

**RACE AND INTELLIGENCE**  
**Separating Science From Myth**



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# Folk Heredity



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**T**he overarching theme I would like to develop here is the conflict between different theories of heredity that coexist in modern society. There is, on the one hand, genetics, a 20th-century science, with modern literature that can generally be recognized through a vocabulary of “blots,” “bands,” “gels,” and “probes.”

On the other hand, there exists a set of commonsense theories of heredity, generally expressed in adages such as “like begets like” and “blood will tell.” These are, of course, much older than the science of genetics, and although they are somewhat diverse, they can be conveniently grouped as a set in contrast to genetics, as theories of folk heredity.

*Folk heredity* comprises a belief in the importance of inherited constitutions in everyday life, in explaining social relationships, in applying formulas for interpreting and improving our world, in the taint of “blood,” and in the condemnation of large groups on the basis of qualities inscribed in their natures. These beliefs form the justifications for hereditary aristocracies, for example, and the justification for “isms” of many kinds—although most notably racism.

Importantly, however, contemporary folk heredity draws legitimacy from genetics. Genetics speaks with cultural authority on matters of heredity in the modern world, and consequently its sanction is important. Thus, instead of an archaic phrase like “inherited constitution,” we frequently see the same thought expressed with the technical term *gene*, although there is usually little or no overlap between the gene as material, transcriptional entity studied by molecular geneticists and the gene as commonsense explanation of “why-you-are-such-a-jerk” (Marks & Lyles, 1994).

Reciprocally, however, genetics derives popular support by validating popular wisdom, particularly as the science may provide an origin myth for the distribution of modern social power. To the extent that genetics relies on popular support for funding priority, for example, it is in the interests of geneticists to promote folk ideologies insofar as they may imply support for the science itself.

It is consequently crucial to explore their points of contact and to point out the potential conflict of interests. For example, when James Watson was quoted in *Time* magazine a few years ago saying “We used to think our fate was in the stars. Now we know, in large measure, our fate is in our genes,” it could raise a number of questions (Jaroff, 1989):

- Do we actually have fate, in any common sense of that term?
- Has it actually been localized to our cellular nuclei?
- Is genetics merely high-tech astrology, although presumably more accurate?

The statement is brilliantly polysemic. Vested with the authority of one of the parents of molecular genetics, this illustrates the conflict of interest that pervades human genetics. Maybe it is merely articulating the manner in which genetic instructions can produce a range of health problems, like diabetes, Huntington’s chorea, or sickle-cell anemia. On the other hand, the reference to astrology suggests a broader implication. Perhaps then, it is a general scientific statement, a testable hypothesis about the force of heredity on destiny. But it is at the same time an articulation of political substance. If we have fates and they are in our genes, then by implication the differences between a Harvard professor, a grocery store checkout clerk, a Bosnian Serb, and an urban teenage gang member are explicable by recourse to bands and blots and gels. If we identify Balkan genocide and urban teenage crime as social problems requiring solutions, the statement encodes a social political philosophy. The only hope to change their life trajectories would be by gene therapy (which does not exist) or by extirpation (which does)—from a benign laissez-faire attitude at least as old as Malthus, through amniocentesis and selective abortion, to the infamous Nazi culmination.

However, even that is an incomplete analysis, for the explicit purpose of Watson’s comment was dictated by its context—a cover story on the Human Genome Project, which was attempting to drum up several billion taxpayer dollars for molecular genetic research. Of course it needed to convey that it was the most important thing in people’s lives. In addition to encoding the authority of science, and a political philosophy, the statement encodes a grant proposal.

The problem is that once we appreciate that geneticists possess conflicting interests, their authority is undermined. One can no more accept at face value a geneticist’s statement on the overriding significance of genetics in life than one can accept at face value an Oldsmobile salesman’s statement about their car being the best ones on the road today. However, it is nevertheless crucially important to be able to discriminate sound work and reasoning from quackery. There have to be some

standards of intellectual rigor in any scientific field, for a situation where all claims are equally valid, and reactionary, politically motivated studies and racist studies are accorded equal status with open-minded, responsible, and competent scholarship is inevitably a victory for the former.

How, then, do we make sense of the miasma of information and misinformation on human genetics that exists in the public forum? I believe the first step is to identify and isolate four pervasive and archaic fallacies about human heredity in popular ideology, toward the ultimate goal of subtracting them from human genetics. These folk hereditary fallacies are taxonomism, racism, hereditarianism, and essentialism.

### TAXONOMISM

The first is the division of the human species into a small number of ostensibly natural, and qualitatively distinct, categories. I call this *taxonomism*, and it is one of the most persistent cultural fallacies, somewhat tragically still occasionally maintained as science even by some physical anthropologists (Gill 1998, Marks, 1998).

It is, of course, universal for cultures to distinguish among groups of people. However, the modern, “scientific” approach to the problem dates only from the late 17th century. Prior to that, Europeans had distinguished peoples locally. The politics of expansionism and colonialism and the economics of slavery introduced an expediency into blurring local heterogeneities that had not existed previously and came to seem entirely natural. Thus in 1684, a French physician and traveler named François Bernier proposed a natural division of humanity into “four or five species or races of men in particular whose difference is so remarkable that it may be properly made use of as the foundation for a new division of the earth” (Bendyshe, 1865, p. 361).

Bernier’s first group encompassed Europe, North Africa, the Near East, and India. His second was sub-Saharan Africa, and the third encompassed the Asians. His fourth comprised the Lapps of Norway, “little stunted creatures with thick legs, large shoulders, short neck, and a face elongated immensely . . . , they are wretched animals” (Behnyshe, p. 362), and somewhat bear-like as well. Finally, “the blacks of the Cape of Good Hope seem to be of a different species to those from the rest of Africa” (p. 362). As to the native Americans, Bernier did “not find the difference sufficiently great to make of them a peculiar species different from ours” (p. 362). (It should be noted that Bernier wrote before the formalization of the biological concept of species, and thus his use of the term should be taken simply as a colloquialism, not implying the ignominious polygenism of a later era.)

Bernier’s innovation was indelibly etched into the scientific canon by Linnaeus, the father of modern biological classification. Classifying the animal, vegetable, and mineral kingdoms in his *System of Nature*, Linnaeus (1735) began the work by classifying humans. He identified four subspecies, corresponding to continental land masses, and color-coded, to boot: white Europeans, red Americans, dark Asians (*fuscus*, later amended to *luridus*, yellow), and black Africans.

Linnaeus's role was to legitimize this approach to human variation as scientific. His system had proven so successful for other organisms and his reputation was so immense that he successfully defined the scientific approach to this problem. A generation later, Blumenbach would observe that all over the world, human populations blend into one another, so drawing formal lines between them is highly arbitrary. Yet posturing as heir to Linnaeus, that is precisely what he had to do. (He found five subdivisions of humans, and provided the coinage "Caucasian," for his belief that the most perfect representations of the European skull were from the Caucasus mountains.)

This approach to human variation began to be challenged only in the mid-20th century. A paper by Ashley Montagu (1941) criticized the race concept "in the light of modern genetics," and Frank Livingstone's (1962) terse and widely cited essay "On the Non-Existence of Human Races" emphasized the continuity of human variation and the arbitrariness of partitioning it, like Buffon and Blumenbach 200 years earlier. Perhaps the most influential paper, however, was geneticist Richard Lewontin's (1972) statistical analysis of "The Apportionment of Human Diversity," which showed that the vast bulk of the genetic differences in the human species occurred within and between populations, the differences between continental regions amounting to only about 6% of the total.

Perhaps the most crucial feature of the taxonomist fallacy, however, lies in the fact that the categories of race are transmitted generationally according to rules that are cultural, not genetic. The child of a mixed marriage is forced to assume a single racial identity (generally that of the socially lower, or marked, race), and is not considered to be an equal participant in both, as their biology might dictate (Davis, 1991). Further, the categories of racial classification do not reflect real patterns of human diversity; consequently marriages between "Asians" can encompass people as different as Koreans and Pakistanis without being formally considered interracial. Finally, the legalities of race necessitate definitions of inclusion. The American miscegenation laws and the German Nuremberg laws specified the definition of "Negro" or "Jew" to include anyone with a single great-grandparent from that group. Apparently seven great-grandparents were not enough to make you "White" or "German"—again in defiance of biological relationships.

The fact is that the human species defies classification into such discrete natural groups. Europeans vary extensively among one another, which is why William Z. Ripley's (1899) analysis of *The Races of Europe* compelled anthropologists to differentiate among the Nordic, Alpine, and Mediterranean races within the European race. Africans, however, have the greatest levels of biological diversity of populations on any continent. Sub-Saharan Africans include the tallest and shortest people in the world, and people of diverse facial form, body build, and skin tones. Clustering them together as a homogeneous group in juxtaposition against a homogeneous "European" race simply does not reflect empirical patterns of diversity.

Even geneticists, however, have difficulty shaking this folk hereditary premise. There is, for example, a body of literature asking which two of the "three great races"

are most closely related to one another. In the 1960s and 1970s, Cavalli-Sforza argued (based on genetic data) that Europeans and Africans clustered against Asians, reflecting a primordial East–West division of the human species (Cavalli-Sforza, 1974; Cavalli-Sforza & Edwards, 1965). On the other hand, Nei and Roychoudhury (1981) found a different pattern from the same data, namely, that Europeans and Asians clustered against Africans. More recently, however, the meaning of these trees generated from genetic distances has come under scrutiny, for these trees reflect many features aside from simply branching ancestry (Harpending, 1994; Terrell & Stewart, 1996). Programmed to do so, a computer will produce dichotomous trees. However, folk hereditary premises about the data can tint the results.

We now know, after all, that genetically the rest of the human species is a subset of Africans (Merriwether et al., 1991; Tishkoff et al., 1996). Consequently “Africans” do not constitute a valid biological contrast to “Europeans” and “Asians.” That would be like contrasting “Mammalia” against “Carnivora” and “Primates.” As the latter two are subsumed by the first, the comparison is nonsensical. Thus, the entire corpus of genetic literature on the relations of the three races to one another is largely valueless.

Because the population is now recognized to be the closest thing to a natural unit of the human species (and even that defies precise definition), one must also be particularly skeptical of studies that compare races, for the populations taken to represent the races become *synechdoches* (metaphors substituting a part for the whole). A study of Kenyan versus Swedish athletes, for example, cannot be relevant to an American black–white comparison, because most American whites are not of Scandinavian ancestry and most American blacks are not of East African ancestry. The claim that “ancestral Europeans are estimated to be an admixture of 65% ancestral Chinese and 35% ancestral Africans” (Bowcock et al., 1991, p. 840) shows how difficult it is to escape the cultural biases of racialized science, especially when accompanied by the information that Africans in this study refers to two populations of central African pygmies.

As we now know, both phenotypic and genetic variation in humans are structured as a series of gradients. We find simply that peoples are similar to those nearby and different from those far away. However, that no more tells us that there are 3 kinds of humans, than it tells us there are 5 or 12 or 31. Thus, a “Caucasoid” Iranian and a “Negroid” Ethiopian are more similar on any biological axis to one another than the Iranian is to a “Caucasoid” Swede or the Ethiopian is to a “Negroid” Senegalese.

The basis for juxtaposing the former two peoples as Caucasoid and the latter two pairs as Negroid reflects a judgment call, the erection of discrete boundaries in defiance of nature. The judgment is a poor one, for it is not justified by their bodies or by their genes. We cluster and divide populations by cultural rules, not by any natural breaks. We can certainly compare populations stemming from different parts of the world, but we have no indications of the number, nature, or existence of any primordial subdivisions. We cluster and segregate populations by fiat, not biology. The basis on which we decide that African people, exceedingly biologically heterogeneous, comprise a single unit to juxtapose against an

equivalent single European unit, is cultural, not natural. Again, it constitutes a folk idea about diversity.

## RACISM

It is important to distinguish the fallacy of classifying humans into groups, misrepresented as natural, from the denial of rights to people based on how they are classified. The judgment of individuals on the basis of characteristics assigned to their group is the folk hereditary fallacy of racism, although obviously independent of the existence of natural taxonomic categories of people. At root, it reflects two simple beliefs: (a) The properties assigned to groups exist in microcosm in the constitutions of the people composing the groups; and (b) those properties form the basis for assessing individual worth and conferring rights.

When Carleton Coon (1962) published *The Origin of Races* and argued that the economic and political subjugation of dark-skinned peoples was the natural expression of their not having been members of *Homo sapiens* for very long, the thesis was quickly taken up by anti-integration activists (Putnam, 1967). Challenged by liberal scientists to repudiate the odious invocation of his work, Coon refused, on the grounds that his work was merely value-neutral science, and he was not responsible for its citation (Coon, 1968; Dobzhansky, 1968). While both political sides recognized the value-ladenness of the work, only its author (whether out of naiveté or malice is irrelevant) maintained the fiction that the work lay outside a system of values.

That was a defining moment for American anthropology, with two consequences for the field. First, anthropologists began to think far more self-consciously about the political responsibilities they carried in pronouncing authoritatively on basic human differences. Second, biological anthropologists began to shy away from talking at all about race. The latter consequence was almost as tragic as the fiasco that inspired it.

Whether or not group-level properties exist in the makeups of individuals is to some extent an empirical question. A group of dark-skinned people and a group of light-skinned people, after all, differ both at the group and at the individual level. However, the judgment of individual worth and the conferral of rights are political and social issues, not biological issues. Because racism is not derived from scientific knowledge in the first place, it is difficult to imagine that science can help to refute it. One must be vigilant, however, for science can easily naturalize racism.

In *The Third Chimpanzee*, biologist Jared Diamond asserted that xenophobia (a highfalutin neologism referring to fear and loathing of others) and its radical manifestation genocide are biological endowments of the human species, indeed inherited from a common ancestor with chimpanzees. What the biologist neglected, however, is that "otherness" is culturally constructed. The people who hate each other the most, of course, are generally biologically the most similar. Whether they are Nazi and Jew, Huron and Iroquois, Muslim and Hindu, Serbian and Bosnian, Hutu and Tutsi, Irish and English, or Harvard and Yale, the xenophobia, or racism, or simple animosity, is not based on natural differences between the groups. It is based, rather, on

constructed identities. Thus, if indeed we are programmed toward group hatred, it is evident that whom we choose to hate, why we hate them, and what we should do about it are entirely culturally programmed. To the extent that biology or genetics may be involved, it would have to be in a very trivial sense.

Racism is thus not predicated on biological races; it is predicated on folk notions of heredity and difference, and it is a social, political, and cultural problem independent of biology and of any class of biological data. The history of science being used to justify racism is well known, from Josiah Nott and George Gliddon (1854) through Carleton Coon (1962) up to J. Philippe Rushton (1995).

It may be interesting to note, however, another genetical approach to the problem, in the assertion that genetics will help put an end to racism. Thus, accompanied by a liberal political bent, the Human Genome Diversity Project acknowledged the equality of the races, even while reifying them. This Project was “expected to undermine the popular belief that there are clearly defined races [and] to contribute to the elimination of racism” (<http://www.stanford.edu/group/morrinst/hgdp/summary93.html>). Not only is the appeal to eliminate racism ridiculous (as if racism were a biological problem, instead of a political one), but their very own flagship literature presented color-coded maps of the world in which “Four major ethnic regions are shown. Africans are yellow, Australians red, [Mongoloids blue], and Caucasoids green” (Cavalli-Sforza, Menozzi, & Piazza, 1995; Piazza, 1997; Subramanian, 1995).

In other words, they have just showed you in different colors the “clearly defined races” that they say do not exist! However, the scientists failed to appreciate that this is all unrelated to racism. If there were no natural taxonomic units of the human species (which indeed there are not), there would still be group-level identifications and the possibility of prejudice and discrimination on that basis—as the experiences of Jews and Hispanics show. This is based on constructed differences, not on patterns of natural biological variation. The science of genetics cannot eliminate racism, for it is not a biological problem; it is a cultural problem.

## HEREDITARIANISM

*Hereditarianism* is the idea that heredity is a crucial determinant of particular human thoughts and behaviors. One can draw on any number of examples of hereditarian thought in modern society, and that is the theme of a very fine recent book, *The DNA Mystique* by sociologist Dorothy Nelkin and historian Susan Lindee. This is where the conflict of interests described earlier is most evident. It is simply not in a geneticist’s best interests to deny the importance of genetics in everyday affairs, so we do have to be cautious about accepting uncritically the pronouncements of geneticists in this area.

In a presidential address to the American Society of Human Genetics, David Comings (1989) contrasted two models of the development of antisocial personality. He eschewed the soft science model in favor of another possibility. “A genetic viewpoint is different,” he wrote, “and would suggest that a disinhibition-disorder

gene carried by a parent could result in marital chaos and separation and that it is this inherited gene—not the fact that the parents separated—that causes antisocial personality in the child” (Comings, 1989, p. 456).

Well, it may be comforting to blame your “marital chaos and separation” on a divorce gene in the innate constitution of your ex-spouse, but certainly divorce rates have been changing quite independently of the gene pool.

Being a geneticist should mean studying heredity scientifically, not postulating that genes are at the root of everything.

Certainly brains and minds are, at some level, “coded for” by genes. However, it is the variations among them that are of central interest, and that have little, if anything, to do with genetics. One can argue that tuberculosis is genetic, in that the human body is programmed to respond in specific ways to infection by the appropriate bacillus; but why one person got tuberculosis and another did not is far more a function of the circumstances of their lives (e.g., in crowded urban ghettos vs. farms or country estates) versus that of their genes.

The analogous question here is understanding the distribution of variation in thoughts, ideas, and behaviors in the human species. Consequently, it is crucial to distinguish between the causes of mental and behavioral variation within and between groups. Generations of immigrants have shown quite strongly that the great bulk of behavioral and mental diversity in our species has always been what we call cultural—located in group-level differences in language, custom, habits, values, ambitions, and conceptualizations. No matter how diverse they may appear, modern Americans constitute an extraordinarily homogeneous behavioral sample of our species. Regardless of the apparent differences among Pat Buchanan, Anita Hill, and Woody Allen, all three regard a particular set of sounds as meaningful; have similar ideas about the responsibilities incurred in different social roles as parent, spouse, or employee; and have similar ideas about appropriate standards of dress, eating, and life in general. Such similarities cannot be taken for granted in the panoply of human history, and they are dwarfed by the differences between either of those two urban Americans and a Hmong, Hutu, or Apache. These cultural differences comprise the *raison d'être* of anthropology and are not in any discernible sense genetic—the 16th-century ancestors of Pat Buchanan, Anita Hill, and Woody Allen would be unable to communicate with or relate to either their descendants or each other.

Our very homogeneity often forces us to exaggerate the behavioral and mental differences among ourselves. However, the bulk of human behavioral differences, to the extent that they are group differences and therefore the product of divergent histories, are not genetic. The differences within any particular group, of course, may have diverse etiologies. So immediately, we see that the very study of “human behavioral genetics” allots to itself a tiny portion of the spectrum of human behavioral variation (Marks, 1997b).

So what is the argument about? It is about the failure to partition the diversity; to recognize structure in the variation of human mental and behavioral diversity.

Of course, urbanism, development, and telecommunications seem destined to continue to reduce such variation. The peril is that, as in earlier centuries, we will take as "natural" merely what we perceive, for we will have little with which to contrast it.

How, then, can we take seriously cross-cultural studies of beauty (which conclude that the homogeneities uncovered must be genetic), as if the different cultures constituted independent data points? What are appropriate controls on such studies? (Perhaps a question like "Have you ever heard of Marilyn Monroe?"—and if the answer is affirmative, discard the response.)

Or consider the widely cited amazing twin coincidences. The Jim twins have been studied by researchers at the University of Minnesota, under Thomas Bouchard, whose funding initially came from the Pioneer Fund, notorious for sponsoring research of a white supremacist bent (Lane, 1994). You can probably guess what the research is going to show. Separated at birth, the amazing Jim twins were given the same name, married women with the same name, divorced them, took second wives with the same name, named their sons the same, and named their dogs the same.

There you have it. Nature one, nurture zero.

But is this science? Let us think about this scientifically. There is in fact a rather small universe of explanations for the amazing Jim twins. Perhaps their similarities are just coincidental. But the very fact that it comes up in discourse about genetics (e.g., in the introduction to the recent book, *Living With Our Genes* (Hamer & Copeland, 1998) as having specifically "showed that genes not only help determine how we look, but how we act, feel, and experience life," p. 22) implies that it is not intended to be regarded as a mere coincidence. After all, how many people do you know with the same name, married to women with the same name, with the same named kids and dogs, and then it just happens they are identical twins separated at birth? That would certainly beg our credulity. No, this is newsworthy precisely because it is not intended to be interpreted that way.

Perhaps, then, it is a demonstration of the primacy of genetics in human affairs. Fortunately, I can relate that when I asked for a show of hands at the International Congress of Human Genetics in 1996 on whether the name you give your dog may be under genetic control, none went up. No sane geneticist would actually admit to that one.

Well, then, perhaps it demonstrates the psychic powers of identical twins. That is, in fact, precisely the way this story was represented in the popular media, for example, in *Newsweek* (Begley, 1987) and *U.S. News and World Report* (Lang, 1987).

Suddenly, however, we see that here the hereditarian claim to scientific status is being validated not by genetics, but by parapsychology. One would hope that behavioral genetics is on somewhat firmer footing than parapsychology; if it is not, then the field is in some epistemological difficulties. In fact, it need hardly be pointed out that the correlations on these twins' personality tests would now be useless, as it is an underlying assumption of such testing that the answers are being given independently, and that the twins are not exchanging answers psychically.

Of course the twins are not in psychic contact, nor is anyone else. The line between science and pseudoscience is just a lot fuzzier here than it is ordinarily supposed to be.

Therefore the process of elimination leaves one explanation for the amazing coincidences of the twins: There is just something wrong with the story; somebody is lying. How could this possibly happen? Well, as one of my undergraduates, who is an identical twin with no psychic powers, said to me, "I guess we'll never be on *Oprah*." If you are a twin without an amazing story, nobody is interested. The amazing twin similarities are wonderful urban legends that have often been repeated, but never validated. Who may be kidding whom is not a question I can answer. The point is that this work lies outside the realm of genetic discourse; there is no genetic science here. The astonishing twin similarities are reported and rereported but never investigated and hardly ever examined critically.

There are of course differences among the gene pools of the world's populations. Because we have virtually no information on the genetic basis of variation in normal behavior, we do not know whether or how it might vary across the human species. We must keep an open mind on that issue. At the same time, we have positive knowledge (from generations of acculturation studies) that virtually everyone is capable of being a normal participant in virtually any culture, and that consequently all known between-group variation in human behavior is the result of history and upbringing.

We also have positive knowledge that different groups of people are treated unequally and have distinctly different opportunities and expectations. These differences can, and do, have a determinative effect on people's lives.

But why one person becomes a grocery store checkout clerk and another becomes a professor is fodder for astrologers, not scientists. As long as social inequalities, historical and cultural differences, and prejudices exist, we have a host of uncontrollable variables in explaining the course of individual human lives. Our concern as citizens should be to develop a system in which talented people from any social group can become either checkout clerks or professors. Our concern as academicians should be to make sure that our fellow citizens appreciate that social barriers are principally constructs of human agency, not of nature.

## ESSENTIALISM

The final aspect of folk heredity is *essentialism*, in its most general form, ignoring diversity in pursuit of a transcendent underlying unitary form, or more commonly, pretending a transcendent form actually exists. In biology it is known as "typology." In a more specific sense, it is to identify your essence, to define you from one small part of what you do, or what you have. It is a pseudo-biological metaphor.

In its most glaring form, this would be represented by the transference of the word "homosexual" from an adjective describing an act, to a noun defining a person, and then the claim to have identified a gene for it (Hamer, Hu, Magnuson, Hu, & Pattatucci, 1993).

In a less charged but equally spurious vein, geneticists found that 54% of self-designated Hebrew priests, many of whom have the surname Cohen, had the same configuration of two genes on the Y chromosome, as opposed to only 33% of

Jews who did not think they were priests. On this basis, the study's authors inferred that this configuration was the real genetic constitution of the Jewish priestly line, inherited directly from biblical Aaron, and by implication reflecting the genetic makeup of his brother, the lawgiver himself (Skorecki et al., 1997).

Of course, people with the same last names are going to be more closely related than people with different last names, reflecting recent common shared ancestry. Anthropologists have long used the sharing of names as a noninvasive estimate of inbreeding. Given the ethnohistory of population crashes in the study population, the recency of surname use, the fictive nature of the Hebrew priesthood in the last few millennia, and the origin myth the authors took literally, it seems unlikely that the Y chromosome would be able to validate the priestly caste.

What is the fallacy? There is no experimental control. Skorecki et al. (1997) simply inferred that the most common configuration in Jews overrepresenting the name Cohen, present at 54% rather than 33%, is authentic and primordial, in the absence of information on the distribution of Y chromosome haplotypes of a sample of Horowitzes or Steinbergs. The most common form becomes the official form of the highlighted group, and all other forms become spurious.

More important, the authors of that report found themselves in the middle of an identity controversy, as people want to know authoritatively if they are "really" Hebrew priests or not (Grady, 1997). Well, as there is no temple or priesthood, nobody is a Hebrew priest. Nevertheless, these genetic data are culturally invested with authority, in spite of the shaky basis for the inference. The construction of identity is a political arena in which geneticists are uniquely unqualified to work, certainly without a great deal of reeducation.

Obviously, it is hard enough to distinguish folk ideologies about heredity from genetics when the geneticists themselves are the ones contributing to the conflation of scientific knowledge and cultural values. The effect of this is to impart the authority of science to cultural folk knowledge that is not actually validated by scientific knowledge itself. This is, however, the framework for understanding *The Bell Curve* (Herrnstein & Murray, 1994).

## MODERN FOLK HEREDITY

The stream of modern folk heredity, within which *The Bell Curve* resides, owes much of its tenacity to a seductive and brilliant formulation by the geneticist Charles Davenport (1911) and his book, *Heredity in Relation to Eugenics*.

Genes, argued Davenport, are what make the brain. The brain is the locus of the mind, and the mind is composed of thoughts. It follows, then, that bad thoughts are ultimately caused by bad genes. The power of this materialist logic is such that it can be found in editorials in the leading science journal in the United States from just a few years ago. In 1990, *Science's* editor Daniel Koshland (1990) took the bully pulpit to remind us that brains are coded by genes, and can be miscoded by genes: "[I]t is time the world recognized that the brain is an organ and that it can go wrong ... because of

hereditary defects .... [T]he irrational output of a faulty brain is like the faulty wiring of a computer" (p. 189).

A few years later, he criticized the German courts for their lack of scientific knowledge in releasing Gunther Parche, assailant of Monica Seles: "We need more understanding of diseases of the brain so that judges with an inadequate knowledge of elementary science do not release criminals who have stabbed a tennis star in the back" (Koshland, 1993, p. 635). Now, nobody is against studying the brain or studying hereditary diseases. However, the train of thought here is very dubious: The assailant had never been diagnosed as having a diseased brain, much less a constitutionally miswired one, only bad thoughts and deeds. And bad thoughts and deeds are far more likely to come from other sources than from a genetically broken brain.

What we have here is the old bait-and-switch. We would like to study minds, but they are metaphysical. Brains are physical—we can study them, but they do not express what we are interested in. But we can pretend they do—hence the fascination with cranial volume in the classical anthropological literature.

*The Bell Curve* does something very similar, expressed in its key phrase, "cognitive ability." What is cognitive ability? The book uses it in a colloquial sense; cognitive ability is some kind of innate scalar brain force. We are all born with it, and some more than others. School and standardized tests are as good a measurement as we have, and those who do well at them have more of that force than those who do not. That is why doctors earn more than cab drivers, and why they should. Q.E.D.

The academic response to *The Bell Curve* focused on the interpretation of data, as if the statement of the problem were scientifically meaningful, and thus had to be debated on scientific turf. The result is that it looked like a scientific disagreement—"you say potay-to, I say potah-to"—which gives the appearance of two legitimate scientific sides to the issue.

But there aren't. Only one legitimate scientific side exists to that discussion: We do not have the slightest idea how to measure anyone's intrinsic ability, cognitive or otherwise. We can neither affirm nor deny that people have different abilities, much less groups of people, because we do not know what the domains of human abilities are, how they vary, what they require for their development, nor what their genetic underpinnings are.

Ability is thus a metaphysical concept; it is unmeasurable and imperceptible. It can be detected only in the context of the life that has already been lived by the subject. It lies outside the domain of scientific inquiry.

What we have are performances. We can compare them between people and between groups of people, but then we must validate the measurements and comparisons with an argument bridging what we can measure and what we are interested in.

That is precisely what *The Bell Curve* failed to do, and what generations of social scientists have failed to do before it—to establish that expressed performances are reliable guides to innate abilities. The reason is that the relevant issues to this problem

are not ontological or scientific (in the common sense of the term, referring to the study of the nature of things), they are epistemological or meta-scientific (in the nature of knowledge). In studying the variation in human ability, we are beyond the limits of the domain of science.

The fallacy is not that we have positive knowledge that different people (or groups) have identical abilities. Rather, it is that we have no way to know what their abilities are, except in retrospect, after those abilities have been cultivated to some extent. This results in a basic asymmetry in the relation between performances and abilities.

The discussion of innate abilities is another example of the folk hereditary fallacy of essentialism. It defines a person, and delimits them, on the basis of a quality that is supposed to be a fundamental aspect of their nature—their essence—and yet is based on no data from the recognizably modern scientific realm of genetics.

This brings us back to *The Bell Curve* and “cognitive ability.” The fact that some people and groups perform better than others may be due to differences in ability, or it may not be. If anthropology has shown anything in the 20th century, it is that the simple observation of a consistent difference between groups of people is not a sufficient basis on which to infer that the observed difference is rooted in the constitutions of the members of those groups.

If you examine 1,000 Danes and 1,000 Nigerians, you will find a consistent difference in their skin color, which is genetic; a consistent difference in their language, which is not genetic; and a consistent difference in their body build, which we don’t know if it’s genetic or not (Marks, 1996).

Without a way to study innate potentials and how they vary in human beings, we can only speculate about them. The issues raised by *The Bell Curve*—whether consistent differences in mental testing results are due to innate differences—thus lie outside the domain of modern scientific inquiry (Marks, 1997a). It is an interesting topic for after hours in a bar, but not fodder for constructive scientific debate. There is, of course, evidence of a humanistic nature that bears on it—that historically, populations derided for their abilities in one time have performed admirably in another, with little concomitant change evident in their gene pool. And the more social variables you control, the more similar the test performances across populations become.

The issue is consequently not whether there are native abilities, but rather, whether at present we can know anything scientifically about them. In the absence of a scientific approach to human potential, though, we are left with two poles of social action: On the one hand, we can argue about the ways of optimizing performances or accomplishments among individuals and among groups. We can try to identify and cultivate diverse talents as widely as possible (by investing our resources in education, day care, and children’s enrichment programs). On the other hand, we can condemn large groups of people on the basis of their poor performance, denying their right to be judged as individuals, and denying as well the possibility of society at all benefitting from the innate gifts with which they are endowed.

Neither alternative is particularly scientific, but the first is at least humanitarian.

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## CONCLUSION: THE VALUE OF HISTORY

*The Bell Curve* of its era was a book by a wealthy New York lawyer bearing the names of two presidents, Madison Grant. It was called *The Passing of the Great Race*, and it was about the social problems of the day, the prolific poor. This was 1916, so the problem was not welfare, it was immigration, and specifically the immigration of the inferior racial stocks from southern and eastern Europe—code for Italians and Jews. Grant was preoccupied with keeping them out, and 8 years after his best-seller appeared, there was Congressional legislation in place to do just that. Ultimately its effect was to deny asylum to many who would ultimately perish in Europe in the 1940s. But what about the immigrants already here?

Grant (1916) held that America's social problems are biological in nature and linked that to a formula for alleviating them: sterilization. He wrote that it "can be applied to an ever widening circle of social discards, beginning always with the criminal, the diseased, and the insane, and extending gradually to types which may be called weaklings rather than defectives, and perhaps ultimately to worthless race types" (pp. 46–47).

First the handicapped and marginalized, and then the undesirable races. Perhaps it sounds familiar.

But you cannot call him a Nazi; in 1916 there were no Nazis. Yet his book was praised by a spectrum of politicians—from former President Theodore Roosevelt, who served with him on the board of the New York Zoological Society, to Adolf Hitler, an aspiring demagogue, who read and admired the German translation of 1925.

More important, it was reviewed in the journal *Science*, as science, and praised there as well, by a geneticist from MIT (Woods, 1918). Grant's ideas reflected mainstream folk wisdom about heredity, and geneticists of the 1920s were largely unable or unwilling to identify *The Passing of the Great Race* for the pseudoscientific bigotry it was.

In 1929, alongside Madison Grant on the Board of Directors of the American Eugenics Society, were Charles Davenport, who founded the genetics laboratory at Cold Spring Harbor, E. G. Conklin of Princeton, and C. C. Little, founder of the Jackson Laboratories in Bar Harbor. On its large advisory council, alongside the demagogues Albert E. Wiggam and Lothrop Stoddard, were the geneticists Castle and East of Harvard, Guyer of Wisconsin, Holmes of Stanford, Shull of Michigan, Herbert Walter of Brown, Frederick Adams Woods of MIT, and Horatio Hackett Newman and Sewall Wright of Chicago. When Madison Grant was a leader of the American Eugenics Society, those serving with him and under him constituted a veritable Who's Who of the American genetics community. If there were those who muttered about Grant (and some did, such as physical anthropologist Aleš Hrdlička), they posed no major opposition.

In the United States, what was lacking was the invocation of scientific authority to expose and debunk the pseudo-science. Those critiques were consequently obliged to come from nongeneticists. Thomas Hunt Morgan worked in the same building as

Franz Boas, who had been criticizing the movement publicly for over a decade, but limited his own criticisms to a few mildly sarcastic comments in articles published in the mid-1920s. Morgan, interestingly, was a notable holdout from the membership rolls of the American Eugenics Society. However, the first public criticism of the eugenics movement by a biologist was published by Raymond Pearl of Johns Hopkins in a literary magazine in 1927.

German geneticists of the 1930s and 1940s adopted the ideas of their U.S. counterparts enthusiastically. As historians are now showing (e.g., Kuhl, 1995; Paul, 1996) it is surprisingly difficult to distinguish the Nazi geneticists from the non-Nazi geneticists. Who could have known that when geneticists were agreeing that the poor and socially marginalized were not biologically good enough to reproduce, the Germans would have taken them so seriously?

This raises a good question: What is an adequate response to that recognition? "Whoops?" "Hey, we didn't say to kill them, we only said to sterilize them?"

The reason for bringing up the eugenics movement is not to bash the scientific study of heredity, but to analyze it and learn from our mistakes. It would be unfair to judge the scientists of another era with our hindsight, but we may acknowledge a debt accrued by their descendants, payable in the recognition of a responsibility. The key feature is this: Genetics was corrupted in the 1920s by the confusion of folk knowledge with scientific inference. For whatever reasons, outsiders who recognized it were shunned, and insiders were, as they say, a day late and a dollar short. The fairly obvious lesson to be learned is that where science appears to validate folk beliefs, it needs to be subjected to considerably higher standards of scrutiny than ordinary science.

On the other hand, when information about human heredity is at issue, who else can we rely on? In spite of its interest conflict, it is the responsibility specifically of the genetics community to distinguish for the rest of us between folk heredity and scientific knowledge in this area. Unfortunately, it is not part of the training of geneticists generally to deal with this. Geneticists are trained to carry out science, to utilize technology, but not to reflect on the political prejudices intruding into a previous generation's science, much less into their own. That burden is currently being borne by 5% of the Human Genome Project's budget, allocated for Ethical, Legal, and Social Implications of human genome research and whose very establishment is a great credit to the HGP's first director, James Watson.

What ELSI has to say about *The Bell Curve* is significant: "Neither Herrnstein nor Murray are geneticists nor have they carried out studies themselves on the genetic basis of behavior . . . [W]e deplore *The Bell Curve*'s misrepresentation of the state of genetic knowledge in this area and the misuse of genetics to inform social policy" (Andrews & Nelkin, 1996, pp. 13–14).

In other words, they crucially identify the book properly for occupying a locus outside the scientific study of heredity. Geneticists did not make that observation in the days of Madison Grant, until it was too late. It is nice to know that progress is being made, but it has to be more widely disseminated, both within the genetics community and the scientific community at large.

Applied to human issues, genetics becomes a humanistic and social science, and it has a poor track record. The first generation of modern human geneticists failed to appreciate the fundamental civil liberties and human rights we take for granted now. If the postmodern world is a better place now, it is unfortunately in spite of, not because of, the genetics and geneticists of that era.

The challenge for scientists of this era is to unharness folk heredity from the science of genetics, to repudiate and resist exploiting the popular prejudices about heredity. That requires a bit of rethinking about science education, and works like *The Bell Curve* regularly make that necessary.

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