

## Commentary on the Meaning of Race in Science and Society

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### Introduction

Quite recently, I had a personal experience that underscored why we must constantly revisit the issue of race in America. I went to the University of North Carolina at Chapel Hill in search of information about my great-great grandfather. I knew he was a slave in Raleigh, North Carolina who bought his freedom in 1838 and called himself “Freeman” because he was free. I also knew the name of his slavemaster, the Honorable George E. Badger, and I wondered how a man could be both honorable and a slave master. I found out that this honorable man was a judge in North Carolina who became Secretary of the Navy and later served as a United States Senator for 11 years. His records showed that he purchased my great-great grandfather in 1829 for \$388. My great-great grandmother, I discovered, was named Eliza and was given to the Honorable George Badger as a wedding gift by his father-in-law in 1828. With much emotion, I held the bill of sale for my great-great grandfather and read that my great-great grandmother was given away as a wedding gift. I share this personal experience to put into some perspective the importance of our country’s history and its influence on people’s lives. I do not believe that I can disassociate my life and my self from the history of what has happened in America and the world in general with regard to race. I emphasize this history because it has been a profound factor in shaping current human circumstances for many Americans, including the unequal burden of disease.

### Our Nation’s History Concerning Race and the Role of Science

Race is perhaps the single most defining issue in the history of American society. This nation’s unique history overwhelmingly provides the basis on which our concept of race is based. From 1492, when Columbus arrived, to the 1960s that ushered in the civil rights movement, and to the present day, race has played a major role in the nation’s social and political history. Popular conceptualizations of race date back several centuries and, in particular, are rooted in 19<sup>th</sup> and 20<sup>th</sup> century scientific thought. The presumption that visible traits produced the measure of all other traits in an individual or population has pervaded our national history and is the basis on which we see and value each other.

To review this history briefly as it pertains to African-Americans: The first African slaves were brought to America in 1619. In 1776, the Declaration of Independence was written. It

was penned in part by Thomas Jefferson, a complex man who could write such an eloquent document yet owned >100 slaves and, according to DNA evidence, fathered children by an African slave. We fought a civil war in large part to eliminate slavery, which led to the Emancipation Proclamation and reconstruction. The Fourteenth Amendment, passed in 1868, mandated equality under the law for all Americans, including the former slaves. In the 1896 Plessy *versus* Ferguson Supreme Court decision, the Fourteenth Amendment was in effect reversed. That decision ruled that separation of the races was legal if the accommodations were equal and thereby reestablished legal segregation. Not until 1954 in the Supreme Court decision in Brown *versus* Board of Education, followed by the civil rights movement, was racial segregation rendered illegal. An understanding of this history is critical to understanding racial disparities.

Going back even further, evolutionary history indicates that man originated in East Africa ~100,000 years ago and later migrated to the rest of the world. By this measure, all of us in this country are African-Americans, a tough concept to accept for some but substantiated in science. Perhaps broad acceptance of this idea could lead us, finally, to embrace the reality that we are all human beings with common origins. Charles Darwin (1) maintained that “the variability of all of the characteristic differences between races cannot be of much importance.”

But for centuries, science also has provided evidence that supported other popular conceptions of race. In the 1700s, Blumenbach (2) was credited with classifying people into African-American, Caucasian, and other racial categories. He coined the term, “Caucasian,” because he found a beautiful skull in the Caucasus Mountains of Russia, and he named the people that he favored the Caucasians, based on that skull. Morton (3) measured skulls of Native-Americans, African-Americans, and Caucasians and concluded that Caucasian skulls had more volume, so they must have bigger brains and, therefore, more intelligence. This conclusion was accepted by scientists for many decades, starting in the mid-1800s. It may be coincidental, but such scientific misconceptions dominated popular thinking throughout the period of slavery in this country and may have been used to justify the institution of slavery in America. Pillars of the community (judges, United States Senators, national leaders, the clergy, etc.) needed justifications for how they could enslave other people.

American classifications of race came out of this history in which people were categorized by external visible traits (skin color, hair type, facial features, etc.) and treated differently. So science has been a major force in establishing and reinforcing racial classifications. The residue of these fallacies continues to color the lenses through which we see, value, and behave toward one another.

Past and current United States Census categories reflect this history, *e.g.*, the 1890 census included the racial categories African-American, Caucasian, mulatto (meaning half Caucasian and half African-American), quadroon (one-quarter African-American and three-quarters Caucasian), and octoroon

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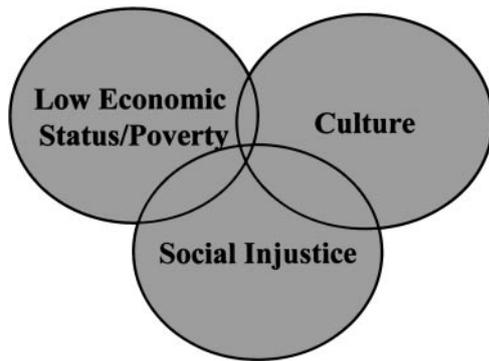


Fig. 1. Causes of health disparities.

(one-eighth African-American and seven-eighths Caucasian). Today, this nation continues to look at its people in categories. Yet population geneticists and genome scientists say that all of a person's external characteristics together constitute only a minuscule expression of 40,000 genes that comprise the human genome. In fact, geneticists now state that there seems to be more genetic variation (95%) within a group that is called a particular race than between so-called racial groups (5%; Ref. 4).

### The One Drop Rule

The so-called One Drop Rule originated in the 1600s and was documented by Myrdal in 1944 (5). This rule defined an African-American person as anyone having even one African-American ancestor (*i.e.*, one drop of "black blood"), no matter how remote, and regardless of physical appearance. By the 1920s, the one drop rule was accepted by virtually everyone, although for different reasons. Caucasians at that time were trying to show that African-Americans were inferior. African-Americans who came together during the Harlem Renaissance (people of hues ranging from white to ebony) concluded that because they all were being oppressed, they all would say they were African-American, although they were using the word "Negro" at that time. Coming together in this way, African-Americans forged a common philosophy and a common defense against racism. Since that time, few have challenged the one drop rule, and government, the dominant society, as well as African-Americans, adhere to it even today.

There is no other group in America, or in the rest of the world, that is subject to such a rule. You can be Native-American and become Caucasian. You can be Asian and become Caucasian by marriage and be accepted. But if you are African-American in America, you can never un-African-American yourself. In recent years, a growing number of people seem to be embracing the notion that most individuals have ancestry that traces back to more than one population group. Golf champion Tiger Woods, *e.g.*, has described himself as a "Cablinasian" (CAucasian, BLack, American-INdian, and ASIAN). His estimate of being one-eighth African-American would make him an octoroon by the standard of 1890. So, people, young people in particular, are beginning to challenge traditional racial classifications.

Biological race theories such as the one drop rule that purport to establish distinctive races conflict with evolutionary theory and the principles of natural selection. The conclusion that the biological concept of race is untenable and has no legitimate place in biological science was published for the first

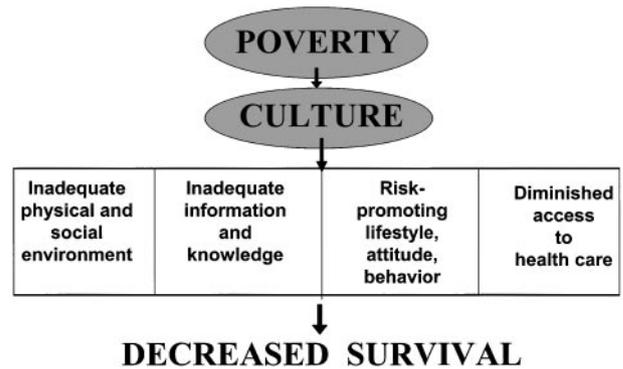


Fig. 2. Poverty acts through the prism of culture.

time in 1996 by the American Association of Physical Anthropologists (6). This statement confirmed that there is no genetic basis for racial classification and that previous and current racial classifications are socially and politically determined.

### Poverty and Culture

It is extremely important to distinguish between race and culture, understand the meaning of economic status and the effect of poverty, and take into account the effect of social injustice (Fig. 1; Ref. 7). These are extremely powerful factors that determine the conditions in which people live. Poverty drives health disparity more than any other factor (Fig. 2; Ref. 8). Poverty is associated with a lack of resources, information, and knowledge; substandard living conditions; very often, a risk-promoting lifestyle; and diminished access to health care. These are interrelated factors driven by poverty, regardless of race. Poverty is a universal force that causes decreased survival.

What is the effect of culture? Culture is another critical factor influencing survival, but culture is not synonymous with race. Many cultures exist within any so-called racial or ethnic group, *e.g.*, increasing numbers of people are now moving from various countries in Africa to Harlem, New York. They are all called African-American, whether they are from Ethiopia, Nigeria, or Ghana, but their cultures are distinctly different from, *e.g.*, the African-Americans who moved north from the American South decades ago. Culture denotes a shared communication system; similarities in physical and social environment; common beliefs, values, traditions, and world view; and similarities in lifestyle, attitudes, and behaviors.

I theorize that poverty is reflected through the prism of culture. If this hypothesis is correct, then culture may augment or diminish poverty's expected effects. Consider the Seventh Day Adventists, a culture driven strongly by religious beliefs; those who follow the religion consume a vegetarian diet and neither smoke cigarettes nor drink alcohol. Even if a person is poor but is living in that culture, it is unlikely that this individual will develop lung cancer, because 90% of lung cancer is related to cigarette smoking. Similarly, known health effects of excess alcohol use would likely be avoided. A diet high in vegetables and fruits seems to prevent disease. In contrast, the culture of the people I have worked with in Harlem is different. These are mainly poor African-Americans, many of whom smoke heavily, drink heavily, and eat a high fat, high salt diet often referred to as "soul food." That diet may be very tasty, but it is not good for you. Drinking excessively, smoking, and eating more fat and salt are cultural conditions that will cause an accentuation of the problems of poverty. In Harlan, Ken-

tucky, the people are Caucasian and poor, and their health risks and outcomes related to smoking, drinking, and diet are very similar to those of African-American people in Harlem. I conclude that the excess mortality in Harlem, New York; Harlan, Kentucky; and other similar communities throughout America is driven primarily by the effects of poverty and culture, not by race in itself.

### Social Injustice/The Lens of Race

In addition to poverty and culture, forms of social injustice, such as racism, are critical factors in creating and maintaining disparities. Sandra Harding, a philosopher from the University of Southern California, has stated that race is a relationship between groups that reflects a cultural framework of societal, institutional, and civilizational values (9). Furthermore, she maintains that this cultural framework exists inside the natural sciences and creates biases that shape our approaches to scientific investigation. How, *e.g.*, does an investigator choose a topic of study? How does he or she derive the central concepts for the research project, develop the hypothesis, and design the research? These decisions are made based on each individual researcher's perspective and the perspective of individuals in decision-making positions in institutions who have great influence in deciding what topics are worthy of study.

The cultural framework in which science is conducted and the role science has played in constructing and legitimizing race and racism must be recognized and addressed. People are socialized and acculturated before they become educated. This implies that culture and cultural values, including those concerning race, may be a kind of baggage that virtually all people, including scientists, bring to their professional endeavors and social interactions.

I believe that in this nation, and perhaps throughout the world, we see, value, and behave toward one another through a powerful lens of race (10). This lens can create false assumptions that may result in serious harm to members of some racial and ethnic groups. This phenomenon has been called racial profiling; we have seen it in cab drivers who bypass certain types of passengers, policemen who search some people without apparent cause, the judicial system, housing, as well as the field of medicine.

What assumptions do doctors make when they see people who are different from themselves? The literature includes some examples that indicate problems, *e.g.*, Bach (11) showed that compared with Caucasian patients, African-Americans with the same stage of early and highly curable lung cancer (stages I and II) are 12% less likely to receive the curative surgery, although they have the same insurance coverage and seem to be at the same economic level. Ayanian (12) found that race is a major factor in who is referred for renal transplantation; you are more likely to be referred for transplantation if you are Caucasian than if you are African-American. Studies of emergency room experiences indicated that people also are treated for pain differently according to race; compared with Caucasians, African-Americans and Hispanics are less likely to be treated with pain-reducing drugs when they have long bone fractures, clearly a painful condition (13, 14). This and other evidence suggest that race does play a role in the provision of medical care. I believe the common thread in these findings is a subtle form of racial bias on the part of medical care providers. The level and extent of this problem are unknown, but it is real and potentially harmful, although predominantly unintentional.

Looking through the lens from the other direction, how do

patients see health care professionals? If a patient does not trust his or her doctor, or avoids participating in a clinical trial for fear of being used as a guinea pig, the patient too is looking through a lens of race with possibly detrimental results. False assumptions made based on the view from either side of this lens of race, therefore, can have profound effects on unequal treatment and health disparities.

### The Context of Health Disparities

This nation has made unparalleled advances in science and extraordinary advances in understanding and treating cancer. When former President Richard Nixon declared a war against cancer in 1971, likening the pursuit to landing a man on the moon, he thought the war would be over in ~8 years, that the disease would be conquered. Cancer turned out to be a far more complex disease than he thought. Yet, this declaration was important because it channeled significant resources to the research community. This allocation of resources has resulted in improved cancer detection, treatment, and cancer-related technologies. Exploration of the human genome and molecular understanding of cancer are now yielding unprecedented discoveries and will lead to untold advances in the future. Despite our tremendous scientific advances, however, there are some populations in this country who bear a heavier burden of disease, particularly the poor and underserved. The question is, "Why?"

Disease always occurs within a context of human circumstances. Social position, economic status, culture, and environment are critical determinants of who is born healthy, grows up healthy, sustains health throughout his or her life span, survives disease, and maintains a good quality of life after diagnosis and treatment. The unequal burden of disease in our society, including but not limited to cancer, is a challenge to science and, more importantly, a moral and ethical dilemma for our nation.

The equal importance of research and health care delivery must be acknowledged, as must the disconnect in our country between what we discover and deliver to people in all walks of life (Fig. 3; Ref. 15). The challenge to the scientific community to eliminate disparities in health, particularly cancer-related health disparities, encompasses issues that span the continuum that begins with basic research, continues through translational research in our medical and cancer centers, and through applied and cancer control research to public education and the delivery of care to the American people, including health care coverage considerations and the policy implications that accompany these concerns. We must deliver our advances in cancer care to all of the people, regardless of their ability to pay, but doing so will require a series of actions by local, state, and national policymakers and legislators.

### The Use of Race in Science and Society

In science and society, race is often used as a proxy for poverty, class, education, discriminatory experiences, and certain behaviors, among other factors. Given the fact that human populations do differ and race is not the basis for those variations, scientists face the challenge of elucidating how populations really differ. When race is used in science, it should be treated as a variable that is clearly defined, and investigators should specify what is being measured and why.

At this time, it appears that the single most important and perhaps only valid reason for continuing to use racial classification is to measure and monitor the effects of past and present social injustice. If people are grouped in a certain category and

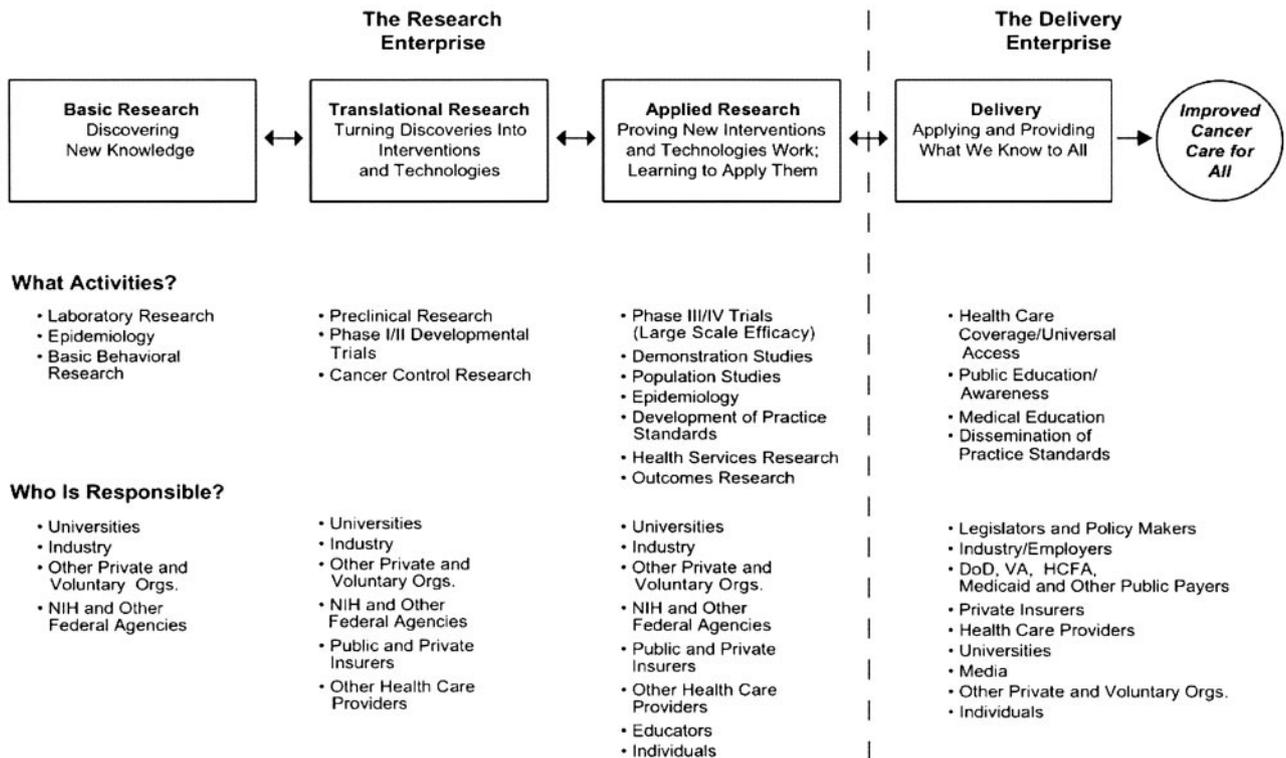


Fig. 3. Bridging the divide between research and delivery.

treated differently, then being in the category itself is the problem. If we are to understand why there are disparities, however, we cannot continue to use the census categories as the only way to see groups of people. We need to look much deeper to find the real variables that are causing disparity, whatever they may be. To the extent the issue may be lack of resources or poverty, cultural differences, lack of health insurance, or some complex array of factors that must somehow be identified and quantified, let us determine that. We must move away from saying that being in a group itself is the cause of disparity, unless it is because of how people are treated according to fairness issues.

Since the human genome has been mapped, debates within the scientific community about race have intensified. When you look at the human genome, you cannot find race, but there are populations of people around the world who have different patterns of disease. A frequent response to such a statement is, "What about sickle cell disease in African-Americans? What about Tay-Sachs disease in Jewish people?" With regard to sickle cell disease, the explanation seems to be that it began in sub-Saharan Africa, as well as in southern Europe, India, and other areas in which malaria is endemic. The people whose RBCs sickled were somewhat protected against malaria. So here you have a case of adaptation followed by migrations of people to all parts of the world, including many to this country. Similar population grouping, survival, and migration phenomena may explain Tay-Sachs and BRCA-1/BRCA-2 mutations among Jewish people. Geographic origin, patterns of intermarriage, and migration are strong determinants of population characteristics; these populations are not equivalent to race. We must take the time to uncover the real variables that are causing disparities. In doing so, there may be groups of people with a genetic commonality who may be important to study, and we

should not hesitate to do so, but groups that we will find by this technique will not be equivalent to socially determined race groups.

### Final Considerations

In our efforts to reduce disparities, we must identify and remove all of the barriers that prevent the benefits of research from reaching all of the people. These barriers are a major cause of health disparities. This is a national issue, a policy issue. Although the nation is now being challenged in significant ways, it is not acceptable that there are 41 million uninsured American people (16) and many millions more who are underinsured for a serious disease, such as cancer. Although a disproportionate number of these people at risk are among our poor and disadvantaged populations, to reduce disparities, I believe we must address factors that affect people universally, such as poverty and lack of insurance, and also address social injustice that affects specific populations.

Given the history of our country, we can easily make assumptions about people that cause harm without intending harm. Overt racism still exists, but that is not now the major American problem. The real problem is something I call "racialism," a gentler term, referring to the ways in which we see, value, and behave toward each other according to race. This is a pervasive American problem that we must face. I believe that education is the key to change. Let us begin with Kindergarten to raise a new group of American people who no longer see each other through a lens of race. In medical care, we must create cultural sensitivity through education and dialogue. We also must establish and implement standards of care for specific conditions and monitor equity in the use of those treatments.

Racism, rooted in the erroneous concept of biological

racial superiority, has been a powerful force in this nation for 500 years and is a part of the cultural framework of societal, institutional, and civilizational values that continues to shape scientific thought. We seek scientific truth, but that drive must always be wedded to concern for social justice. Even in the laboratory, it is not enough to simply find an answer and go on to the next question without considering how our discoveries can affect real people in the neighborhoods throughout this country and the world community. We must show as much concern for human beings as we do for molecules. We need to direct our efforts to alleviating the overlapping causes of disparity, including poverty, culture, and social injustice.

In author James Baldwin's day, race and racism were highly charged issues. In answer to a question put to him by a Caucasian journalist, Baldwin said, "As long as you believe that you are Caucasian, I will have to say that I am black," essentially placing the burden of the issue on the people who classify themselves as the dominant group.

Although surrounded by a group of Haitian citizens, Papa Doc Duvalier of Haiti was asked by a journalist, "What percentage of the people in Haiti are white?" Papa Doc thought for a moment, and he said, "98% of the people in Haiti are white." The journalist, looking around and seeing the dark faces, looked at Duvalier with some amazement and asked how this could be. Replied Duvalier, "We use the one drop rule, too."

It is important to see things in perspective. Perhaps the greatest of all scientists was Albert Einstein. In his theory of relativity, he described a four-dimensional universe in which observers viewing an event will see that event differently. This commentary is from the perspective of the great-great grandson of a slave who has spent a career as a cancer surgeon in a poor community. This has been in part a 30-year endeavor to understand the interplay of socioeconomic conditions, culture, and social injustice on the unequal burden of disease. From this perspective, I also, through oversight positions at the national level, have had the opportunity to observe the whole nation and

much of the world. I believe that what Einstein concluded has important meaning in our considerations of race in science and society: what you see depends on where you stand.

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