

21A.240
Race and Science
Spring 2004 MIT

PART 1:
THE ALCHEMY OF RACE: MAKING AND UNMAKING SCIENTIFIC RACISM
Lecture 7. March 18

PAPER # 1 DUE

From Population to Genome: Race after World War Two

We'll be talking about the evaporation of typological race categories in evolutionary and population biology and in anthropology after World War II — and particularly thinking about how this evaporation becomes manifest in the UNESCO statements about race which we've already heard so much about. We've already gotten glimpses of this move — in our readings of Kevles and Proctor — from seeing RACE as a typological category — enabling ranking and so forth — to seeing RACE as an illusory concept based on misapprehensions of the proper object of evolutionary inquiry: the POPULATION, characterized by shifting gene frequencies.

The shift from POPULATION thinking to GENOMIC thinking.

To summarize and anticipate: we want to look today at the shift from RACE to POPULATION to GENOME in scientific discourses about human biological unity and diversity. We're also going to be concerned with continuities between these categories — and particularly with whether typological race categories actually do go away through these shifts. I think we'll find that they don't entirely. But I think we'll also see some NEW WAYS in which RACE gets articulated.

It's useful to have the typology that Haraway provides us in mind as we go:

RACE, POPULATION, GENOME
(eugenics/population genetics/molecular genetics)

Haraway, Donna. 1994. Universal Donors in a Vampire Culture, Or It's All in the Family: Biological Kinship Categories in the Twentieth-Century United States. In *Uncommon Ground: Toward Reinventing Nature*. William Cronon, ed. New York: Norton, pp. 321-366.

RACE

on RACE as an organizing principle: we've really gone over this category and its various instantiations with a fine-toothed comb. And we've seen a bit of POPULATION thinking, too. But POPULATION is where I want to begin. The UNESCO statements are a good starting point. Look at Provine and Montagu to help us along:

summarizing the shift from TYPOLOGICAL RACE thinking to POPULATION thinking:

Montagu: "such differences as exist between different groups of mankind are due to the operation of evolutionary factors of differentiation such as

isolation, the drift and random fixation of the material particles which control heredity (the genes), changes in the structure of these particles, hybridization and natural selection"

"from the biological standpoint, the species *Homo sapiens* is made up of a number of populations, each one of which differs from the others in the frequency of one or more genes ... a race from the biological standpoint, may therefore be defined as one of the group of populations constituting the species *Homo sapiens*"

"The term 'race' designates a group or population characterized by some concentrations, relative as to frequency and distribution, of hereditary particles (genes) or physical characters, which appear, fluctuate, and often disappear in the course of time by reason of geographic and/or cultural isolation. The varying manifestations of these traits in different populations are perceived in different ways by each group"

so WHAT IS RACE now?

a population that differs from others with respect to gene frequencies.

note that differences are:

IMPERMANENT and SUBJECTIVE (relative to the categories chosen [since focus on different gene frequencies/populations would result in different groups]). Kind of confusing since the statement seems to simultaneously point to "real" groups at the same time that it emphasizes relativity of measure.

compare Boas? RACE exists and does not at the same time.

the focus is now shifted to what humans have IN COMMON:

"the one trait which above all others has been at a premium in the evolution of men's mental characters has been educability, plasticity. It is indeed a species characteristic of *Homo sapiens*"

differences between 1950 and 1952 statements? 1950 had cooperation in it and mental equality. 1952 dropped cooperation and remained agnostic on mental traits.

difference between race and population thinking: "Rather than phylogenies and types, it was processes and populations — constructed out of gene flow, migration, isolation, mutation, and selection — which were to be the privileged scientific objects of knowledge" (p. 202)

It was this view, this focus on what humans had in common, which shifted the research agenda of physical anthropology from typological questions, to questions of adaptation.

the search for a common human adaptational complex in early humans: the sharing way of life, hunting, bipedalism, brain growth. As Haraway points out, even as ideas about race were muted, the search for the common human adaptational complex remained grounded in traditional ideas about sex role. Hence, Man the Hunter (recall Darwin on sexual selection!)

DID RACE GO AWAY? Why not? Is POPULATION inconsistent with RACE?

Clearly not; even in the 1950 statement we see the same old Mongolian, Caucasian, Negroid categories, though these are now declared temporary, impermanent (begging the question of whether they are originary, I think. Polygenist commitments were to be disavowed when if you could still use the same categories and claim they were "plastic"). Hooton and Coon held on to race

THE PLACE OF GENES

So, GENES take on a new visibility here, though ostensibly not as essences. Any account about human unity and diversity now must get constructed around the adaptational histories that would lead to the temporary fixing of new genetic complexes of traits.

Interlude on sociobiology...

GENOMICS

Haraway argues that we are moving into a NEW REGIME of REPRESENTATION OF UNITY AND DIVERSITY IN HUMAN (and other) BIOLOGY: GENOMICS

She argues that GENOMICS has a different logic than that of POPULATION. Can someone explain what she means?

First what is a genome?

Full complement of genes that code for proteins in chromosomes.

What is a gene?

chromosomes made of DNA made of codons that code for amino acids, which make proteins. Gene maps are supposed to locate segments of the genome that code for stuff like hemoglobin. Gene sequences are lists of the nucleotides (bases: purines and pyrimidines) that make up a gene.

Haraway writes that "If universal humanity was plastic under the sign of the population at mid-century, then human nature is best described as virtual at present" (p. 348). *Why is this?* Well, because, as she puts it, "human nature is embodied, literally, in an odd thing called a genetic database" (p. 348).

We think about genes through databases: "something peculiar happened to the stable, family-loving. Mendelian gene when it passed into a database, where it has more in common with LANDSAT photographs, Geographical Information systems, international seed banks, and the World Bank than with T.H. Morgan's fruit flies at Columbia University in the 1910s or UNESCO's populations in the 1950s" (p. 349).

material instantiations of genomes: in a body, "in yeast artificial chromosomes or bacterial plasmids, which can hold and transfer cloned genes. The entire genome of an organism might be held in a library of such artifactual biochemical information structures" (p. 351)

In this practice, "Embodied information with a complex time structure is reduced to a linear code in an archive outside time" So what?

What are implications for thinking about human diversity and unity?

She writes: "the genome projects produce entities of a different ontological kind than flesh-and-blood organisms, "natural races" or any other sort of normal organic being" They produce DATABASES

and "genetic engineering is not eugenics" (because, for one thing, its not about heredity and birth)

Might be good to use EXAMPLES to figure out what she means. HGDP, Guaymi, Iceland, SNiPs on chips.

1. Human Genome Diversity Project: the result of population geneticists' critique of molecular geneticists' grasp of how variation is distributed across human populations
2. Guaymi case — is this about "race"? don't need "race," even as project may be racializing.
3. Iceland case: a private company was able to obtain the rights to a comprehensive genetic database of Iceland's population. So, the genetic database is privately owned. Iceland was thought to be relatively homogeneous (but Vikings!)

Duster, Troy. 2001. The Sociology of Science and the Revolution in Molecular Biology. In *The Blackwell Companion to Sociology*. Judith R. Blau, ed. Malden, MA.: Blackwell Publishers Limited, pp. 213-226.

SNiPs on chips.

DUSTER argues that in the age of genomics, we are seeing the reconstruction of race as a biological/genetic category, though this time not through appeals heredity or lineage. Race is being biologized/geneticised in new ways. He centers his argument on this technology called SNiPs on chips. What are those?

SNiPs are single nucleotide polymorphisms — sites where people's genomes differ from one another by a single nucleotide substitution (sickle-cell is an example).

If you're interested in seeing whether a complex of SNiPs is connected to something like heart disease, you'll want to look at a number of SNiPs at once. This is where SNiPs on chips come in. What are those?

DNA chips. Different bits of DNA are affixed to a chip and then compared to a sample of DNA for a particular person (complementary base pairing). You can put together different DNA chips to look for sets of different SNiPs. SNiP profiles.

Duster argues that this is already being used in line with social categories of race and reinscribing them, though in new ways. How? (begins on p. 16, "Molecular genetics and the new conflation of race and forensics")

"It is possible to make arbitrary groupings of populations (geographic, linguistic, self-identified by faith, identified by others by physiognomy) and STILL find statistically significant allelic variations between those groupings"

"when researchers claim to be able to assign people to groups based on allele frequency at a certain number of loci, they have chosen loci that show differences between the groups they are trying to distinguish"

so WHAT DOES THIS MEAN FOR "RACE"?

Go back to the Bowker and Star: Prototypical racial categories (which can be different for the FBI, for Scotland yard, etc.) are being used to divide up a group of people; these categories are then fed into questions about which genetic loci can help make the distinction; this DNA distinction is then used to identify people according to that prototypical category, which at that moment is conflated (perhaps) with an essential category — and perhaps the assumption that the racial category is real, based in lineage, etc. But it doesn't need to be so based in order to be recognizable.

So, here we're getting the potential for a reconstruction of RACE (according to social categories) in a biogenetic idiom that doesn't explicitly appeal to lineage of heredity (since there are many reasons and histories that could account for the presence of SNiPs and heredity and lineage are not always the most parsimonious).

So, it's circular. Race becomes a self-fulfilling prophesy, with one powerful scientific account flattened into the technology of the chip. So, ideas about humours, bloodlines, germ plasms, crania don't need to be in place for racial and racist categories to be re-biologized in the age of genomics! Discussion?