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APPLYING ANTHROPOLOGY

An Introductory Reader

SIXTH EDITION

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Bred in the Bone?

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Forensic anthropologists, like those we met in the previous selection, analyze biological remains—usually bones—in order to identify the victim of a crime or an accident. In police work, they might determine the age and gender of a victim based on the physical characteristics and measurements of the skeletal remains. Determination of age or gender from a complete skeleton is fairly straightforward because it is based on the statistical methods and observations of human biological variation. Paleoanthropologists who study fossil remains use similar methods.

This article considers the difficulty and inappropriateness of determining race based on biological remains. Alan Goodman begins with the case of the extra leg in the Oklahoma City bombing trial. The forensic anthropologists made a mistake in that case. But the author is asking an even more basic question: Because most anthropologists do not think race is a useful biological concept, why do forensic anthropologists, medical doctors, and epidemiologists continue to use that category? Goodman argues that racial categorization is bad science based on outdated racist ideas and that the use of racial categorizations in scientific inquiries results in confusion and misdiagnosis, leading investigators down the wrong paths. Goodman shows how questionable racial typologizing has created real harm in medical research.

Anthropologists cannot determine race from biological remains largely because race is a social construct rather than a biological fact. We will see this

argument again in Selections 30, 31, and 32. Race does not work as a shorthand for biological variation. In this selection, Goodman suggests five reasons why this is the case. This perspective on race is an important lesson that all students of anthropology should learn.

As you read this selection, ask yourself the following questions:

- Why is it important to recognize that there is more variation within racial groups than between them? What is the relevance of this fact to the difficulties of determining ethnicity based on skeletal remains?
- Goodman suggests that “objective” science can be influenced by the cultural biases of scientists. Do you think that this is true?
- Why might categories of race continue to be used even among scientists and researchers long after the biological concept of race has been discarded?
- Is the author just being politically correct? Are there specific social or biological variables that can be used instead of race?

The following terms discussed in this selection are included in the Glossary at the back of the book:

forensic anthropology
osteoporosis

race
sickle-cell anemia

On the morning of May 30, 1995, rescue workers in Oklahoma City made a final, melancholy sweep through the ruins of the Alfred P. Murrah Federal Building. In the weeks after the building was bombed,

165 victims had been discovered and removed, but three more bodies had been lodged in places too unstable to reach. Rather than risk more lives in a futile rescue—any survivors of the blast would have long since died of starvation or suffocation—workers simply had marked the three locations with Day-Glo orange paint before bringing down the rest of the building with dynamite. Now they picked methodically through the rubble, searching for glimpses of orange.

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Clyde Snow, a forensic anthropologist with a long history of identifying victims of war crimes, was stationed in the state morgue at the time, listening to reports from the bomb site. "Everything was going swimmingly," he later recalled. "When they got down to level zero, people could hear them talking on their mobile phones: 'Okay, we have one, two, three bodies. . . . Fine, wrap it up, we can all go home,'" The rescue team, events soon showed, was jumping the gun just a bit. Two or three minutes after the third body had been found a voice suddenly broke back over the airwaves: "Hey wait a minute! We've got a leg down here. A left leg."

During the explosion and its aftermath about twenty-five of the victims had been dismembered. Snow assumed, at first, that the leg must belong to one of those. "In all the confusion, with bodies going back and forth for X rays, I thought somebody just overlooked that one body had a left leg missing," he said. "So we'll just match it up." But one recount after another yielded the same number: 168 right legs, 168 left legs; none of the survivors was missing a leg. "We went through autopsy records, pathology reports, body diagrams, and photographs. I did it twice, the pathologist did it twice," Snow said. "It was just a mathematical paradox."

Baffled, Snow took a closer look at the leg itself. Sheared off just above the knee by the blast, it still wore the remains of a black military-style boot, two socks and an olive-drab blousing strap. Its skin, Snow said, suggested "a darkly complected Caucasoid." By measuring the lower leg and plugging the numbers into computer programs that categorize bones by race and sex, Snow confirmed his hunch: the leg probably came from a white male. An attorney for the prime suspect in the bombing, Timothy J. McVeigh, pounced on the news, suggesting that the leg belonged to the "real bomber." Snow wondered if it might belong to one of the transients who hung out on the first floor of the building. Fred B. Jordan, the Chief Medical Examiner for the state of Oklahoma, guessed that the leg belonged to a person walking alongside the truck carrying explosives.

As it turned out, the leg belonged to none of the above. Its owner was one Lakesha R. Levy of New Orleans, an Airman First Class, stationed at Tinker Air Force Base in Midwest City, Oklahoma. On April 19 Levy had gone to the Murrah building to get a Social Security card and gotten caught near the epicenter of the blast. Levy was five feet, five inches tall, twenty-one years old and female. She was also, in the words of one forensics expert, "obviously black." With that disclosure, McVeigh's attorney declared, "no one can have confidence in any of the forensic work in this case."

Just a few weeks before the leg was found, . . . Snow had said that he could accurately discern a victim's race from its skull 90 percent of the time. True, a skull provides more clues to its owner's identity than a leg does, and Levy's leg was discovered and examined under extremely trying conditions. But the leg was still covered in skin, only partly decomposed, and skin is the most common indicator of "race."

In fact, numerous examples suggest that mistakes like the one in Oklahoma City are common. They are common not because forensics experts do shoddy work—they don't, the errors in Oklahoma city notwithstanding—but because their conclusions are based on a deeply flawed premise. As long as race is used as a shorthand to describe human biological variations—variations that blur from one race into the next, and are greatest *within* so-called races rather than among them—misidentifications are inevitable. Whether it is used in police work, medical studies or countless everyday situations where people are grouped biologically, the answer is the same: race science is bad science.

Thirty years ago, the American paleontologist George Gaylord Simpson declared all pre-Darwinian definitions of humanity worthless. "We will be better off" he wrote, "if we ignore them completely." The scientific concept of race—an outgrowth of the Greek idea of a great chain of being and the Platonic notion of ideal types—is anti-evolutionary to its core. It should therefore have been the first relic consigned to the scrap heap.

Race should have been discarded at the turn of the century, when the American anthropologist Franz Boas showed that race, language and culture do not go hand-in-hand, as raciologists had contended. But race persisted. It should have vanished in the 1930s, when the "new evolutionary synthesis" helped explain subtle human variations. Yet between 1899, when William Z. Ripley published *Races of Europe*, and 1939, when the American anthropologist Carleton S. Coon published a book by the same name, the concept of race as type persisted almost unchanged. (Coon, on the eve of the Second World War, went to some lengths to ponder the essence of Jewishness. "There is a quality of looking Jewish," he wrote "and its existence cannot be denied.") Race should have disappeared in the 1950s and 1960s, when physical anthropologists switched from studying types to studying variations as responses to evolutionary forces. But race lived on. To Coon, for instance, races just became populations with distinct adaptive problems.

Most anthropologists today acknowledge that biological races are a myth. Yet the idea survives, in a variety of forms. A crude typology of world views

goes something like this. At one end of the spectrum are the true believers: At the University of Western Ontario in London, for example, the psychologist J. Philippe Rushton asserts that there are three main races—Mongoloid, Negroid and Caucasoid—and he ranks them according to intelligence and procreative ability. Here, sure enough, the old racial stereotypes leak out: the two traits allegedly appear in inverse proportion. You can have either a large brain or a large . . . (insert sexual organ of choice). Rushton's Mongoloids rank as the most intelligent; Negroids allegedly have the strongest sexual drive; Caucasoids fit into the comfortable middle.

At the other end of the spectrum are two groups who agree that races are a myth, but draw radically different conclusions from that premise. The politically conservative group, known for proclaiming a "color-free society," argues that if races do not exist, sociopolitical policies such as affirmative action ought not to be based on race. Social constructionists, on the other hand, realize that race-as-bad-biology has nothing to do with race-as-lived-experience. Social policy does not need a biological basis, especially when a dark-skinned American is still roughly twice as likely to be denied a mortgage as is a light-skinned person with an equivalent income. True races may not exist, but racism does.

A fourth group, the confused, occupies the middle ground. Some do not understand why race biology is such bad science, yet they avoid any appeal to race because they do not want to be politically incorrect. Others apply race as a quasi-biological, quasi-genetic category and cannot figure out what is wrong with it. Still others think the stance against racial biology is political rather than scientific.

That middle category of the confused is huge. It includes nearly all public health and medical professionals, as well as most physical anthropologists. Moreover, the continued "soft" use of race by that well-meaning group acts to legitimize the "hard" use by true believers and scientific racists. And if most professionals are confused about race, most of the public is both dazed and confused. There is no single, stable or monolithic public perception about race, but races are generally thought to be about genes (or blood) and (only slightly less permanent) cultural ties. Regardless, race is considered to be deep, primordial and constant: in short, indistinguishable from its nineteenth-century definition.

In 1992 the forensic anthropologist Norman J. Sauer of Michigan State University in East Lansing published an article in the journal *Social Science and Medicine* provocatively titled, "Forensic Anthropology and the Concept of Race: If Races Don't Exist, Why

Are Forensic Anthropologists So Good at Identifying Them?" Race may be unscientific, Sauer argued, but people of one socially constructed racial category still tend to look alike—and different from the people of another "race." The biological anthropologist C. Loring Brace of the University of Michigan in Ann Arbor explains Sauer's paradox in a slightly different way. Forensic scientists are good at estimating race, Brace says, because so-called racial variations are statistically confounded with real regional differences. People do vary in a systematic way depending on their environment.

Both arguments make sense, and forensic anthropologists do important work. But how good are they, really, at identifying race? Like Snow, the authors of forensic texts and review articles typically maintain that the race of a skull can be correctly identified between 85 and 90 percent of the time. The scientific reference for those estimates—if cited as anything other than common knowledge—is a single, groundbreaking study by the physical anthropologists Eugene Giles, at the University of Illinois in Urbana-Champaign, and Orville S. Elliot, at the University of Victoria in British Columbia. In the early 1960s Giles and Elliot measured the skulls of modern, adult blacks and whites who had died in Missouri and Ohio, many of them at the turn of the century, as well as Native American skulls from a prehistoric site in Indian Knoll, Kentucky. Using a statistical equation known as a discriminant function, they then identified a combination of eight measurements that could determine a skull's "race" once its sex was known.

When Giles and Elliot applied the formula to additional skulls from the same collections, it agreed with the race assigned to the deceased at death between 80 and 90 percent of the time. To be useful, however, the formula has to work in places other than Missouri, Ohio and prehistoric Kentucky. I have found four retests of the Giles and Elliot method, and their results do not inspire confidence. Two of the retests restricted themselves to Native American skulls: in one of them almost two-thirds of the skulls were correctly classified as Native Americans; in the second, only 31 percent were correctly classified. For the two other studies, in which the skulls were of mixed race, skulls were correctly identified as Native American just 18.2 percent and 14.3 percent of the time. Thus in three of the four tests, the formula proved less accurate than a random assignment of races to skulls—not even good enough for government work.

Contemporary Native American skulls may be particularly hard to classify because the formula is based on a very old sample. But the four retests were carried out on complete crania that had already been

sexed, a necessary prerequisite to determining race. Forensic anthropologists often have much less to go on. Moreover, Native Americans are easier to classify than Hispanics or Southeast Asians, not to mention infants, children or adolescents of any race. At best, in other words, racial identifications are depressingly inaccurate. At worst, they are completely haphazard. How many bodies and body parts, like Lakesha Levy's leg, are sending investigators down wrong paths because the wrong box was checked off.

Forensic anthropologists usually blame such mistakes on the melting pot. Yet distinct racial types have never existed. What changes are social definitions of race—the color line—and human biology. Whites in Cleveland in 1897 were different from whites in Amarillo, Texas, in 1997. Science 101: generalizations ought not be based on an ill-defined, constantly changing and contextually loaded variable.

Skulls and corpses, one could argue, have ceased to care to which race they belong—though their families and friends might disagree. But when physicians base their actions on perceived racial categories, their patients ought to care a great deal. Does race, however imperfect a category, help physicians diagnose, treat, prevent or understand the etiology of a disease?

Before the Second World War, physicians were often blinded by the conviction that certain races suffered from certain diseases. People who had sickle-cell anemia, for instance, were assumed to have "African blood." In 1927 the American physician J. S. Lawrence discovered a case of the disease in a "white" person. "Special attention was paid to the question of racial admixture of negro blood in the family but no evidence could be obtained." Lawrence wrote in the *Journal of Clinical Investigations*, "There must be some caution in calling this sickle-cell anemia because no evidence of negro blood could be found."

Evelynn M. Hammonds, a historian of science at the Massachusetts Institute of Technology, has brought to my attention some early diagnoses of ovarian cysts that express the same logic. In 1899 the American physician Thomas R. Brown reported that he often heard surgeons say that tumors found in black women had all the features of ovarian cysts, "but inasmuch as the patient is a negress it is certainly not so, as multilocular cysts are unknown in the negress." The following year Daniel H. Williams, the eminent African-American physician and the first American to perform successful heart surgery, quoted a physician from Alabama speculating that: "Possibly the Alabama negro has not evolved to the cyst-bearing age." Williams went on to show unambiguously, in a study, that ovarian cysts are common in black women including women from Alabama. He noted

that white physicians have a history of ignoring black women, then offered examples of black women whose cysts swelled to 100 pounds or more before they were diagnosed.

Today the paradigm of racially distinct diseases has been replaced by the more flexible idea of race as disease risk factor. Yet the medical effects are the same. Some 25 million Americans are said to suffer from osteoporosis, a progressive loss of bone mass that leads to 1.5 million fractures a year. Since the nineteenth century, blacks have been thought to have thicker bones than whites have and to lose bone mass more slowly with age. (A few years ago, when a dentist visited my laboratory, he was shocked to find that neither one of us could tell a black jaw from a white one.) In the journal *Seminars in Nuclear Medicine*, a review titled "Osteoporosis: The State of the Art in 1987" listed race as a major risk factor. The section on race begins: "It is a well-known fact that blacks do not suffer from osteoporosis."

That "fact" is backed by a single reference, a seminal paper by the American physical anthropologist Mildred Trotter and her colleagues titled "Densities of Bones of White and Negro Skeletons." Trotter and her colleagues evaluated the bone densities of skeletons from forty adult blacks and forty adult whites. They excluded skeletons with obvious bone diseases, but they did not describe how they chose the cadavers or whether the samples were matched for causes of death, diet or other known risk factors for osteoporosis. Of the ten bones they studied in each skeleton, Trotter and her colleagues found that six tended to be denser in blacks than in whites; the other four showed no differences by race. Furthermore, the authors wrote, the decline in density took place at "approximately the same rate" for each sex-race group.

Trotter and her colleagues may have realized that their data could be overinterpreted. In later publications they present scatterplots with age on one axis and bone density on the other. The scatterplots confirm that bone densities tend to decline with age: the clusters of data points slope downward. It is a challenge, however, to discern any difference between the densities of bones from blacks and those from whites. The six lowest radius densities, for example, were found in bones of blacks.

Let me be clear: I am only following citations to see if the data say what the references say they say. But my conclusion is dismaying. If the "well-known fact that blacks do not suffer from osteoporosis" is based on poorly interpreted data, then black women may not be getting enough preventive care, are not targeted in the media and are underdiagnosed as osteoporotic.

In every instance I have cited, a double leap of scientific faith seems to have taken place. First, a serious medical condition (sickle-cell anemia, ovarian cysts, osteoporosis) is regarded as genetic, even though environmental factors have not been adequately examined. Second, anything genetic is assumed to imply a panracial phenomenon. Thus, what might be true in a statistical sense is assumed true for all members of a so-called race. All blacks are protected from osteoporosis. All blacks are less prone to heart disease. By the same logic, Native Americans have some special predisposition to obesity and diabetes, though, in truth, rates vary wildly among groups and regions.

Why are my findings more than idiosyncratic examples? Why does race not work as a shorthand for biological variation? The answer lies in the structure of human variation and in the chameleon-like concept of race.

- Most traits vary in small increments, or clines, across geographic areas. Imagine a merchant walking from Stockholm, Sweden, to Cape Town, South Africa, in the year 1400. He would notice that the skin colors of local people darkened until he reached the equator, then slowly turned lighter again. If he took a different route, perhaps starting in Siberia and wandering all the way to Singapore, he would observe the same phenomenon, though none of the people he passed on this second route would be classified as white or black today: all of them would be "Asian." Race, in other words, does not determine skin color, nor does skin color determine race. As Frank B. Livingstone, an anthropological geneticist at the University of Michigan in Ann Arbor, put it more than thirty years ago: "There are no races, there are only clines."
- Most traits are nonconcordant. That is, traits tend to vary in different and entirely independent ways. If you know a person's height, you can guess weight and shoe size because tall people tend to be heavier and have bigger feet than short people. Those traits are concordant. By the same token, however, you could guess nothing about the person's skin color, facial features or most genes. Height is nonconcordant with nearly every other trait. If you know skin color, you might be able to guess eye color and perhaps (but surprisingly inaccurately) hair color and form. But that is all. Race, for that reason, is only skin deep.
- As I mentioned earlier, nearly all variations in genetic traits occur within so-called races rather

than among them. Some thirty years ago the population geneticist Richard C. Lewontin of Harvard University conducted a statistical study of blood groups with two of the more common forms. On average, he found about 94 percent of the variation in blood forms occurred within perceived races; fewer than 6 percent could be explained by variations among races. Extrapolating from race to individuals is hardly more accurate than extrapolating from the human species to an individual.

One could argue that such classifications, however crude, are still useful as first approximations. Here is where one needs to see race as something more than the equivalent of shoe size.

- Racial differences are interpreted differently. Sometimes people consider them genetic, sometimes ethnic or cultural, and sometimes they use the term "race" to mean differences in lived experience. When race is assigned as a risk factor, the meaning is often unclear, and that ambiguity dramatically affects medical treatment. Sometimes race is a proxy for socioeconomic status or even for the effects of racism. If so, a particular racial classification suggests a possible set of actions. But if a racial classification is intended to signal a panracial genetic difference, as in osteoporosis, an entirely different set of actions should be undertaken. The conflation of genetics with culture, class and lived experience may be the most serious flaw in racial analysis.
- Race is impossible to define in a stable, repeatable way because, to repeat, race as biology varies with time and place, as do social classifications. Color lines change. When the skeletons studied by Giles and Elliot began to be collected in Cleveland at the turn of the century, the United States Census Bureau classified people not only as white or black, but as mulatto, quadroon or octoroon. Europe at the time was thought to be home to a dozen or so distinct races. One cannot do predictive science based on a changing and undefinable cause.

In studies such as those on osteoporosis—or any other disease—race is either undefined or assigned on the basis of the patient's own self-identification. "Since self-assignments to racial categories are commonly used," the authors of a review of race and nutritional status wrote in 1976, "the problem of racial identification is minimal." Compare that statement with the finding of a recent infant-mortality study by Robert A. Hahn, a medical anthropologist at the Cen-

ters for Disease Control and Prevention in Atlanta, Georgia. Thirty-seven percent of the babies described as Native American on their birth certificates, Hahn discovered, were described as some other race on their death certificates.

When I started out in anthropology in the 1970s, I thought anthropologists would stop using race by the 1990s. Why does it persist? At the very least, on a scientific level, it violates the first law of medicine: Do no harm. For every instance in which knowing race helps an investigator, there is probably another instance in which it leads to a missed diagnosis or the premature closing of a police file. At best, it is a proxy for something else. Why not study that something else?

There are good, simple alternatives to classifying by race. In biological studies, from forensics to epidemiology, investigators could focus on traits specific to the problem at hand. If the problem is describing human remains, simply describe those remains as well as possible. In Oklahoma City, for example, the police would have been better off looking for anyone

with a dark complexion rather than searching for a "darkly complected Caucasoid." Police officers are used to searching for people with specific traits ("suspect has a smiley-face tattoo on his left bicep"). Why not be equally specific about skin color and other "racial" traits? Epidemiologists, for their part, could focus on likely causal traits. If skin color is a risk factor, classify people by skin color alone. If the risk factor is a genetic trait, such as type A blood, compare individuals with and without type A blood.

I do not for a moment think that knowing race is a myth eliminates racism. But as long as well-meaning investigators continue to use the concept of race without clearly defining it, they reify race as biology. In so doing, they mislead the public and encourage racist notions. According to the American sociologist Donal E. Muir, those who continue to see race in biology but mean no harm by it are nothing more than "kind racists." By continuing to legitimize race, they inadvertently aid the "mean racists," who wish to do harm. Far too many scientists, unfortunately, still belong to both categories.