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Constructing Whiteness in Health Disparities Research

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CONSTRUCTING WHITENESS IN HEALTH DISPARITIES RESEARCH

My project is an effort to avert the critical gaze from the racial object to the racial subject; from the described and imagined, to the describers and imaginers; from the serving to the served.

--- *Morrison, 1990:90*

INTRODUCTION

Over the past two decades, the body of research documenting and examining racial differences in health has grown exponentially, from fewer than 20 publications between 1980 and 1989, to more than 130 between 1990 and 1999, and over 700 in the first four years of the new millennium.[i] This literature has documented racial disparities in a substantial range of health outcomes, often comparing the health of one or more racialized groups to the health of "Whites." In other words, the search for explanations regarding the cause of racial disparities in health—and indeed, often the definition of racial disparities itself—is largely framed in terms of explicit or implicit comparisons of racialized groups to the referent group of White.

Often unspoken and unexamined in these comparisons is the category of Whiteness itself: what it contains or represents and just what a comparison to Whites tells us. Scholars examining the question of "Whiteness" have noted that, in contrast to other racial groups, Whiteness has often been defined by what it is not (Frankenberg, 1993; Fine, 1997)—not marked, not deficit, not raced.

As Toni Morrison suggests in the quotation that serves as the epigraph for this chapter, there is a long tradition within the United States of constructing Whiteness (the racial subject) against racialized others (the racial object) and in the process displacing the focus of critical analysis. Here we turn our lens to the often invisible—or at least underinterrogated—concept of Whiteness within the context of the literature on racial disparities in health. Specifically, we examine how Whiteness is constructed in the active literature documenting and interpreting racial disparities in health and the implications of these constructions for efforts to eradicate inequalities in health. We draw on the concepts of racial formation and racial "projects" that emphasize the fluidity, mutability, and historically constructed nature of race, as well as the social and political processes through which racial categories are created and transformed (Nagel, 1996; Nobles, 2000; Omi and Winant, 2002; Stevens, 2003; Winant, 1997). In particular, we apply Winant's (1997) concept of "racial projects" to examine the construction of Whiteness in ongoing dialogues about race and racial disparities in health. We consider the ways that varying constructions of Whiteness enter into, influence, and are influenced by discussions of racial disparities in health, and the role of those constructions in the reproduction or disruption of racial categories and the inequitable distribution of resources along racial lines.

RACE AND RACIAL CLASSIFICATION IN HEALTH

The problem of Whiteness and what it means or represents reflects larger dilemmas related to historical as well as contemporary constructions of race. Questions regarding race as a scientific category transcend disciplinary boundaries (e.g., Freeman, 1998; American Anthropological Association, 1998; Duster, 2003b), reflecting the pervasive influence of racialized thinking in scientific endeavors. Although widely used as analytic categories, racial classification systems have been soundly critiqued as unscientific, poorly defined, and contingent upon both historical and geographic context. Despite persistent associations between racial categories and health outcomes, scholars both within and outside of public health continue to raise critical questions about the use of racial classifications as analytic categories (Bhopal, 1998; Duster, 2003a; Epstein, Moreno, and Bacchetti, 1997; Farley, Richards, and Bell, 1995; Hahn, 1999; Hahn and Stroup, 1994; Hahn, Mulinare, and Teutsch, 1992; Hahn, Mendlein, and Helgerson, 1993; Jackson, 1989; Kaufman, 1999; Mullings, 2004; Nobles, 2000; Witzig, 1996; Williams, 1997), including questions about their relation to historical processes that created contemporary inequalities, contemporary definitions, meanings, and interpretations, and their limits in identifying etiological pathways through which differential health outcomes are produced.

Critics point to the lack of a biologic, genetic, or other "scientific" basis for racial classification systems and ensuing difficulties creating clear and consistent definitions (Hahn, 1999; Kaufman, 1999;

Hahn, Mendlein, and Helgerson, 1993). Two illustrative examples involve classifications employed in census data and birth certificates, both commonly used in health research in the United States. In 1790, the U.S. Census included three categories: Free Persons (White, and all other free persons except Indians not taxed); slaves (counted as 3/5 of a person); and Indians living on reservations (not taxed). By 1850, categories had shifted to more explicitly racial language, denoting simply "white" and "free person of color." By 1890, an expanded range of racial categories included "white"; "black" (persons with ¾ or more Black ancestry); "mulatto" (1/2 Black ancestry); "quadroon" (1/4 Black ancestry); and "octoroon" (1/8 Black ancestry). By 1910, these categories had contracted to aggregate the previous distinctions in percent ancestry into just "white," "black," and "mulatto" categories. In 1930 and 1940, census takers were instructed to categorize individuals with White and American Indian ancestry as "Indian," and those of African and American Indian ancestry as "African" "unless Indian blood definitely predominates" (Forbes, 1993:12). In other words, any American Indian ancestry overrode White ancestry to identify individuals as Indian (not White), while African ancestry overrode American Indian ancestry, except in cases where African ancestry was small. And, of course, the U.S. racial paradigm of hypodescent means that a small amount of African ancestry overrides a much larger amount of European ancestry. The 2000 Census reflected renewed expansion of racial options, including five racial categories and two ethnic categories [Hispanic or Latino; and not Hispanic or Latino]. Respondents were allowed to indicate both race and ethnicity (OMB, 1978), further expanding the range of ethnic options available. The historically contingent nature of these racial categories highlights their socially and politically constructed nature and belies any coherent biological basis or interpretation of contemporary racial groups (Nobles, 2000).

Similarly, racial classification systems used on birth records in the United States reflect changing gender as well as racial ideologies and practicalities. Prior to 1989, the race of infants indicated on birth certificates was derived using a complex algorithm. Specifically, infants' race was coded as paternal race regardless of maternal race, with two exceptions. In instances where the father's race was White and the mother's race was any other, maternal (rather than paternal) race was used to define the infant's race. In contrast, if either parent was Hawaiian, the infant's race was coded as Hawaiian on the birth certificate.

In 1989, this system of racial classification was modified, in part due to increasing numbers of children born for whom the father was not present and therefore father's race was unknown. Both the previous and the current system systematically simplify hereditary complexities, although using different racial and gender heuristics to do so. The examples of the census and birth certificate racial categories highlight the historical, social, and political nature of racial classification systems and make clear their limitations as indicators of biological or genetic makeup (see Hahn, Mendlein, and Helgerson, 1993; Cooper and David, 1986; Cooper and Freeman, 1999; Kaufman, 1999; Watson and others, 1993 for more detailed discussions of the limitations of racial classification systems as indicators of biological or genetic composition).

These illustrations of the socially, historically, and politically contingent nature of race, combined with the persistent interpretation of racial categories that emerged out of the specific historical and political context of the United States as scientifically meaningful, have contributed to lively debate about how persistent racial differences in health outcomes are best understood and addressed. Even as *race* is increasingly recognized as a social construct and racial categories as problematic from an analytic perspective (Bhopal and Donaldson, 1998; Fullilove, 1998; Williams, 1997; Witzig, 1996), scholars differ as to how best to address this problem. Some have suggested that "race" should be abandoned entirely in public health research (Fullilove, 1998) and replaced by explicit attention to the political and social processes that it represents (e.g., socioeconomic differences, racial discrimination). Others, who would concur that we must explicitly attend to the political and social processes that create racial disparities in health, argue that we must continue to use racial and ethnic categories to monitor progress toward elimination of racial disparities (Baker, 1998; Duster, 2003a; LaVeist, 1994; Mullings, 2004). In other words, racial categories reflect racialized social systems in the United States, and those systems impact the health of groups defined by race differently. Attaining equitable health outcomes can only be assessed if we continue to monitor the health of racially defined groups, recognizing that these differences are produced through social and political processes.

Even as these discussions about how best to recognize the socially constructed nature of race have emerged, interpretations of race as reflecting immutable characteristic of individuals continue, with racial differences in health viewed as emerging from biologic or genetic differences (Hernstein and Murray, 1994; Last, 1995; Rushton, 1994; Snyderman and Rothman, 1988). Understanding this struggle over the very meaning of *"race"* is central to an analysis of the interplay of race, gender, and class in health, as well as to an understanding of Whiteness both within health and in United States social and political systems more broadly.

These debates about the validity and certainly the reliability of the construct of race as an analytic category have unfolded in the context of a virtual explosion of research drawing attention to racial differences in health and mortality over the past quarter century. Within this literature, the most common referent group is "White" (or, more rarely, Caucasian, European, or Western) (Bhopal, 1998). Despite critical examination of the homogenizing influence of racial or ethnic categories that collapse diverse national, linguistic, and other identity groups into a single category (e.g., Gimenez, 1989; Williams, Lavizzo-Mourey, and Warren, 1994) and a trend toward increasing complexity of comparisons within various racialized groups (e.g., disaggregating analyses of Blacks into African Americans and Afro-Caribbeans; disaggregating "Latinos" into Cuban, Puerto Rican, and Mexican American), there has been relatively little critique of the aggregation of multiple groups into the "White" racial category (Bhopal, 1998). Furthermore, there has been relatively little explicit examination in the public health literature of how some groups come to be defined as White and the subsequent implications for health. How is it that the category of White or Whiteness is both pervasive as a comparison or referent group in the literature on racial disparities in health and at the same time its composition and the meaning or interpretation of comparisons to "Whites" remains largely uninterrogated? And perhaps more importantly, what are the implications of this invisibility for understanding and addressing the inequalities in health with which this literature is concerned?

To begin to examine this question, we borrow the concept of "racial projects." This concept emerged in an attempt to capture the active and dynamic efforts of social groups to organize the distribution of resources along racial lines (Omi and Winant, 2002). Conceptualizing Whiteness, like other racial categories, as socially constructed allows Whiteness to be examined as dynamic, as actively created and maintained, rather than as static, given, or immutable. Thought of in this way, Whiteness is not genetically derived or granted but is *accomplished* through the active efforts of human beings who construct and maintain social boundaries—for example, defining who is White and who is not (see Buck, 2001; Daniels, 1997; Ignatiev, 1995). Creating and maintaining Whiteness as a bounded category that is largely not visible or marked, and yet manages to retain privilege, is neither a modest nor a simple venture. A defining feature of Whiteness, then, is the absence or unmarked invisibility of "White" as a racial category. As many scholars have noted, this invisible and absent quality of Whiteness is itself a mechanism of privilege (Allen, 1993; Dyer, 1998; Feagin and Vera, 1994; Fine and others, 1997; Frankenberg, 1993; Ignatiev, 1995; Kincheloe and others, 1998; McIntosh, 1988; Roediger, 1991; 1998), deflecting attention from Whiteness while simultaneously playing a role in the racialization of those groups that are defined as not "White."

Winant suggests that "the problem of the meaning of whiteness appears as a direct consequence of the movement challenge posed in the 1960s to white supremacy" (Winant, 1997:48-49). As civil rights movements disrupted previously homogeneous notions of Whiteness, Whites and Whiteness were no longer exempt from the complex racialization processes that are the hallmark of U.S. history (Winant, 1997:48). Rather, Whiteness has become a more contested and visibly negotiated racial category. The disruption of the homogeneity of Whiteness brought about by the Civil Rights Movement opened up both the possibility of an interrogation of White privilege, as well as challenges to civil rights legislation such as affirmative action through newly galvanized Whites who envisioned themselves as under attack. A series of recent scholarly works has examined in detail the intersections of race and gender, and in some cases class and religion, in negotiations that define who is White and who is not, as well as the meaning of inclusion in various racial categories (e.g., Buck, 2001; Daniels, 1997; Chehade, 2001; Majaj, 2000; Ferber, 2004). The concept of "Whiteness projects" encourages explicit analyses of active efforts to negotiate conceptualizations of Whiteness that, in turn, may serve to *reproduce* or to *disrupt* racial inequalities.

Winant has sketched several useful typologies for understanding contemporary “white racial projects”: far right, new right, neoconservative, neoliberal, and new abolitionist (1997). He describes the Whiteness project of the *far right* as putting forward biological notions of race as part of a racialized ideology that views racial differences (racial hierarchies) as immutable and inherent, grounded in genetic or biological difference. Effectively, this conservative racial project seeks to maintain White privilege through the argument that Whites are genetically or biologically distinct from and superior to other racial groups.

Winant describes *new right racial projects* as differing from those of the far right in their acceptance of participation by members of non-White racial groups, provided that such participation “is pursued on a ‘color-blind’ basis and adheres to the rest of the authoritarian, nationalist program” (Winant, 1997:44; see also Mullings, 2005). Despite the appearance of inclusiveness of non-White racial groups, new right racial projects emphasize the maintenance of White racial privilege through cultural representations of race that play on racial fears and exacerbate divisions among racial groups—for example, through the 1988 Willie Horton campaign ads employed by George Bush (Winant, 1994:44). A more recent example comes from Wilton’s (2002) case study of community opposition to the placement of “special needs” housing in a San Pedro, California, neighborhood. Wilton demonstrates the ways opponents to the housing project galvanized a NIMBY campaign that deployed a romanticized, European, and “Whitened” construction of community which marked “special needs” as outsiders, unwelcome and unwanted in the community. Wilton’s case study provides an example of the ways in which the new right racial project of Whiteness emphasizes the maintenance of White racial privilege through cultural representations of race that play on racial fears and exacerbate divisions among racial groups.

Neoconservative Whiteness is similarly rooted in the politics of the right but seeks to preserve White advantage through denial of racial difference (1997). Such efforts simultaneously valorize universalism and individualism, and in so doing they seek to obscure or deny differences that may emerge from social inequalities. For example, in *The End of Racism* (1995), D’Souza writes that “racism can be overcome” by “revising our most basic assumptions about race,” including the notion that “Affirmative

Action is a policy that assures equal opportunity for disadvantaged African Americans and other minorities" (1995:2-3). D'Souza and other neoconservatives' opposition to affirmative action policies simultaneously appeals to universalism (job or academic performance standards) and individualism (achievement in meeting those standards). Thus, for neoconservatives, "the end of racism" comes with renewed focus on universal standards and individual achievement without regard to race. Yet the focus on universal, race-blind standards within a context in which race still matters (that is, in which Whites are more likely to have access to the kinds of material and social resources that enable them to achieve those standards) is a strategy that reinforces and privileges Whiteness. Advocates are actively working to make this "colorblind" racial project the underpinning of contemporary legal theory and social practices (Mullings, 2005).

In contrast to these projects, *neoliberal Whiteness* "seeks to *limit* white advantage through denial of racial difference" (Winant, 1997:45). Winant describes neoliberal Whiteness projects as encompassing social democratic political perspectives that focus on social structure, as opposed to the cultural representations of race that are employed in the various right-wing racial projects. Within this Whiteness project, inherent racial differences are negated, and any systematic racial inequality is attributed to structural, often economically rooted, phenomena. Neoliberal Whiteness maintains that if structural disadvantages that disproportionately affect Black, Hispanic, and Native American groups were equalized, then racial differences would disappear.

The final category in Winant's typology is *new abolitionist* racial projects. New abolitionist projects emphasize the historical development of Whiteness and White privilege as central to the emergence of U.S. capitalism. These studies focus attention on the relations between historical formations of race and class in the U.S. and promote the deconstruction or repudiation of White racial privilege. Here we employ Winant's notions of various racial projects as a way of continuing the disruption of homogenous Whiteness as it is constructed in health disparities research. To do this, we examine the constructions of Whiteness that emerge within the context of two literatures in public health: broadly, the literature on racial disparities in health that focuses on social structural explanations for those differences, and discussions of genetic explanations for racial health disparities that have emerged in the wake of the Human Genome Project.

CONSTRUCTING WHITENESS IN THE CONTEXT OF RACIAL DISPARITIES IN HEALTH

The literature on racial disparities in health by definition involves comparisons across groups defined by some racial classification system. Perhaps the most common of these comparisons take the form of the following general proposition: *[Black/Hispanic/Native American] [children or adults] have higher rates of [the condition, disease, or "disability" under investigation] than Whites, primarily because of [explanatory variable].*

This proposition constructs Whiteness in two ways. First, it establishes a comparison between Whites as a referent group and some "other" group whose health is evaluated in comparison to that of Whites. In an ideal world, such comparisons may demonstrate arenas in which health outcomes do not differ by race, challenging ideas of racial group difference. If, however, funders are less likely to support research in areas in which substantial racial differences are not apparent, or if publishers are less likely to publish articles that find no statistically significant differences (see Phillips, 2000; Scargle, 2000; Stern, 1997 for discussions of publication bias), the literature will reinforce racial health differences while minimizing similarities (Gould, 1996; Lewontin, Rose, and Kamin, 1984, Stevens, 2003, Tucker, 1996).

Equally important, however, are the theoretical or conceptual frameworks that underlie questions about racial disparities. Whether such theoretical frameworks are implicit or explicit, they guide the way that research questions are framed, as well as the interpretation of results. We have already noted the absence of a "scientific" foundation for racial categories or even a clear and shared definition of what race is across and, in some cases, within disciplinary boundaries. Precisely because of the socially constructed and situated nature of racial constructs, comparisons of racial groups "leave room for multiple interpretations, including biologic or cultural notions of race as an essential or unchanging constituent of a person" (Muntaner 1999:122). In other words, the use of racial categories and comparisons with no consistent foundation for theorizing, understanding, or interpreting observed racial differences (or their absence) in health outcomes provides space for a wide range of potential explanations. Each of these "explanations" implicitly or explicitly constructs both race and Whiteness.

For example, within the literature on racial disparities in cardiovascular disease, comparisons of Black or Latino/a to White Americans show disparities not only in cardiovascular mortality rates (Cooper and others, 2000; Wong and others, 2002) but also in multiple risk factors, including high blood pressure (Cooper and Rotimi, 1997; National Heart Lung and Blood Institute, 2004; Crespo, Loria, and Burt 1996), obesity (James, 1999; Kumanyika, 2001), physical activity (Brownson and others, 2001; Crespo and others, 1996), and intake of micronutrients and macronutrients associated with cardiovascular risk (Li and others, 2000). In the absence of an explicitly social theory of race, analyses explaining racial disparities in cardiovascular disease in terms of biological, "lifestyle," or "cultural" factors can reify racial differences and obscure connections to socially structured inequalities. In other words, explaining racial differences in health in terms of individual biology, genes, or behavior can locate health problems in the bodies of those most negatively affected by social inequalities. Such explanations fail to make explicit connections to histories of racism and the struggles against oppression by subordinated groups (Bonilla-Silva, 2003; Mullings, 2005). In the process, they also take out of the equation—and thus make invisible—the processes through which Whites maintain positions of relative advantage or privilege within racial hierarchies. In this sense, such explanations are consistent with the "colorblind" strategies of neoconservative and neoliberal Whiteness projects described above, in that they explain racial disparities in health in nonracial terms. The example of cardiovascular disease is one to which we will return in a moment. First, we want to place this discussion within an historical context.

The failure to make explicit connections between biologic and behavioral factors and race as a socially constructed system of inequality can also reinforce racial inequalities by playing on racial fears to exacerbate divisions between groups. An historic example of this is offered by Shah (2001), who describes the explicit construction of Chinese immigrants living in cramped, substandard housing in San Francisco. The communicable diseases that were, not surprisingly, common under these conditions were constructed as a "pestilence" that posed a "danger to the white public" (Shah, 2001:251). Here the disproportionate occurrence of communicable diseases among Chinese immigrants led to constructions that associated disease with the Chinese immigrants themselves rather than with their relative disadvantage within a racial system, which led to their disproportionate residence in substandard housing. Even more extreme is the construction of "Negro diseases" such as drapetomania (running away from enslavement), which defined resistance to slavery as a mental illness (Williams and Harris-Reid, 1999). Samuel A. Cartwright, M.D., writing on this topic in the 1850s, said, "With the advantage of proper medical advice, strictly followed, this troublesome practice that many Negroes have of running away can be almost entirely prevented." The recommended treatment was whipping, as well as keeping slaves in a submissive state and treating them like children, with "care, kindness, attention to humanity to prevent and cure them from running away" (Cartwright, 1981:71; Jackson, 2002; Wren, 1985). Defining individual responses to enslavement as a mental illness requiring treatment provided a justification for continued enslavement, with treatment of the medical condition the responsibility of the slave owner (Szasz, 1971). Simultaneously, locating the "problem" within the bodies and minds of slaves shifted the lens away from the structured economic system of slavery and the White slaveholders whom it benefited. More recent examples can be found in the literature on HIV/AIDS, in which the identification of HIV/AIDS among Haitians and gay men contributed to stigmatization of affected communities and impeded effective response (Altman, 1986; Brandt, 1987; Cohen, 1996; Sontag, 1989). In each of these examples, the identification of a particular group most negatively affected by a health or social condition, combined with cultural representations that play on racial fears and stereotypes, serves to define particular health concerns within those groups most harmed, contributes to their stigmatization, and obscures White privilege in a manner that is consistent with Winant's typology of *new right* Whiteness projects.

Examples such as these demonstrate the processes through which the causes of racial disparities in health can be located within those groups most visibly affected, rather than in the social relations that systematically advantage Whites in relation to other racial groups. What remains invisible is Whiteness itself, as well as its role in the process of creating and sustaining racial disparities in health by contributing to unequal access to the resources necessary to maintain health. The failure to explicitly conceptualize race as a set of social relations leaves descriptions of racial differences in biological or behavioral factors associated with differential health outcomes open to interpretations as produced through biological, genetic, or culturally patterned lifestyle differences. In other words, they "explain racial inequality as the outcome of nonracial dynamics" (Bonilla-Silva, 2003:2), a hallmark of "colorblind racism." Such studies can be interpreted in ways that foster *neoliberal, neoconservative,* or *new right* Whiteness projects.

In an effort to move toward a more explicit analysis that links racial disparities in health to social contextual factors, a literature on social disparities in health has emerged. This literature attempts to address the discrepant "life-chances" between poor or working-class and middle-class people and between Whites and Blacks, Hispanics, or other racialized groups. This body of research attempts to explain racial and class differences in health outcomes through the identification of unequal exposures to social conditions that influence health—for example, access to employment opportunities, exposure to unfair treatment, or exposure to noxious environments.

To return to our earlier example of racial differences in cardiovascular disease, research framed in terms of social determinants of health might attempt to explicitly link racial disparities in cardiovascular disease to differentials in access to the resources or environments necessary to maintain health. Studies in this vein examine, for example, racial or socioeconomic variations in access to healthy and affordable fruits and vegetables and their implications for dietary practices (Cheadle and others, 1991; Morland and others, 2002; Nestle and Jacobson, 2000; Swinburn, Egger, and Raza, 1999; Travers, 1996; Zenk and others, 2005), access to educational and employment opportunities and their implications for socioeconomic status (Massey and Denton, 1993; Orfield, 1993; 2001; Wacquant and Wilson, 1989), the location of health care providers and pharmacies and their implications for access to health care (McLafferty, 1982; Whiteis, 1992), and neighborhood concentrations of poverty and wealth and implications for cardiovascular risks (Diez-Roux and others, 2001; Kaufman, Cooper, and McGee, 1997). This literature reflects a move toward a more explicit theoretical conceptualization of racial disparities in health as resulting from differential access to the resources necessary to maintain health (e.g., education, income, access to nutritious foods), which, in turn, influence health-related behaviors and biological processes associated with cardiovascular disease.

How is Whiteness constructed in this literature? Explanations of racial disparities in health that focus attention on differential access to resources to promote health (e.g., grocery stores) and differential exposure to environments that are not conducive to health (e.g., restricted employment opportunities) shift the explanatory lens from the biology and the behaviors of racialized groups to the contexts within which people reside. This explanatory shift, depending on the theoretical framework and the explanation for *why* there is differential distribution of resources conducive to health, may help disrupt racial categories.

Specifically, these analyses test the extent to which racial differences in health emerge from differences in social environments rather than from differences in inherent characteristics of racial groups. They seek to document the contributions of differential access to health-promoting resources and differential exposure to health risks. They essentially suggest that there are not inherent differences between racial groups but that differences in health emerge through differences in the social determinants of health. Extending the argument that race would not matter if exposures to “x” were more equitably distributed contributes to understanding how social conditions contribute to or create racial differences in health. However, without an explicit analysis of *how risks come to be distributed differentially*, such analyses stop short of making the theoretical or empirical link to the processes that create these unequal distributions of resources and risks. In other words, they fail to specifically theorize the ways that racial categories and racialized processes contribute to the accrual of advantage by Whites and the extent to which those benefits accrue at the expense of non-White people’s health. This leaves Whiteness, and specifically the way Whiteness is protective of health, unmarked, invisible, and unnoticed. Given that the research is ostensibly addressing the issue of “race,” and indeed disparities in health, the invisibility of Whiteness in this context becomes all the more difficult to name.

Much of this literature, however, is more explicit in theorizing the processes through which Whiteness accrues privilege while disadvantage accumulates among racially labeled groups. For example, an active body of research explicitly examines the ways that race-based residential segregation and urban renewal efforts have served to concentrate poverty and disadvantage in segregated Black or Latino/a urban communities while concentrating wealth and advantage in segregated White communities, with subsequent implications for health (Acevedo-Garcia and others, 2003; Fullilove, 2004; Schulz and others, 2002; Williams and Collins, 2001). This work links processes of racialization and discrimination to the distribution of resources available to maintain health, probing the ways that Whites accrue advantage and Blacks, Latinos/as, and other racialized groups accrue systematic disadvantage in terms of exposures to risks and access to protective factors. Similarly, analyses that probe the intersections of race and gender and class, including the racialized and gendered nature of the labor market, help to explicate the reciprocal nature of advantage and disadvantage and their role in producing racial disparities in health (Mullings and Wali, 2000; Mullings, this volume).

Finally, analyses that turn the lens on the cultural production of difference and differential access to the means of constructing cultural interpretations (see Geronimus and Thompson, 2005; Weber, this volume) further interrogate the production of inequalities, including the role of Whiteness in sustaining systems of racial inequality. Explicit examinations of Whiteness projects can make more visible the processes through which racial hierarchies are reproduced. Bringing such analyses to research on racial disparities in health moves us toward what Winant has termed "new abolitionist" Whiteness projects, those that explicitly focus on deconstructing or decentering White racial privilege by analyzing the construction of Whiteness. Placing Whiteness under such a critical lens in future studies of racial disparities in health can contribute to an examination of the complex forms that Whiteness projects take, ranging from those that reproduce racial hierarchies to those that may disrupt and potentially transform those hierarchies. Scholars have raised important concerns and caveats about contemporary investigations of Whiteness (Arnesen, 2001; Fine, 1997; Stein, 2001; Winant, 1997) while encouraging continued critical attention to the contribution of Whiteness in social, political, and cultural processes that perpetuate racial inequalities.

In the following section, we examine the emergence of various Whiteness projects within the context of the Human Genome Project over the past decade or so. Building on our analysis of the absence of an explicit theory of race as a set of social relations, we examine how that absence enables the production of a variety of racial projects that construct Whiteness while enabling it to remain relatively invisible. This invisibility facilitates Whiteness projects that simultaneously perpetuate inequalities (and thus disparities in health) while undermining the potential for more transformational Whiteness projects that could contribute to the disruption of racial hierarchies and the health disparities that they produce.

CONSTRUCTING WHITENESS THROUGH GENETIC EXPLANATIONS FOR RACIAL DISPARITIES

Writing in 1997, Winant asserted that the neoconservative racial project was "far more complicated now than ever before, largely due to the present unavailability of biologistic forms of racism as a convenient rationale for white supremacy" (Winant 1997:45). However, in the first years of the 21st century, there has been a dramatic resurgence in the availability of biology as an explanation for persistent racial differences. In fact, the interest among scholars, mainstream media, and the lay public in biological or genetic explanations for differences between racial groups has been so pronounced that Barbara Katz Rothman describes this "genetic frame" as a new "way of thinking" (2001:2). While not the equivalent of the biologistic racism of the far right racial project, the biologically based individualism of neoconservative Whiteness constructs and reinforces notions of "race'" as fixed, rooted in physical bodies rather than in social constructs, while it also seeks to abrogate racial disparities in health. The interplay of assumptions and constructions of race and the inevitably of Whiteness are visible as discussions of genomic research, particularly aspects of genomic research concerned with racial disparities, unfold.

Background to Human Genome Research

Genomic research, and in particular the Human Genome Project (HGP), has substantially altered biomedical and health research in racial disparities, precipitating a move toward analysis of genomic characteristics of individuals or groups (Duster, 2003a; 2003bHaraway, 1997; Katz Rothman, 1998; 2001;

Stevens, 2002; 2003). Begun in 1990 and completed in 2003, the Human Genome Project was conducted by an International Human Genome Research Consortium.[ii] Alongside this academic consortium, a number of privately owned biotechnology firms, such as Celera, began attempts to map the human genome, with an eye toward turning a profit from genetic knowledge, particularly in the field of health (Malakoff and Service, 2001). The goal of both the privately funded efforts and the academic Human Genome Project was to "analyze the structure of human DNA and to determine the location of an estimated 100,000 human genes" (Guyer and Collins, 1993). The completion of the HGP has made it possible to identify and isolate human genes, particularly those associated with disease (van Ommen, 2002). Completion of the Human Genome Project and mapping of the human genome single-nucleotide polymorphisms (SNPs) are widely regarded, both by genomic researchers and the lay public, as holding out great promise for the future of diagnostics, treatment, and prevention of disease (Chice, Cariou, and Mira, 2002; Wade, 2002b).

Frequently considered the medical equivalent of landing on the moon, the HGP seemed to offer improved opportunities for early diagnosis and treatment when, in 1994, two leading scientists wrote that "The ability to predict the development of disease makes possible early intervention to limit the severity of a disease or to use gene therapy to cure inherited disorders" (Gottesman and Collins, 1994:591). While some have tempered their enthusiasm in the years since the start of the HGP, neither the unfulfilled goal of early diagnosis and intervention to limit the severity of disease nor the illusive promise of gene therapy to cure inherited disorders has deterred ardent proponents of the possibilities of genomic research for disease diagnosis, prevention, and treatment (Stevens, 2003).

The Human Genome Project, and genomic research more broadly, are having a ripple effect on public health research agendas having to do with disparities. Evidence of this genomic ripple effect can be seen in the growing body of literature that addresses the implications of genomic research for health promotion and disease prevention (Austin, Peyser, and Khoury, 2000; Khoury, Burke, and Thomson, 2000; Beskow and others, 2001; Chadwick, 2004; Gerard, Hayes, and Rothstein, 2002; Wilkinson and Targonski, 2003). This emerging literature calls for a variety of responses to genomic research by those who work in public health, including “how to address barriers to widespread application” (Gerard, Hayes, and Rothstein, 2002) and “the integration of genomic competencies among public health professionals” (Beskow and others, 2001). At the same time, a more critical voice has emerged among scholars within public health, medicine, genetics research, and related disciplines calling for a more equivocal and nuanced response to the emergent emphasis on genetic solutions to public health concerns (Anderson and Nickerson, 2005; Bonham, Warshauer-Baker, and Collins, 2005), including a concern about overemphasizing genetic explanations for public health problems (Kaufman and Hall, 2003; Stevens, 2003). Funded in the United States by the National Institutes of Health (NIH), the HGP had an annual budget of approximately $350 million, easily making it the largest recipient of NIH funds. Some have speculated that in the wake of NIH sponsorship of the HGP, it will be increasingly difficult to obtain NIH funds for public health research that does not address genomes, such as environmental and behavioral health research (Wilkinson and Targonski, 2003). We contend that this shift toward the genomic has profound implications for an understanding of racial disparities in health and, in particular, the reproduction of Whiteness within public health research and practice that seeks to address racial disparities.

Whiteness and the Human Genome

The director of the National Human Genome Research Institute (NHGRI) at the National Institutes of Health, Francis Collins, has stated that the HGP “helped to inform us about how remarkably similar all human beings are—99.9% at the DNA level. Those who wish to draw precise racial boundaries around certain groups will not be able to use science as a legitimate justification” (Collins and Mansoura, 2001:221). Other scientists working in the area of population genetics often (though not universally) echo this disavowal of the existence of race: "One important conclusion of human population genetics is that races do not exist" (Cavalli-Sforza, 1997:52-53). As one researcher has noted, referring to Hernstein and Murray’s 1994 work, “This is not the sociobiology seen in *The Bell Curve*, in which genetically based intelligence differentials are asserted to characterize different races” (Dunklee, 2003:154). Reframed within Winant's typology, this is not the essentialism of the far right Whiteness project. Rather, the HGP resonates with neoconservative Whiteness projects as it universalizes, emphasizing similarities in human genetic material across races, while it simultaneously elevates the individual. This is particularly evident in both the sampling for the HGP and the claims based on those samples.

Rarely mentioned in the literature, and even less often scrutinized, are the samples and the sampling strategy used in the Human Genome Project and the associated private ventures on which this claim of "shared humanity" is based. Scientists working on the HGP from both the academic consortium and the privately funded biotechnology firms originally proposed to include a "diverse" sample of DNA for mapping the human genome: that is, chromosomal samples taken from people of a variety of racial and ethnic backgrounds. For example, the website for the academic consortium responsible for the Human Genome Project in the U.S. indicates that "candidates were recruited from a diverse population" (http://www.genome.gov/11006943). The private effort to map the human genome, led by the biotech firm Celera, claimed to be using an even more deliberately "diverse" chromosomal sample. Venter and others (2001) write, "Celera and the IRB believed that the initial version of a completed human genome should be a composite derived from multiple donors of diverse ethnic backgrounds" (Venter and others, 2001:1306). DNA samples were collected from 21 volunteer male and female donors who self-identified their racial/ethnic category (Venter and others, 2001:1306). From those 21 donors, DNA was selected from five subjects (one African American, one Asian Chinese, one Hispanic Mexican, and two Caucasians, two of whom were male and three female (Venter and others, 2001:1307). The decision about whose DNA to sequence was based on "a complex mix of factors, including the goal of achieving diversity, as well as technical issues such as the quality of the DNA libraries and availability of immortalized cell lines" (Venter and others, 2001:1307). Thus, both the academic consortium and the private firm involved in mapping the human genome originally sought to include DNA from people of diverse racial/ethnic backgrounds as well as gender. Upon completion of 90% of the mapping project, Collins of the NHGRI and Venter of Celera—former competitors in the race to map the human genome—held a joint press conference with President Clinton to announce the completion of a "rough draft of the human genome" (Wade, 2000), ostensibly on this diverse sample of DNA.

However, both the academic HGP and the privately funded mapping project have been criticized for not selecting a sample that is diverse enough to serve as the map of the human genome (Jackson, 1997). In point of fact, the chromosomal reference samples for the academic HGP were taken from "sixty-seven northern American and northern European men" with a large portion oversampled from Utah (Stevens, 2002:110). As for the private venture at Celera, after the project was completed, Celera's CEO Craig Venter revealed the mapping that his firm had done had not been on the "diverse" chromosomal sample of donated DNA but rather on *his* (Venter's) own DNA (Wade, 2002a). Explaining the use of his own DNA, Venter cited both "privacy concerns" for volunteers who submitted DNA to the project and his curiosity about the uniqueness of his own DNA (Wade, 2002a).[iii] The point of noting this discrepancy here between the claim of shared genetic universality and the limited sampling diversity (to vastly understate the case) of DNA actually used for mapping the human genome is to raise one of the central dilemmas for those interested in critically engaging the genomic literature and the construction of Whiteness. On the one hand, charging that the DNA sample was not "diverse enough" across racial and ethnic groups presumes that there are significant genetic racial differences between groups that should be studied. Indeed, Fatimah Jackson argues forcefully against the applicability of the heavily North American and northern European sample of the HGP to people who are descendants of African ancestors (1997). She calls for separate genetic studies of Africans directed by Africans and African Americans (Jackson, 1997).[iv] But this critique of the limited genome sample, while powerful, does little to upend the reliance on biologically based notions of racial taxonomies. More to the point for our discussion here, this type of argument leaves the normativity of Whiteness unexamined by calling for further mapping of ostensibly genetically distinct racial groupings rather than interrogating the notion that Whiteness is a homogenous and genetically discreet category. On the other hand, accepting the use of a limited, and predominantly Caucasian, DNA sample as "the map" of "all humankind" morphs Whiteness into that which is universally human (Duster, 2001). Returning again to Winant's typology, neoconservative Whiteness combines a dual assertion of the universal alongside the assertion of the uniqueness of the individual. That Venter in his private venture used only his (Caucasian, male) DNA for mapping (Wade, 2002a) passed with little comment because of the assumption of universality of this genetic sample: any (White) North American or northern European man is just as human as the next. As it plays out in the Human Genome Project, the *universal* "shared inheritance of all humankind" is invoked by leaders of one faction of the HGP researchers, while another researcher asserts his *individual* curiosity about his own DNA. In a very real sense, then, the mapping of the human genome is both a universal appeal to "humankind" and is based on the DNA of a putatively *White* genome. Yet this is rarely explicitly stated or called into question. Given the pervasiveness of Whiteness as a racialized norm in the U.S., it is not surprising that a map constructed from the DNA of northern Europeans and Americans is assumed to represent *"the human"* genome (Cross, 2001:435).

Alongside and following shortly after the Human Genome Project began, genetic researchers, led by Luigi Luca Cavalli-Sforza of Stanford University, proposed the Human Genome *Diversity* Project (HGDP) in 1991. Its explicit purpose was to map the diversity of the 0.1% of variation in human genomes by extracting genetic samples from a variety of geographically distinct populations, with a particular focus on indigenous peoples around the world. These DNA samples were to be multiplied and stored for future research. The Human Genome Diversity Project, unlike the Human Genome Project, has met with strenuous criticism (Dodson and Williamson, 1999; Greely, 2001; Katz Rothman, 2001; Reardon, 2001; Resnik, 1999). Although the project languished without funding for a number of years, due in no small measure to opposition by indigenous people (Cross, 2001; Greely, 2001), it has recently been given new life in a formal working relationship with the HGP (Stevens, 2002:110). The goal of mapping genetic "diversity" is doubly ironic, given both the minute proportion of variation (0.1%) and Sforza's statement quoted above that "races do not exist" (Cavalli-Sforza, 1997). As Jacqueline Stevens notes, Cavalli-Sforza's statement that races do not exist is "overshadowed" by the HGDP, "for if they do not exist, then it makes no sense to study the small differences among them" (Stevens, 2002:109). What is left unquestioned and unexamined here is the *Whiteness* of the baseline of comparison. The variation of 0.1% is variation from some norm, and given the predominance of Caucasians in the sample establishing that norm, it is a putatively *White* genomic standard; mapping the variation from that norm is a project inherently concerned with mapping difference from Whiteness.

Undaunted by the criticisms and initial failure of the HGDP, another group of genetic researchers has proposed the "HapMap" project (Couzin, 2002; Gottleib, 2002). One of the discoveries of the Human Genome Project was that many genes, rather than being transmitted to new generations at random, are passed down in blocks known as haplotypes (Gabriel and others, 2002). These haplotypes remain largely unchanged through generations; therefore, genome researchers hypothesize that there may be only a handful of variations across the entire human population. Further, some genetic researchers speculate that these small variations may play an important role in the development of diseases such as asthma, cancer, and diabetes (Collins, 1999). Several countries involved in the HGP have already signed on to the HapMap project, and $100 million in funding will be shared by researchers in the U.S., Canada, Britain, China, and Japan (Couzin, 2002; Gottleib, 2002). The research aim is to decode the genetic sources of disease by comparing the genomes of people in four ethnic groups: Japanese, Han Chinese, the Yoruba people of Nigeria, and Americans of northern and western European descent (Couzin, 2002).[v] Clearly, the HapMap (like the HGDP) project holds the potential for naturalizing racial categories and challenging claims about the social construction of race by asserting a biological essence of race (Dunklee, 2003; Duster, 2003a; Katz Rothman, 2001; Stevens, 2002; 2003).

The HapMap's quest to find genetic markers for fundamentally social racial and ethnic groups, like the goal of the Human Genome Diversity Project, is a move away from the ostensibly universal notions of the Human Genome Project. Indeed, Charles Murray (coauthor of *The Bell Curve*) has been quoted as saying: "As the HapMap project gets underway, this would seem to be a good time to put bets on the table regarding how the results will affect the ongoing debate about whether race is a valid and/or useful construct… the HapMap results will move the current consensus toward the traditional end. Race will regain credibility as a useful, albeit imprecise, way to categorize human beings." (Quoted in Cohen and others, 2003)

Here, the promise of genomic research in any sense of the universal ("we are all one," "99.9%

the same DNA") has disappeared. In its place is a move toward reconstructing "race"—and thus, inevitably Whiteness—in a manner that reproduces racial *difference* as immutable *genetic difference*.

Many genomic researchers share an assumption that the goal of genetic research is to identify those specific genes and gene variants that influence the diagnosis, prevention, and treatment of disease, with little or no emphasis on race at a genomic level (Collins and others, 2003). However, a subset of researchers continues to use self-identified and inherently social racial categorizations as a means to identify populations for genetic study, arguing that it is more economical to categorize people based on phenotypically based notions of "race" rather than to look exclusively at individual genetic composition for prevention, diagnosis, and treatment of disease (Risch and others, 2002). Risch and colleagues argue that "population genetic studies have recapitulated the classical definition of races based on continental ancestry—namely African, Caucasian (Europe and Middle East), Asian, Pacific Islander (for example, Australian, New Guinean, and Melanesian), and Native American" (Risch and others, 2002:3). The continued use of "race" as a heuristic device for investigation at the genomic level is paradoxical, when on its face individualized genetic therapy would mean testing and categorization on the individual level. This return to the use of classical racial categories in population genetics studies despite empirical evidence documenting the clear limits of these categories as indicative of ancestry or heritage (such as the U.S. census and birth record examples described earlier in this chapter) highlights the power of these socially constructed categories within science, as well as the role of scientific research in continuing to reproduce these categories.

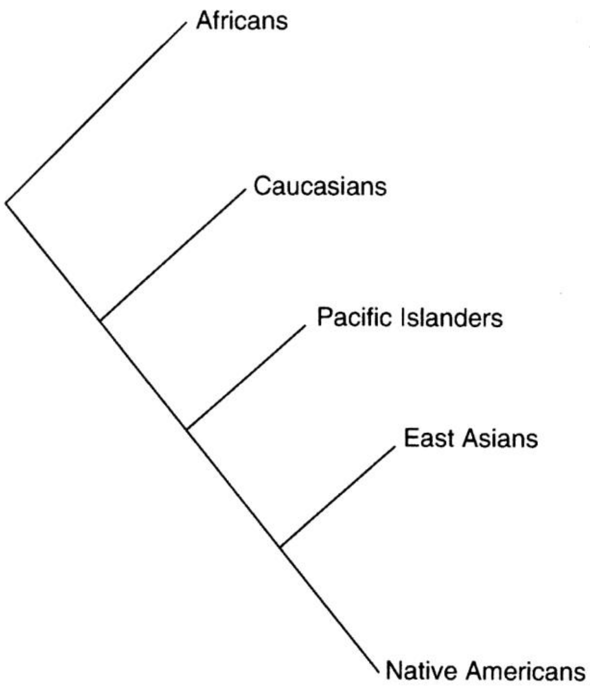

Figure 1: The evolutionary tree of human races. Population genetic studies of world populations support the categorization into five major groups, as shown. From Risch and others, 2002, fig. 1

This is a particularly pernicious use of racial categories. While the evidence from genetic research confirms the similarities of human beings across racial categories, geneticists like Risch want to continue to use social categories as a "practical" matter to underwrite the enormous costs of authentically individualized genetic testing and screening.

As Bonham and colleagues point out, attributing racial variations in patterns of disease to the genetic composition of racial or ethnic groups is based on a series of imperfect assumptions. Specifically, "self-identified race is a surrogate for ancestral geographic origin, which is a surrogate for variation across the genome, which is a surrogate for variation in disease-relevant alleles, which is a surrogate for individual disease risk" (Bonham, Warshauer-Baker, and Collins, 2005:13, citing Collins, 2004). With each imperfect assumption, the link between socially constructed racial categories and genetic sources of disease gets less clear, like a copy of a copy of a copy that continues to blur with each reproduction; yet the genetic frame, and the supposedly biological basis for Whiteness, remains unchallenged. This reliance on race as a sorting mechanism of convenience in the face of genomic research that demonstrates this is a less than completely reliable proxy simultaneously naturalizes racial disparities while it holds out the promise of eliminating racial disparities in health. And it leaves the Whiteness within those disparities unexamined.

Furthermore, scholars have also pointed out the impulse to attach genetic conditions to labeled racial or ethnic groups, while those attached to "Whites" remain invisible. For example, genetically linked conditions such as Tay-Sachs or sickle cell anemia have become labeled as "Jewish" and "Black" diseases respectively because they are associated with people who are descendants of Ashkenazi Jews and African Americans. However, a disease such as cystic fibrosis, which is genetically linked to subgroups of the White population, does not get labeled as *difference* (Katz Rothman, 1998). The link, then, between genetic condition and Whiteness is ephemeral, while the connection between genetic condition and members of (already) labeled racial and ethnic groups is intractable. Schwalbe and colleagues have pointed to the process of identifying and labeling groups as crucial to the process of reproducing inequalities (Schwalbe and others, 2000). Thus, the HapMap's explicit quest to locate difference at the genetic level contributes to a Whiteness project that both reifies racial categories and contributes to the identification of disease risk as located within racialized groups.

Returning again to Winant's typology of different Whiteness projects, the "classical" definition of races mentioned here seems to move away from the neoconservative Whiteness project and toward the far right Whiteness project of biological essentialism. Indeed, Risch's "evolutionary tree of human races" is actually quite close to de Gobineau's conceptualization in *Inequality of the Races* (1853), an essay widely regarded as crucial in the development of contemporary Western "racist culture" (Goldberg, 1993). Here we have moved fully from the neoconservative racial project on to the far right racial project in which race is seen as biologically based and Whiteness morphs (Duster, 2001) into a discrete line, distinct from others and solidified. Thus, the explicit quest to locate difference at the genetic level contributes to a Whiteness project that reifies racial categories and return to pre-Civil Rights Movement constructions of race and Whiteness as inherent, biological difference.

WHITENESS IN HEALTH DISPARITIES RESEARCH

Scholars both within and outside the field of public health have drawn attention to the limits of analyses and interventions that focus on biological or behavioral explanations for health and disease, without understanding the social contexts within which health and disease are produced (Geronimus, 2000; House and others, 1994; House and Williams, 2000; Link and Phelan, 1995; Lupton, 1995; Schulz and others, 2002; Williams and Collins, 2001). Specifically, they have argued that such a focus serves to locate the causes of poor health within the bodies of those individuals or groups who are most visibly affected by social, economic, and political powerlessness while drawing attention away from the broader social processes that influence opportunities for health as well as risk of disease (Lupton, 1995; Muntaner, 1999; Shah, 2001).

In this chapter, we have examined one aspect of this process —the ways that race and Whiteness are constructed in the literature on racial disparities in health and the ways that this literature may contribute to the reification or reproduction of the racial categories that are fundamental to the production of racial inequalities (Schwalbe and others, 2000). We suggest that this challenge resurfaces particularly in the absence of a specifically *social* theory of race, and of whiteness. Following Muntaner (1999), we argue that the absence of an explicitly social theory of race allows a wide range of interpretations of racial disparities in health to emerge, implicitly or explicitly locating the causes of health and disease within individuals, particular groups (e.g., Mexicans, Chinese Americans, the poor), or social relations (e.g., hierarchies of race and class).

These interpretations, each of which can be linked to various Whiteness or, more broadly, racial, projects, do not occur in isolation from the larger social and political context. Over the past several decades in the United States, neoliberal and neoconservative Whiteness projects have been in constant flux. Recently, as the mainstream of U.S. politics has moved rightward, challenges have emerged to social and behavioral epidemiological research on health disparities (Zielhuis and Kiemeny, 2001), while biomedical and genomic research on racial disparities in health have reemerged.

Nelkin and Lindee suggested a decade ago that the power of genetic explanations for racial disparities in health may derive in part from the exoneration of the individual, "removing moral responsibility by providing a biological 'excuse.' Genes are the agents of destiny: We are the victims of a molecule, captives of our heredity" (1995:129). Yet, as Kaufman and Hall point out more recently, "The myth of genetic determinism cuts both ways, however, for although it absolves the individual from responsibility, it also absolves the society at large. Deterministic biological explanations ('it's in my genes')—much like theological explanations ('the devil made me do it')—locate problems (and therefore solutions) within individuals" (2003:117). Genetic explanations for racial disparities in health ignore the historically situated and contextual nature of processes of racialization, shifting the lens away from the ways that those processes are linked to the social, political, and economic conditions that influence health. Instead, by locating the cause of health disparities within the genes—or haplotypes—of racialized groups, they suggest that there is "something innately pathologic" about that group, reinforcing their "essential physical inferiority in the modern world." (2003:117). Such interpretations obscure the social processes that create inequality, contribute to the stigmatization of racialized groups (and thus perpetuate inequalities), and allow Whiteness to remain invisible and uninterrogated.

While we have focused particular attention on genetic research in the latter half of this chapter, this same process may play out with any research that does not put forward a specifically social theory of race. For example, research into the extent to which behaviors or cultural practices contribute to racial disparities in health, without explicit theoretical linkages to social and historical contexts, can reproduce ideas of immutable difference between racial groups. To the extent that culture, for example, comes to be perceived as an innate characteristic distinct to particular racial or ethnic groups, it "inherits the role of race…[and] becomes determinist and teleological," reproducing the idea of inherent differences between groups (Malik, 1996:150).

Explicitly theorizing race as a social construct encourages us to examine how processes of racialization are linked to social, political, and economic conditions that, in turn, influence health outcomes. By moving beyond the use of race as an atheoretical and ahistorical category and toward analysis of the processes through which racial constructs are produced and linked to differences in health, researchers can contribute to etiologic research that identifies the underlying—or fundamental—causes of racial disparities in health. This includes an understanding of the ways that race is implicated in the construction of class, as well as the ways that class is implicated in the construction of race (Buck, 2001).

Even more so, it is imperative for those vested in understanding and addressing health disparities—whether population geneticists, social epidemiologists, or public health practitioners—to examine critically the assumptions and implicit as well as explicit theoretical frameworks that we bring to our work. Only in so doing can we begin to understand the ways that socially constructed racial categories permeate our own implicit assumptions and interpretations, as well as the ways that research on racial disparities in health may, advertently or inadvertently, reproduce the racial categories that are themselves fundamental to the processes of inequality. Scholars who make explicit connections between social conditions and the historical and locally contingent production of Whiteness and its connections to relative advantage in the distribution of material, political, and cultural resources begin to disrupt the invisibility of Whiteness and offer the potential for transformational racial projects to emerge.

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NOTES

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[i] PubMed search conducted February 2005 using search terms "racial disparities."

[ii] The International Human Genome Sequencing Consortium includes:
1. The Whitehead Institute/MIT Center for Genome Research, Cambridge, Mass., U.S.
2. The Wellcome Trust Sanger Institute, The Wellcome Trust Genome Campus, Hinxton,

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Cambridgeshire, U.K.
3. Washington University School of Medicine Genome Sequencing Center, St. Louis, Mo., U.S.
4. United States DOE Joint Genome Institute, Walnut Creek, Calif., U.S.
5. Baylor College of Medicine Human Genome Sequencing Center, Department of Molecular and Human Genetics, Houston, Tex., U.S.
6. RIKEN Genomic Sciences Center, Yokohama, Japan
7. Genoscope and CNRS UMR-8030, Evry, France
8. GTC Sequencing Center, Genome Therapeutics Corporation, Waltham, Mass., U.S.
9. Department of Genome Analysis, Institute of Molecular Biotechnology, Jena, Germany
10. Beijing Genomics Institute/Human Genome Center, Institute of Genetics, Chinese Academy of Sciences, Beijing, China
11. Multimegabase Sequencing Center, The Institute for Systems Biology, Seattle, Wash.
12. Stanford Genome Technology Center, Stanford, Calif., U.S.
13. Stanford Human Genome Center and Department of Genetics, Stanford University School of Medicine, Stanford, Calif., U.S.
14. University of Washington Genome Center, Seattle, Wash., U.S.
15. Department of Molecular Biology, Keio University School of Medicine, Tokyo, Japan
16. University of Texas Southwestern Medical Center at Dallas, Dallas, Tex., U.S.
17. University of Oklahoma's Advanced Center for Genome Technology, Dept. of Chemistry and Biochemistry, University of Oklahoma, Norman, Okla., U.S.
18. Max Planck Institute for Molecular Genetics, Berlin, Germany
19. Cold Spring Harbor Laboratory, Lita Annenberg Hazen Genome Center, Cold Spring Harbor, N.Y., U.S.
20. GBF - German Research Centre for Biotechnology, Braunschweig, Germany

[iii] Since he had his DNA sequenced, Venter has been following an individually tailored regime for a condition that is known to be a precursor to Alzheimer's (Wade, 2002a). Most of the genetic research community involved in mapping the human genome found Venter's announcement less than noteworthy. Collins of the NHGRI, who shared the joint press conference with Venter, declined to comment on the revelation (Wade, 2002a).

[iv] And, indeed, a project known as G-RAP, Genomic Research in African-American Pedigree, is under way at Howard University, based precisely on the notion of understanding "gene-based differences."

[v] According to a News Advisory titled "Background on Ethical and Sampling Issues Raised by the International HapMap Project," the NHGRI's website describes the rationale for selecting these groups in these terms: "These four populations were selected to include people with ancestry from widely separate geographic regions. Researchers have found that most human populations share the common haplotype patterns. Research already suggests that the overall organization of genetic variation is similar in all four populations, but that there will be enough differences in haplotype frequencies to justify genome-wide studies of samples from these populations." [http://genome.gov/10005337]. Accessed March 28, 2005.