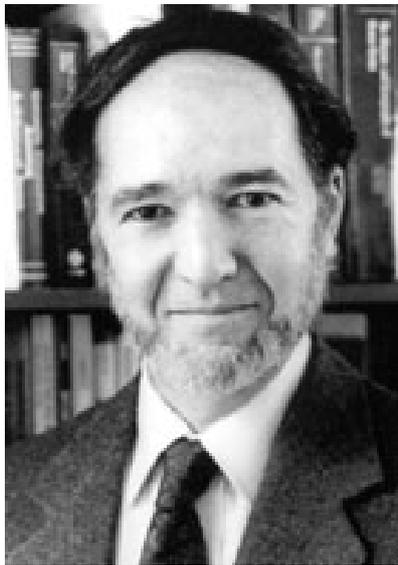


## Race Without Color

By Jared Diamond



Basing race on body chemistry makes no more sense than basing race on appearance--but at least you get to move the membership around.

Science often violates simple common sense. Our eyes tell us that the Earth is flat, that the sun revolves around the Earth, and that we humans are not

animals. But we now ignore that evidence of our senses. We have learned that our planet is in fact round and revolves around the sun, and that humans are slightly modified chimpanzees. The reality of human races is another commonsense "truth" destined to follow the flat Earth into oblivion.

The commonsense view of races goes somewhat as follows. All native Swedes differ from all native Nigerians in appearance: there is no Swede whom you would mistake for a Nigerian, and vice versa. Swedes have lighter skin than Nigerians do. They also generally have blond or light brown hair, while Nigerians have very dark hair. Nigerians usually have more tightly coiled hair than Swedes do, dark eyes as opposed to eyes that are blue or gray, and fuller lips and broader noses.

In addition, other Europeans look much more like Swedes than like Nigerians, while other peoples of sub-Saharan Africa--except perhaps the Khoisan peoples of southern Africa--look much more like Nigerians than like Swedes. Yes, skin color does get darker in Europe toward the Mediterranean, but it is still lighter than the skin of sub-Saharan Africans. In Europe, very dark or curly hair becomes more common outside Scandinavia, but European hair is still not as tightly coiled as in Africa. Since it's easy then to distinguish almost any native European from any native sub-Saharan African, we recognize Europeans and sub-Saharan Africans as distinct races, which we name for their skin colors: whites and blacks, respectively.

What could be more objective?

As it turns out, this seemingly unassailable reasoning is not objective. There are many different, equally valid procedures for defining races, and those different procedures yield very different classifications. One such procedure would group Italians and Greeks with most

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African blacks. It would classify Xhosas--the South African "black" group to which President Nelson Mandela belongs--with Swedes rather than Nigerians. Another equally valid procedure would place Swedes with Fulani (a Nigerian "black" group) and not with Italians, who would again be grouped with most other African blacks. Still another procedure would keep Swedes and Italians separate from all African blacks but would throw the Swedes and Italians into the same race as New Guineans and American Indians. Faced with such differing classifications, many anthropologists today conclude that one cannot recognize any human races at all.

If we were just arguing about races of nonhuman animals, essentially the same uncertainties of classification would arise. But the debates would remain polite and would never attract attention outside the halls of academia. Classification of humans is different "only" in that it shapes our views of other peoples, fosters our subconscious differentiation between "us" and "them," and is invoked to justify political and socioeconomic discrimination. On this basis, many anthropologists therefore argue that even if one could classify humans into races, one should not.

To understand how such uncertainties in classification arise, let's steer clear of humans for a moment and instead focus on warblers and lions, about which we can easily remain dispassionate. Biologists begin by classifying living creatures into species. A species is a group of populations whose individual members would, if given the opportunity, interbreed with individuals of other populations of that group. But they would not interbreed with individuals of other species that are similarly defined. Thus all human populations, no matter how different they look, belong to the same species because they do interbreed and have interbred whenever they have encountered each other. Gorillas and humans, however, belong to two different species because--to the best of our knowledge--they have never interbred despite their coexisting in close proximity for millions of years.

We know that different populations classified together in the human species are visibly different. The same proves true for most other animal and plant species as well, whenever biologists look carefully. For example, consider one of the most familiar species of bird in North America, the yellow-rumped warbler. Breeding males of eastern and western North America can be distinguished at a glance by their throat color: white in the east, yellow in the west. Hence they are classified into two different races, or subspecies (alternative words with identical meanings), termed the myrtle and Audubon races, respectively. The white-throated eastern birds differ from the yellow-throated western birds in other characteristics as well, such as in voice and habitat preference. But where the two races meet, in western Canada, white-throated birds do indeed

interbreed with yellow-throated birds. That's why we consider myrtle warblers and Audubon warblers as races of the same species rather than different species.

Racial classification of these birds is easy. Throat color, voice, and habitat preference all vary geographically in yellow-rumped warblers, but the variation of those three traits is "concordant"--that is, voice differences or habitat differences lead to the same racial classification as differences in throat color because the same populations that differ in throat color also differ in voice and habitat.

Racial classification of many other species, though, presents problems of concordance. For instance, a Pacific island bird species called the golden whistler varies from one island to the next. Some populations consist of big birds, some of small birds; some have black-winged males, others green-winged males; some have yellow-breasted females, others gray-breasted females; many other characteristics vary as well. But, unfortunately for humans like me who study these birds, those characteristics don't vary concordantly. Islands with green-winged males can have either yellow-breasted or gray-breasted females, and green-winged males are big on some islands but small on other islands. As a result, if you classified golden whistlers into races based on single traits, you would get entirely different classifications depending on which trait you chose.

Classification of these birds also presents problems of "hierarchy." Some of the golden whistler races recognized by ornithologists are wildly different from all the other races, but some are very similar to one another. They can therefore be grouped into a hierarchy of distinctness. You start by establishing the most distinct population as a race separate from all other populations. You then separate the most distinct of the remaining populations. You continue by grouping similar populations, and separating distinct populations or groups of populations as races or groups of races. The problem is that the extent to which you continue the racial classification is arbitrary, and it's a decision about which taxonomists disagree passionately. Some taxonomists, the "splitters," like to recognize many different races, partly for the egotistical motive of getting credit for having named a race. Other taxonomists, the "lumpers," prefer to recognize few races. Which type of taxonomist you are is a matter of personal preference.

How does that variability of traits by which we classify races come about in the first place? Some traits vary because of natural selection: that is, one form of the trait is advantageous for survival in one area, another form in a different area. For example, northern hares and weasels develop white fur in the winter, but southern ones retain brown fur year-round. The white winter fur is selected in the north for camouflage against the snow, while any animal unfortunate enough to turn white in the snowless southern

states would stand out from afar against the brown ground and would be picked off by predators.

Other traits vary geographically because of sexual selection, meaning that those traits serve as arbitrary signals by which individuals of one sex attract mates of the opposite sex while intimidating rivals. Adult male lions, for instance, have a mane, but lionesses and young males don't. The adult male's mane signals to lionesses that he is sexually mature, and signals to young male rivals that he is a dangerous and experienced adversary. The length and color of a lion's mane vary among populations, being shorter and blacker in Indian lions than in African lions. Indian lions and lionesses evidently find short black manes sexy or intimidating; African lions don't.

Finally, some geographically variable traits have no known effect on survival and are invisible to rivals and to prospective sex partners. They merely reflect mutations that happened to arise and spread in one area. They could equally well have arisen and spread elsewhere--they just didn't.

Nothing that I've said about geographic variation in animals is likely to get me branded a racist. We don't attribute higher IQ or social status to black-winged whistlers than to green-winged whistlers. But now let's consider geographic variation in humans. We'll start with invisible traits, about which it's easy to remain dispassionate.

Many geographically variable human traits evolved by natural selection to adapt humans to particular climates or environments--just as the winter color of a hare or weasel did. Good examples are the mutations that people in tropical parts of the Old World evolved to help them survive malaria, the leading infectious disease of the old-world tropics. One such mutation is the sickle-cell gene, so-called because the red blood cells of people with that mutation tend to assume a sickle shape. People bearing the gene are more resistant to malaria than people without it. Not surprisingly, the gene is absent from northern Europe, where malaria is nonexistent, but it's common in tropical Africa, where malaria is widespread. Up to 40 percent of Africans in such areas carry the sickle-cell gene. It's also common in the malaria-ridden Arabian Peninsula and southern India, and rare or absent in the southernmost parts of South Africa, among the Xhosas, who live mostly beyond the tropical geographic range of malaria.

The geographic range of human malaria is much wider than the range of the sickle-cell gene. As it happens, other antimalarial genes take over the protective function of the sickle-cell gene in malarial Southeast Asia and New Guinea and in Italy, Greece, and other warm parts of the Mediterranean basin. Thus human races, if defined by antimalarial genes, would be very different from human

racess as traditionally defined by traits such as skin color. As classified by antimalarial genes (or their absence), Swedes are grouped with Xhossas but not with Italians or Greeks. Most other peoples usually viewed as African blacks are grouped with Arabia's "whites" and are kept separate from the "black" Xhossas.

Antimalarial genes exemplify the many features of our body chemistry that vary geographically under the influence of natural selection. Another such feature is the enzyme lactase, which enables us to digest the milk sugar lactose. Infant humans, like infants of almost all other mammal species, possess lactase and drink milk. Until about 6,000 years ago most humans, like all other mammal species, lost the lactase enzyme on reaching the age of weaning. The obvious reason is that it was unnecessary--no human or other mammal drank milk as an adult. Beginning around 4000 B.C., however, fresh milk obtained from domestic mammals became a major food for adults of a few human populations. Natural selection caused individuals in these populations to retain lactase into adulthood. Among such peoples are northern and central Europeans, Arabians, north Indians, and several milk-drinking black African peoples, such as the Fulani of West Africa. Adult lactase is much less common in southern European populations and in most other African black populations, as well as in all populations of east Asians, aboriginal Australians, and American Indians.

Once again races defined by body chemistry don't match races defined by skin color. Swedes belong with Fulani in the "lactase-positive race," while most African "blacks," Japanese, and American Indians belong in the "lactase-negative race."

Not all the effects of natural selection are as invisible as lactase and sickle cells. Environmental pressures have also produced more noticeable differences among peoples, particularly in body shapes. Among the tallest and most long-limbed peoples in the world are the Nilotic peoples, such as the Dinkas, who live in the hot, dry areas of East Africa. At the opposite extreme in body shape are the Inuit, or Eskimo, who have compact bodies and relatively short arms and legs. The reasons have to do with heat loss. The greater the surface area of a warm body, the more body heat that's lost, since heat loss is directly proportional to surface area. For people of a given weight, a long-limbed, tall shape maximizes surface area, while a compact, short-limbed shape minimizes it. Dinkas and Inuit have opposite problems of heat balance: the former usually need desperately to get rid of body heat, while the latter need desperately to conserve it. Thus natural selection molded their body shapes oppositely, based on their contrasting climates.

(In modern times, such considerations of body shape have become important to athletic performance as well as to heat

loss. Tall basketball players, for example, have an obvious advantage over short ones, and slender, long-limbed tall players have an advantage over stout, short-limbed tall players. In the United States, it's a familiar observation that African Americans are disproportionately represented among professional basketball players. Of course, a contributing reason has to do with their lack of socioeconomic opportunities. But part of the reason probably has to do with the prevalent body shapes of some black African groups as well. However, this example also illustrates the dangers in facile racial stereotyping. One can't make the sweeping generalization that "whites can't jump," or that "blacks' anatomy makes them better basketball players." Only certain African peoples are notably tall and long-limbed; even those exceptional peoples are tall and long-limbed only on the average and vary individually.)

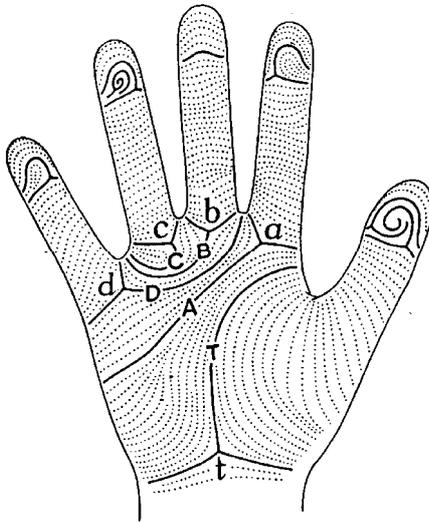
Other visible traits that vary geographically among humans evolved by means of sexual selection. We all know that we find some individuals of the opposite sex more attractive than other individuals. We also know that in sizing up sex appeal, we pay more attention to certain parts of a prospective sex partner's body than to other parts. Men tend to be inordinately interested in women's breasts and much less concerned with women's toenails. Women, in turn, tend to be turned on by the shape of a man's buttocks or the details of a man's beard and body hair, if any, but not by the size of his feet.

But all those determinants of sex appeal vary geographically. Khoisan and Andaman Island women tend to have much larger buttocks than most other women. Nipple color and breast shape and size also vary geographically among women. European men are rather hairy by world standards, while Southeast Asian men tend to have very sparse beards and body hair.

What's the function of these traits that differ so markedly between men and women? They certainly don't aid survival: it's not the case that orange nipples help Khoisan women escape lions, while darker nipples help European women survive cold winters. Instead, these varying traits play a crucial role in sexual selection. Women with very large buttocks are a turn-on, or at least acceptable, to Khoisan and Andaman men but look freakish to many men from other parts of the world. Bearded and hairy men readily find mates in Europe but fare worse in Southeast Asia. The geographic variation of these traits, however, is as arbitrary as the geographic variation in the color of a lion's mane.

There is a third possible explanation for the function of geographically variable human traits, besides survival or sexual selection--namely, no function at all. A good example is provided by fingerprints, whose complex pattern of arches, loops, and whorls is determined genetically. Fingerprints also vary geographically: for example, Europeans' fingerprints tend to have many loops, while

aboriginal Australians' fingerprints tend to have many whorls.



If we classify human populations by their fingerprints, most Europeans and black Africans would sort out together in one race, Jews and some Indonesians in another, and aboriginal Australians in still another. But those geographic variations in fingerprint patterns possess no known function whatsoever. They play no role in survival: whorls aren't especially suitable for grabbing kangaroos, nor do loops help bar mitzvah candidates hold on to the pointer for the Torah. They also play no role in sexual selection: while you've undoubtedly noticed whether your mate is bearded or has brown nipples, you surely haven't the faintest idea whether his or her fingerprints have more loops than whorls. Instead it's purely a matter of chance that whorls became common in aboriginal Australians, and loops among Jews. Our rhesus factor blood groups and numerous other human traits fall into the same category of genetic characteristics whose geographic variation serves no function.

You've probably been wondering when I was going to get back to skin color, eye color, and hair color and form. After all, those are the traits by which all of us members of the lay public, as well as traditional anthropologists, classify races. Does geographic variation in those traits function in survival, in sexual selection, or in nothing?

The usual view is that skin color varies geographically to enhance survival. Supposedly, people in sunny, tropical climates around the world have genetically dark skin, which is supposedly analogous to the temporary skin darkening of European whites in the summer. The supposed function of dark skin in sunny climates is for protection against skin cancer. Variations in eye color and hair form and color are also supposed to enhance survival under particular conditions, though no one has ever proposed a plausible

hypothesis for how those variations might actually enhance survival.

Alas, the evidence for natural selection of skin color dissolves under scrutiny. Among tropical peoples, anthropologists love to stress the dark skins of African blacks, people of the southern Indian peninsula, and New Guineans and love to forget the pale skins of Amazonian Indians and Southeast Asians living at the same latitudes. To wriggle out of those paradoxes, anthropologists then plead the excuse that Amazonian Indians and Southeast Asians may not have been living in their present locations long enough to evolve dark skins. However, the ancestors of fair-skinned Swedes arrived even more recently in Scandinavia, and aboriginal Tasmanians were black-skinned despite their ancestors' having lived for at least the last 10,000 years at the latitude of Vladivostok.

Besides, when one takes into account cloud cover, peoples of equatorial West Africa and the New Guinea mountains actually receive no more ultraviolet radiation or hours of sunshine each year than do the Swiss. Compared with infectious diseases and other selective agents, skin cancer has been utterly trivial as a cause of death in human history, even for modern white settlers in the tropics. This objection is so obvious to believers in natural selection of skin color that they have proposed at least seven other supposed survival functions of skin color, without reaching agreement. Those other supposed functions include protection against rickets, frostbite, folic acid deficiency, beryllium poisoning, overheating, and overcooling. The diversity of these contradictory theories makes clear how far we are from understanding the survival value (if any) of skin color.

It wouldn't surprise me if dark skins do eventually prove to offer some advantage in tropical climates, but I expect the advantage to turn out to be a slight one that is easily overridden. But there's an overwhelming importance to skin, eye, and hair color that is obvious to all of us--sexual selection. Before we can reach a condition of intimacy permitting us to assess the beauty of a prospective sex partner's hidden physical attractions, we first have to pass muster for skin, eyes, and hair.

We all know how those highly visible "beauty traits" guide our choice of sex partners. Even the briefest personal ad in a newspaper mentions the advertiser's skin color, and the color of skin that he or she seeks in a partner. Skin color, of course, is also of overwhelming importance in our social prejudices. If you're a black African American trying to raise your children in white U.S. society, rickets and overheating are the least of the problems that might be solved by your skin color. Eye color and hair form and color, while not so overwhelmingly important as skin color, also play an obvious role in our sexual and social preferences. Just ask yourself why hair dyes, hair curlers,

and hair straighteners enjoy such wide sales. You can bet that it's not to improve our chances of surviving grizzly bear attacks and other risks endemic to the North American continent.

Nearly 125 years ago Charles Darwin himself, the discoverer of natural selection, dismissed its role as an explanation of geographic variation in human beauty traits. Everything that we have learned since then only reinforces Darwin's view.

We can now return to our original questions: Are human racial classifications that are based on different traits concordant with one another? What is the hierarchical relation among recognized races? What is the function of racially variable traits? What, really, are the traditional human races?

Regarding concordance, we could have classified races based on any number of geographically variable traits. The resulting classifications would not be at all concordant. Depending on whether we classified ourselves by antimalarial genes, lactase, fingerprints, or skin color, we could place Swedes in the same race as either Xhosas, Fulani, the Ainu of Japan, or Italians.

Regarding hierarchy, traditional classifications that emphasize skin color face unresolvable ambiguities. Anthropology textbooks often recognize five major races: "whites," "African blacks," "Mongoloids," "aboriginal Australians," and "Khoisans," each in turn divided into various numbers of sub-races. But there is no agreement on the number and delineation of the sub-races, or even of the major races. Are all five of the major races equally distinctive? Are Nigerians really less different from Xhosas than aboriginal Australians are from both? Should we recognize 3 or 15 sub-races of Mongoloids? These questions have remained unresolved because skin color and other traditional racial criteria are difficult to formulate mathematically.

A method that could in principle overcome these problems is to base racial classification on a combination of as many geographically variable genes as possible. Within the past decade, some biologists have shown renewed interest in developing a hierarchical classification of human populations--hierarchical not in the sense that it identifies superior and inferior races but in the sense of grouping and separating populations based on mathematical measures of genetic distinctness. While the biologists still haven't reached agreement, some of their studies suggest that human genetic diversity may be greatest in Africa. If so, the primary races of humanity may consist of several African races, plus one race to encompass all peoples of all other continents. Swedes, New Guineans, Japanese, and Navajo would then belong to the same primary race; the Khoisans of southern Africa would constitute another primary race by themselves; and African "blacks" and Pygmies would be divided among several other primary races.

As regards the function of all those traits that are useful for classifying human races, some serve to enhance survival, some to enhance sexual selection, while some serve no function at all. The traits we traditionally use are ones subject to sexual selection, which is not really surprising. These traits are not only visible at a distance but also highly variable; that's why they became the ones used throughout recorded history to make quick judgments about people. Racial classification didn't come from science but from the body's signals for differentiating attractive from unattractive sex partners, and for differentiating friend from foe.

Such snap judgments didn't threaten our existence back when people were armed only with spears and surrounded by others who looked mostly like themselves. In the modern world, though, we are armed with guns and plutonium, and we live our lives surrounded by people who are much more varied in appearance. The last thing we need now is to continue codifying all those different appearances into an arbitrary system of racial classification.

