ANTHROPOLOGY

Debating Reality and Relevance

Troy Duster

During the past decade, the debate about whether to use the concept of race in scientific research and clinical medicine reached such a heated level and took such a polemical turn that it inspired a book with the subtitle *Why Both Sides Are Wrong in the Race Debate* (*1*). Advocates for each of the two warring camps circled the wagons, fired conceptual bullets at their opponents, and often took no prisoners. How did we get to this point, especially in the larger context of the mapping and sequencing of the human genome? Anyone even vaguely familiar with these developments knows the mantra that human DNA is overwhelmingly alike across all cultures, classes, and nationalities—at 99.9% similarity. The surface consensus achieved at the turn of the century generated largely uncontested pronouncements from many of the world's most prominent molecular geneticists that racial taxonomies at the DNA level are or should be dead and buried.

Revisiting Race in a Genomic Age

Barbara A. Koenig, Sandra Soo-Jin Lee, and Sarah S. Richardson, Eds.

Rutgers University Press, New Brunswick, NJ, 2008. 394 pp. $80. ISBN 9780813543231. Paper, $32.95. ISBN 9780813543246. Studies in Medical Anthropology.

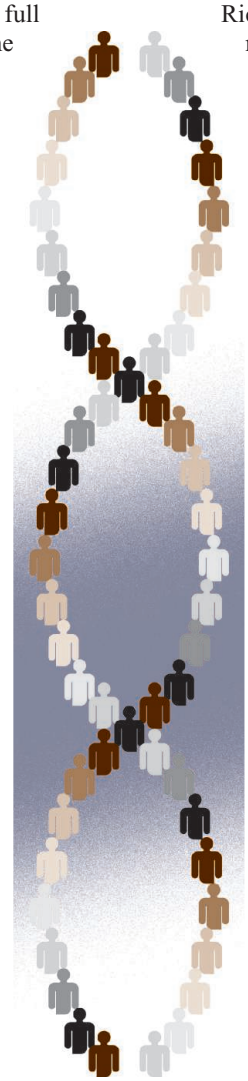
However, about this same time the emergence of new fields of clinical application—from pharmacogenomics to nutrigenomics to pharmacotoxicology—began to provide fodder for those who would contest these pronouncements about the end of race. This was also the beginning of an era in which companies making blockbuster drugs, designed for an undifferentiated consumer population, would face costly lawsuits and product recalls when even a small fraction of consumers had adverse drug reactions. Reacting in large measure to such developments, pharmaceutical and biotechnology companies began to reconceive the past strategy of pursuing drugs designed for the general consumer (the one-size-fits-all approach) and substitute a promise of delivering drugs to "specific populations" fine-tuned by DNA analysis. As early as 1999, *Science* published a review article in which the authors proclaimed:

> All pharmacogenetic polymorphisms studied to date differ in frequency among ethnic and racial groups.… The marked racial and ethnic diversity in the frequency of functional polymorphisms in drug- and xenobiotic-metabolizing enzymes dictates that race be considered in studies aimed at discovering whether specific genotypes or phenotypes are associated with disease risk or drug toxicity. (*2*)

The very next year, a congressional mandate directed federal funding agencies to require researchers to address race and ethnicity as categories in their research, in pursuit of a better understanding and mitigation of health disparities. Thus, the early scaffolding of the debate was erected a full decade ago. The intensity of the protagonists would only grow during the ensuing years.

The collection of essays (some previously published) in *Revisiting Race in a Genomic Age* addresses many of the issues surrounding the recent resurgence of race. The volume, edited by Barbara Koenig, Sandra Soo-Jin Lee, and Sarah Richardson, grew out of a project supported by Stanford University's Research Institute for Comparative Studies in Race and Ethnicity. It presents critiques and analyses from a wide range of scholars from different disciplines. Contributors approached the topic using a variety of methods. They include anthropologists doing close-up ethnographic studies of bench science in labs, legal scholars examining intellectual property and patent law, and molecular geneticists working on identifying genetic markers designed to reveal continental ancestral linkages or on polymorphisms linked to alcoholism or asthma in socially designated populations.

To organize this expansive terrain, the book is divided into four sections. The first provides a general history of the concept of race and includes a primer on key concepts in genetics that relate to human taxonomies. One of the most important tools currently deployed to examine human genetic variation is computer software called Structure (*3*). This program permits the researcher to discover patterns or clusters of DNA markers. When an alignment of such clusters overlaps existing categories of race and ethnicity, there arises the siren's seductive call to reinscribe these categories as biologically meaningful. Anthropologist Deborah Bolnick's detailed analysis of the Structure program and its uses, one of the most evocative pieces in the volume, will do much to further illuminate key issues in the debate. Her chapter is especially interesting because the paper most frequently cited for bringing race back into the fields of population and molecular genetics—the Noah Rosenberg, Marcus Feldman, *et al*. article "Genetic structure of human populations" (*4*)—was based on this technology. (In the book's next section, Feldman teams with Richard Lewontin to review recent research in population genetics. They conclude that race is too broad a concept to have medical or clinical utility.) These opening chapters are appropriately foundational, and they will help guide the reader through some of the thicket in the succeeding parts.



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The second section deals with substantive matters in contemporary race-based clinical medicine. Here authors engage head-on the matter of drug development for populations categorized by race and ethnicity. Sarah Tate and David Goldstein provide a useful summary of the claims (in peer-reviewed journals) that at least 29 medicines have different efficacy among racial and ethnic groups. Although they are cautious, even skeptical, about attributing these differences primarily to genetics, they wish to leave the door open to further exploration. Other papers highlight the external forces at play shaping the science, such as patent law and marketing decisions. Some authors also follow scientists at work in the laboratory to see how they confront the variable meanings of race in the most determinedly empirical manner, e.g., the framing of the problem under investigation.

The third section displays a

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range of positions on the meaning and utility of ancestry testing using contemporary molecular genetics. Geneticists Mark Shriver and Rick Kittles demonstrate the effective uses of Y-chromosome and mitochondrial DNA analyses for sex-linked ancestry evaluations. Because of the limits of these two tests, they also argue for the utility of the more-contested technology of ancestry informative markers ("genetic markers that show substantial differences in allele frequency across population groups"). Shriver and Kittles's position is far from polemical in that they readily acknowledge that the meaning of these markers will vary based on the choice, size, and sampling procedure that determine the reference population. Henry Greely provides an overview of the dramatic surge in commercial, direct-to-consumer ancestry testing, and he calls for more transparency in the methods used to determine ancestral origins. This development is of vital interest in certain communities: Kimberly Tallbear documents how Native Americans are dealing (or refusing to deal) with the use of genetics to authenticate tribal membership. Alondra Nelson portrays how African Americans are using these tests to try to find links to specific branches of an African heritage.

There are vigorous proponents for the continued use of race as a proxy for ancestry, some represented in this collection. Yet the full value of *Revisiting Race in a Genomic Age*—and the editors' trenchant analytic summaries—is that the volume substantially raises the level and the terms of the debate. That deserves applause from all sides.

References

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BEHAVIOR

Under the Influence of Hormones

Elizabeth Adkins-Regan

Endocrinology of Social Relationships

Peter T. Ellison and Peter B. Gray, Eds.

Harvard University Press, Cambridge, MA, 2009. 509 pp. $49.95, £36.95, €45. ISBN 9780674031173.

Throughout much of human history, people with no social relationships would not have survived childhood, much less reproduced successfully. It is difficult even to imagine human life completely devoid of family, friends, or romantic interests. Social relationships are an adaptive characterististic of our and many other animal species. These relationships can be cooperative, competitive, or a mixture of both. Humans can even sustain close relationships over long distances, through letters, phone calls, and e-mails.

Understanding the biology of these relationships requires research into both their ultimate causes (evolution and ecology) and their proximate causes (physiology and development). *Endocrinology of Social Relationships* focuses on exciting recent work on endocrine physiology as both a cause and consequence of social interactions. Editors Peter Ellison and Peter Gray (anthropologists at, respectively, Harvard and the University of Nevada, Las Vegas) successfully aim at providing an overview and synthesis of the current state of the field, with an emphasis on—but not restricted to—humans.

Three developments in particular have catalyzed the field. First, more researchers interested in hormones now study systems of social interactions and not just particular acts of social behavior. The difference between a monogamous and a promiscuous mating system lies in how many partners an individual has sex with, not the mechanics of the mating act itself. The relevant research on animals has produced important discoveries about the role of the brain neuropeptides oxytocin and vasopressin in monogamous relationships, discoveries that have captured the interest of human-focused researchers as well. Studies have found that men with one sexual partner have lower testosterone levels than those with multiple or no partners. Second, noninvasive methods for measuring steroid hormones in saliva have made it much easier to collect data through time while subjects are in social contexts such as being defeated in a competitive game, hearing a baby's cry, or entering into a committed romantic relationship. Third, the

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