for Innovative Teaching) at UMass Boston.

I knew that I must teach about these topics in all my classes as no student should go without knowing all about the biology of these issues. I highlight biology in particular, as that would make it clear in scientific terms as to what scientific understandings underlie these concepts. All should be able to understand that no ethnicity is inferior or superior, and no one should have gender bias, and today we need to address this latter issue even more urgently than before because gender today can be much more than just being a girl or a boy.

I. RACIAL ISSUES

The word “race” has been controversial for a long time. In 1950, UNESCO recommended its replacement by the word “ethnicity,” yet today in the United States still the word race is in common usage. On July 20th, 1950, a statement on race was drafted by the United Nation’s Educational, Scientific and Cultural Organization at Unesco House, Paris, by the following experts: Professor Ernest Beaglehole, New Zealand; Professor Juan Comas, Mexico; Professor L.A. Costa Pinto, Brazil; Professor Franklin Frazier, United States; Professor Morris Ginsberg, United Kingdom; Dr. Humayun Kabir, India; Professor Claude Levi-Strauss, France; and, Professor Ashley Montagu, United States (UNESCO Report 1950).

There were 15 statements issued in all. A few sentences from these different statements stand out in their clarity:

- “That all men belong to the same species, *Homo sapiens*.”
- “From the biological standpoint, the species *Homo sapiens* is made up of a number of populations, each one of which differs from the other in the frequency of one or more genes.”
- “A race, from biological standpoint, may therefore be defined as one of the group of populations constituting the species *Homo sapiens*. These populations are capable of inter-breeding with one another but, by virtue of the isolating barriers which in the past kept them more or less separated, exhibit certain physical differences as a result of their somewhat different biological histories. These represent variations, as it were, on a common theme.”

- “National, religious, geographical, linguistic and cultural groups do not necessarily coincide with racial groups: and the cultural traits of such groups have no demonstrated genetic connection with racial traits. Because serious errors of this kind are habitually committed when the term “race” is used in popular parlance, it would be better when speaking of human race to drop the term “race” altogether and speak of ethnic groups.” (UNESCO Report 1950)

After this 1950 statement, I thought that nobody would use the word race again; however, questions about race and gender are still being addressed on job applications. The EEO-1 Report—formally known as the “Employer Information Report”—is a government form requiring many employers to provide a count of their employees by job category and then by ethnicity, race and gender. The EEO-1 mandatory report is submitted to the Equal Employment Opportunity Commission (EEOC) and the Department of Labor, Office of Federal Contract Compliance Programs (OFCCP).

Typical race categories on an application form are: *American Indian or Alaska Native; Asian; Black or African American; Native Hawaiian or Other Pacific Islander; and White; and one ethnicity category, Hispanic or Latino* (Title VII of the Civil Rights Act 1964). Speaking of myself, I feel that I do not fit into any of these above categories, as I do not understand on what scientific basis these categories have been assigned.

Do you know about your race (... and age, gender, parents, siblings, class, nationality and ethnicity)? Today, we have mixed ethnicities. Our age is not the chronological age alone; each organ could have its own age. Our gender is not determined till the 7th week of gestation. Only in the 7th week does the structure called the bipotential

gonad begin to take on the distinctive appearance of a testis or an ovary. These days, a child’s social parents can be the biological ones, or not. What do you say when a child is made in a Petri dish and implanted into a surrogate mother? Then, who should be the parents? The ones who give the sperm and ovum or the mother who gives the environment of her womb? How about when a mother donates her embryos to different couples all over the globe: how do we then define the parents? Are they the ones who contribute their gametes or the ones who raise the child? We will have to coin different terms for our new age. Therefore, one could have sibs all over the world; the concept of a global family may be in vogue very soon. Some sibs could be in the deep freezer and others alive and thriving with you. Because of the prevalence of immigration, nationality could change for persons in their lifetime. Lastly, regarding class and caste issues, caste is defined at birth and an individual belongs to an endogamous group but class can change at any moment of time. Hence, class has less biological implications unless nobility or such special groups are under purview.

Recently, I took my students to the Exhibition, “Race: Are We So Different?” at the Museum of Science in Boston, Massachusetts. Developed by the American Anthropological Association in collaboration with the Science Museum of Minnesota, the exhibit explored the origins and impact of race and racism through biological, societal and cultural perspectives (Ford 2011). The best aspect of the exhibition was the personal accounts given by different people about their racial identities but I found that there was less coverage about the biology of race (that is, ethnic variations).

The American Anthropological Association’s Statement on “Race” (AAA 1998) “does not reflect a consensus of all members of the AAA”; rather, it “repre-

sents generally the contemporary thinking and scholarly positions of a majority of anthropologists." Even today not all anthropologists have unequivocal agreement that there is no basis for the word "race," or that emphasis has to shift completely towards ethnic variability. Therefore, I think, for academic purposes as well as historical reasons, the word race can be used but not in daily interactions.

How long will the word 'race' be associated with intelligence?

Unfortunately the concept of race and of racial difference was long associated with differences in intelligence. While UNESCO was putting forth its statement against the use of the term race because of the "serious errors" associated with it, during the same period other prominent researchers like James Watson believed in the worst of those errors. Even as recently as October 14, 2007, the Sunday Times of London wrote about, "The elementary DNA of Dr. Watson." It included a long profile of James Watson written by Charlotte Hunt-Grubbe, describing him as a "former protégée," and in a later paragraph contained his thinking about race and intelligence:

He says that he is "inherently gloomy about the prospect of Africa" because "all our social policies are based on the fact that their intelligence is the same as ours—whereas all the testing says not really," and I know that this "hot potato" is going to be difficult to address. His hope is that everyone is equal, but he counters that "people who have to deal with black employees find this not true." He says that you should not discriminate on the basis of color, because "there are many people of color who are very talented, but don't promote them when they haven't succeeded at the lower level." He

writes that "there is no firm reason to anticipate that the intellectual capacities of peoples geographically separated in their evolution should prove to have evolved identically. Our wanting to reserve equal powers of reason as some universal heritage of humanity will not be enough to make it so." (Hunt-Grubbe 2007)

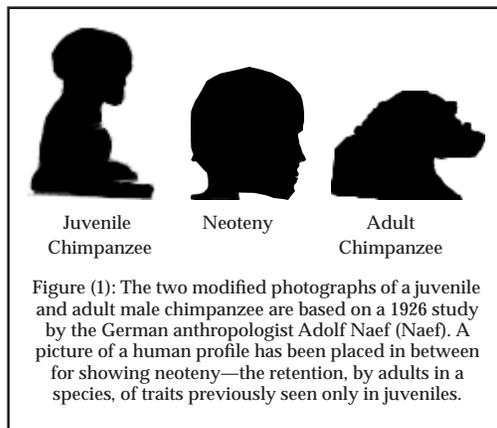
Reading such comments by the scientist who actually revealed the structure of the DNA (Watson won the Nobel Prize, with Francis Crick and Maurice Wilkins, after working out the structure of DNA in 1953) is really discouraging to one and all who unequivocally believe in equality between all ethnic groups. He was also the first director of the US government's \$3 billion human genome project, which completed the first human genome in 2003. The first two genome sequences were of Dr. Watson's and Dr. J. Craig Venter's (who as president of the Celera Corporation started a human genome project in competition with the government).

In 2007, the Sunday Times of London published again a follow up by Jonathan Leake, entitled "DNA pioneer, James Watson is blacker than he thought." It pointed out that:

James Watson, the DNA pioneer who claimed Africans are less intelligent than whites, has been found to have 16 times more genes of black origin than the average white European. An analysis of his genome shows that 16% of his genes are likely to have come from a black ancestor of African descent. By contrast, most people of European descent would have no more than 1%. The study was made possible when he allowed his genome—the map of all his genes—to be published on the internet in

the interests of science. “This level is what you would expect in someone who had a great-grandparent who was African,” said Kari Stefansson of deCODE Genetics, whose company carried out the analysis. It was very surprising to get this result for Jim.” (Leake 2007)

Therefore, what is important to understand is that morphological traits (phenotypic traits) do not reveal the entire information about an individual. Adding the genetic component, which Watson’s own work helped make possible, makes the picture more complete.



Further, an evolutionary approach can also provide information about human origins and the variations seen among the humans. Lodewijk ‘Louis’ Bolk was struck by one such observation. Bolk was a Dutch anatomist who created the fertilization theory about the human body. It states that when a human being is born, it is still a fetus, as can be seen if one pays attention to its (proportionally) big head, to its uncoordinated mobility or to its absolute helplessness, for instance. Furthermore, this “prematuration” is specifically human. Figure (1) shows a juvenile chimpanzee, a human female and an adult chimpanzee.

When the smaller baby chimp grew into the larger adult chimp, its skull cap did not enlarge; unlike humans, the chimp brain stops growing at a much earlier age. The difference between the young and adult orangutan is so great that an early naturalist (Geoffroy Saint-Hilaire, in 1836) thought they were not even in the same genus (cited from Fuerle 2008).

Looking at the pictures it is clearly evident that the human resembles the juvenile chimpanzee rather than the adult chimpanzee. Therefore, Bolk (1926) wrote that, “Man is a primate fetus that has become sexually mature” (p. 44). The suggested conclusion is that man is a retarded ape. Therefore, what caused this slowing of development which made man’s life run like a slow-motion film? It must have been an endocrine change. What a come down for the status of humans: a sexually mature primate fetus, rendered so by a glandular mutation. Therefore, “the white race appears to be the most progressive, as being the most retarded” (Bolk 1926; cited in Fuerle 2008). This is again not right. Now there are concepts such as neoteny, which suggests that all humans stop their development at the ape juvenile stage and have developed a bigger brain and a less prognathic face.

Presently, the human genome is being studied for all the different kinds of variations and to map out the pattern of human migrations. Also important is that the association of these variations with disease risk for pharmacogenomics (how an individual’s genetic inheritance affects the body’s response to drugs). Single nucleotide polymorphisms and different kinds of repeat sequences are being analyzed, like the STRs- short tandem repeat, and Alu Insertion polymorphisms, to name a few. All these help in analyzing human variation among contemporary living populations and these can help in the construction of our phylogenetic trees. Further evolutionary studies are being done using the

genome analysis of fossil remains.

Even today, some people are trying to attach a racial connotation to it all and again trying to make the human genome into superior or inferior versions. This kind of an association has been seen with the medicine called Bidil, called as the race-specific drug. This is not a new drug; it is merely a combination of two existing generic drugs that have been used to treat heart failure (irrespective of race for more than a decade). Less fortunate is the way race has been exploited to bring this drug to the market by announcing that this drug is specifically for African Americans (Kahn 2005). Titles like this are appearing in literature: "Race-Based Therapeutics. Are we moving into a new era of race-based therapeutics?" (Bloche 2004).

Human beings differ from each other at only about 0.1% of the genome's 3 billion bases, but it is not exactly known how those differences create disparities in disease prevalence, severity, and drug response between different ethnic groups. Each scenario will have to be studied in detail without bringing in racial connotations; ethnicity cannot be overlooked, of course. Then only benefits would be derived from all the genome analysis. Today, the revolution in DNA sequencing has brought down the cost of genome analysis, yet the price will have to come down considerably so that one day every person should have his genome data in his or her palm.

All issues about race get dissolved when someone needs an organ, and no one checks out for race or gender. Now everyone looks like a brother or sister under different color skins. Do we have to come to that final stage, when we will realize that all human beings are one?

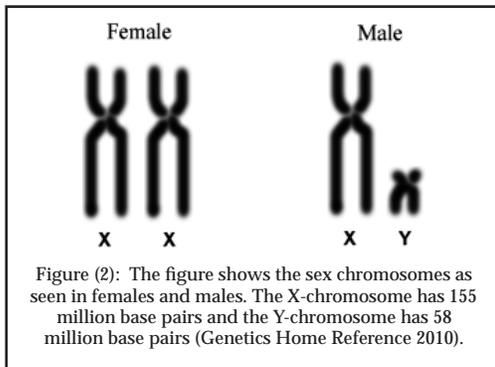
II. GENDER ISSUES

Even as recently as 2005, in a private, invitation-only conference on women and

minorities in science, then Harvard University President Lawrence Summers (presently Director of the National Economic Council), gave a controversial luncheon talk offering some possible explanations for the small numbers of women in high-level positions in science and engineering. The response of the organization WISELI (Women in Science & Engineering Leadership Institute) was that, "Summers began by positing that one reason for women's inadequate representation in high-level positions in science is the reluctance or inability of women who have children to work 80-hour weeks. Summers continued by arguing that fewer girls than boys have top scores on science and math tests in the late high school years. He acknowledged that no one really understands the reasons for this, but went on to contend that genetics may provide the explanation. Women, he argued, do not have the same 'intrinsic aptitude' as men in some fields. This lack of 'intrinsic aptitude' presumably explains women's inadequate representation in senior positions on science faculty across the nation" (WISELI 2005).

In fact, looking at male and female genomes, the male has a little less number of base pairs compared to the female's. There are 46 chromosomes in both men and women but there are two X-chromosomes in females and X and Y-chromosomes in males. The Y has less number of base pairs as it is shorter in length; therefore the women have more base pairs than men. Looking at such statements made in 2005 by scholars in high academic positions makes me wonder if women will ever achieve equal status in the US. Coming from India, where women can achieve any high-level position in academics or any other arena (which has been amply demonstrated by the Prime Minister Indira Gandhi, who was in office for a decade or more and Pratibha Patil, who is at present the President of the country), I see a climate of women's not being treated at a par with

men in the US. I came into this country thinking contrary to what I see now. Eventually, of course, Lawrence Summer made such controversial comments that he had to step down from his position and Drew Gilpin Faust was appointed as Harvard's 28th president on July 1, 2007.



Because there is a higher number of X-chromosomes in females, they have to randomly inactivate one of them to make the gene expression same as in men. Therefore, females show a great amount of heterogeneity as two women with the same genetic defect carried on their X-chromosomes may have different expression of the defective allele (that is, alternate forms of a gene) due to random inactivation of X-chromosome. Therefore, in one female the X-that is inactivated in some cells could be the one with the defective allele while another female may make inactive more of the normal allele. Therefore, it is thought now that females will have to be reassessed for all genes located on the X-chromosome. The inactivation mechanisms are being studied in detail and interesting mechanisms have come to the surface.

Peter N. Goodfellow in 1991 studied the SRY gene (the sex-determining region) on the Y-chromosome, which is responsible for maleness (Koopman et al. 1991). Today, it is said that the Y-chromosome may be lost in a million year's time, and then we may have other mechanisms evolving for sex

determination. Not every organism has sex chromosomes in any case, yet still they produce male and females. It was about 300 million years ago that one chromosome acquired the SRY gene by the process of mutation in the first place (Lahn and Page 1999).

Sex determination in humans happens in the seventh week of gestation. Before that we have a bipotential gonad. This is the only organ that has two possibilities, to either become a testis or ovary. No other organ of the body has a choice. The parts to make a boy or a girl are the same, only some parts get disintegrated in males specifically and some others in females due to different hormone production. Therefore, we have gonadal sex, morphological sex and physiological sex. All these stages have to be passed in order for a human to be able to procreate. The process can be modified at any stage leading to different syndromes. Therefore, today when we talk about gender issues there are many variations that can be envisaged—from congenital malformation and transgender issues to different sexual orientations to people who do not find their body and mind belonging to the same sex. Therefore, it is not necessary that we have to make everyone a male or a female and expect in all exactly all the features of maleness or femaleness to be perfect. Variation is what nature likes. Therefore, we find the largest variation around gender issues. Epigenetics (above genetics) is a field that helps us to understand the variations seen in expression of a gene even when the DNA sequence is the same. This is the present and the future in the field of genomics which will throw light on the expression patterns of the genome (the epigenome).

III. CASTE ISSUES

While many questions about human variation are best approached through

scientific research in fields like genetics, some societies have developed a highly refined sense of difference that is socially constructed. Over time, genetic differences emerge from such groups like the caste-defined endogamous groups of India. Caste is purely a *Hindu* concept and is highly misunderstood. The *Hindu* society was organized on the basis of caste. The Varnashrama historically was actually an inclusive concept unlike what is being understood and argued today about caste. The Brhadaranyaka Upanishad states that God created the *Brahmanas* from his face; the *Kshatriyas* from his arms; the *Vaishyas* from his thighs; and, the *Shudras* from his feet. In sequence, first the *Brahmanas* were created, but God realized that the *Brahmanas* (the priests, teachers, and scholars) cannot perform sacrifice without protection, so the *Kshatriyas* were created (as *administrators, warriors, and police*) to protect the *Brahmanas* and the sacrifice. However, even this was not enough. To perform sacrifice (yagna) one needed the financial and material goods. This was the reason why *Vaishyas* were created to be the farmers, bankers, and businesspeople. Lastly, in order to have physical help to conduct all the yagnas, God created the *Shudras* to be the artisans, workers, and service providers (Swami Madhavananda 1975).

What is important to note is that God knew it was not enough to create the caste groups. This is because the *Brahmanas* may become too powerful because of their knowledge. Similarly the *Kshatriyas* may misuse their muscle power, the *Vaishyas* may become miserly and not share their wealth with the society and the *Shudras* may become lazy and not perform their work. Therefore, the moral code of Dharma was created above all the four castes. Each caste had to abide by this code. The moral code was in line with the ultimate goal of life, namely, liberation or self-realization. There was interdependence between all the caste groups. For example a Brahmin could not shave by

himself, but needed to request a barber to do it. The *Brahmanas* are supposed to beg food from five houses and not earn any money for living. Therefore, roles were assigned to each caste group. This is what is meant by inclusiveness of the caste system as opposed to its being simply contractual. The *Hindu* society was thus a status-based society unlike the contract based market economy.

Caste is determined by birth and birth is determined by the karmas done in the previous births. Therefore, rebirth is central to the caste system. No caste is lower or higher in status. The Caste groups are endogamous. Each therefore shares a gene pool. This becomes of importance from the biological standpoint as the allele frequencies can be studied both for understanding variations and disease association for these groups. Further, they can be studied for gene-environmental interactions. There is a lot of underlying homogeneity. That is the reason why when we call *Hindu an ethnic group*, in the genetic analysis we cannot pool all *Hindus* together as they belong to different endogamous groups and do not share a gene pool, which is very important in terms of genome analysis. However, data from *Hindus* are being pooled together when making Phylogenetic trees.

Today, however, the caste system has been misinterpreted as a conflict based system, instead of understanding its religious basis as a system to bring harmony, where Dharma will prevail. Therefore a reestablishment of Dharma will be essential for solving today's problem of injustice, first to the *Shudras* and now to the *Brahmanas*. But from a biological viewpoint even today these groups are unique for teaching us more about ethnicities.

CONCLUSION

Learning concepts from an academic perspective makes an individual aware of

the correct code of conduct with which we can then interact wisely in society. We can make no discrimination on the basis of ethnicity, gender, caste categories. Therefore, imparting the knowledge that makes the seeker wiser is the goal of teaching everyone about the above concepts. I hope this will help us one day bring about a world where we all will feel connected.

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