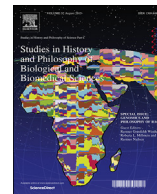




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Thinking about populations and races in time



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ABSTRACT

Biologists and philosophers have offered differing concepts of *biological race*. That is, they have offered different candidates for what a biological correlate of race might be; for example, races might be sub-species, clades, lineages, ecotypes, or genetic clusters. One thing that is striking about each of these proposals is that they all depend on a concept of *population*. Indeed, some authors have explicitly characterized races in terms of populations. However, including the concept of population into concepts of race raises three puzzles, all having to do with *time*. In this paper, I extend the causal interactionist population concept (CIPC) by introducing some simple assumptions about how to understand populations through time. These assumptions help to shed light on the three puzzles, and in the process show that if we want to understand races in terms of populations, we will need to revise our concept(s) of race.

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1. Introduction

Are biological races a legitimate biological category in *Homo sapiens*? To answer this question, biologists and philosophers have had to characterize “biological race.”¹ Such characterizations differ, but notably, the concept of *population* plays a central role in many of them. For example:

- *Races as genetically different*—“A geneticist can define races as *populations* that differ from each other in the frequencies of certain genes” (Dobzhansky, 1941, 162; emphasis added).
- *Races as subspecies*—a race is “a geographically localized subdivision of the species, which differs genetically and taxonomically from other subdivisions of the species [and is]... composed of a number of genetically distinct *populations* (Mayr, 1942, 106; emphasis added).

- *Races as lineages*—a race is “a distinct evolutionary lineage within a species” (Templeton, 1998, 632), but “recurrent genetic interchange among Old World human *populations*” would mean that human races do not exist (Templeton, 1998, 636; emphasis added).
- *Races as clades*—“races are ancestor-descendant sequences of breeding *populations*, or groups of such sequences, that share a common origin” (Andreasen, 1998, 200; emphasis added).
- *Races as ecotypes*—races are “local *populations* adapted to particular environments” (Pigliucci & Kaplan, 2003, 1161; emphasis added).
- *Races as populations*—‘race’, in its current U.S. meaning, is a proper name for a particular set of human *populations* (Spencer, 2014a).
- *Races as population groups*—a race is a group of *populations* that exhibits a distinctive pattern of genetically transmitted phenotypic characters that corresponds to the group’s geographical ancestry and belongs to a biological line of descent initiated by a geographically separated and reproductively isolated founding population (Hardimon, manuscript).

In this paper, I will neither take a stand on which biological race concept, if any, is viable, nor discuss the question of whether, given a defensible concept (or concepts) of race, races exist in *H. sapiens*.

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¹ By specifying *biological* race concepts, I mean to distinguish biological concepts from “commonsense” or “social” concepts of race. This is not to say that the biological concepts are somehow asocial, but rather that such concepts have specifically sought to identify a biological correlate for race.

Rather, I examine three puzzles that result from including a population concept in a race concept:

1. *Population membership at a time*: Can a person be a member of more than one population at a time, as we would say that a person can be a member of more than one race?
2. *Forward-looking vs. backward-looking concepts*: Is “race” a “backward-looking” concept (i.e., looking to the past), and is “population” a “forward-looking” concept (i.e., looking to the future)? If so, have confusions been introduced by characterizing “race” in terms of “population”?
3. *Status of genetic clusters*: Can genetic clusters (see, e.g., Rosenberg et al. 2002, 2005), the result of interactions from different points in the past, be understood as delineations of populations or races or both?

Note that all three puzzles involve *time*. Among race scholars, Lisa Gannett has usefully drawn attention to the importance of time in thinking about races and populations; I thus use her work as a springboard. She argues that thinking about time supports the view that there are multiple legitimate concepts of “population,” depending on research context (Gannett, 2003). For example, one researcher might wish to predict the future composition of a particular population’s gene pool, given the population’s current size, genetic composition, breeding structure, and rates of mutation and migration. Such a researcher, Gannett suggests, would use a forward-looking population concept, relying on breeding units to delineate the population; the organisms that are interbreeding will determine the future gene pool, regardless of their past origin(s). Another researcher might want to compare adaptive differences among the same organisms—organisms, let us suppose, that have origins in different environments. Such a researcher, Gannett suggests, would use a backward-looking population concept, relying on ancestral relations to delineate the population; the researcher would not want to lump together in the same population organisms that had undergone different selection processes, even if they were now interbreeding. Thus, on Gannett’s account, there are at least two different population concepts that a researcher might use, depending on the research question she was seeking to answer, one forward looking (using interbreeding as a criterion) and one backward looking (using ancestral relations as a criterion).²

In a paper on the use of race in pharmacogenetics research, Gannett further states:

Genetic clustering tells us *something* about the ways in which individual genomes have been shaped by past, even long past, reproductive choices and environments. But what is it to say, further, that these genetic clusters themselves represent biological groups whose component individuals share “genetic ancestry” or a common “ancestral geographical origin”? Which ancestors (matrilineal, patrilineal, *recent*, *remote*)? Which geographical locations (country, city, village, riverbank, valley, continent, island)? Research context determines the geographical scale or *historical period of interest* (2005, 1237–8; emphasis added).

Here, Gannett seems to be suggesting that there is no privileged point in time (and no privileged place) that would univocally determine a person’s “race.”

Contrary to Gannett’s pluralism about populations, Millstein (2009, 2010a) defends a monist population concept: the causal

interactionist population concept (CIPC).³ In what follows, I extend (and slightly modify) the CIPC in order to show more explicitly how it incorporates time, using some relatively simple assumptions about how to understand populations through time. In light of this elaboration, I agree with Gannett that there is no privileged point in time that would univocally constitute a person’s “race,” but disagree with her claim that looking-forward and looking-backward require different concepts of population. I then seek to shed light on the three puzzles I outlined above.

A note before proceeding: The authors cited above do not generally specify what they mean by “population.” Or they default to population genetics’ definitions of the term, which are themselves not clear and whose ambiguity raises various problems (Millstein, 2009).⁴ This ambiguity necessitates the use of an articulated and defended conception of “population”; thus, I use the concept that I have previously defended, the CIPC. I suspect that it would be possible to make similar points with an alternate concept of population (e.g., the population-as-deme concept discussed in Millstein, 2014), but I have not fully explored that possibility, and I do not explore it here.

2. Incorporating time into the causal interactionist population concept (CIPC)

I begin by outlining the basic elements of the CIPC (see Millstein, 2010a for further details). According to the CIPC, in ecological and evolutionary contexts⁵ populations consist of at least two conspecific organisms who, over the course of a generation, are *actually* engaged in survival or reproductive interactions, or both. Reproductive interactions include both unsuccessful and successful matings (interbreeding), as well as offspring rearing. Survival interactions are almost as broad as Darwin’s “struggle for existence,” including competition for limited resources as well as cooperation. Social interactions are not a separate category, but may fall into either or both of the other two categories; social interactions that do not affect survival or reproduction are not relevant evolutionarily or ecologically.

The CIPC further specifies that the boundaries of the population are the largest grouping where the rates of interaction⁶ are much higher within the grouping than outside. Thus, organisms located in the same spatial area (including recent migrants) are part of the population if and only if they are interacting with other conspecifics. If a later grouping is causally connected by survival and/or reproductive interactions to an earlier grouping, then it is the same population, although fusing, splitting, and budding are in this essay

³ However, it is a defeasible monism (Millstein, 2010b). Note that I will simply presume the CIPC here; see Millstein (2009, 2010a, 2010b, 2014) for a defense. I recognize that the CIPC does not capture all biologists’ utterances of the term “population” in ecological and evolutionary contexts, but it avoids difficulties encountered by other population concepts, e.g., difficulties with describing and predicting evolutionary dynamics. See Barker & Velasco (2013) and Stegenga (2014) for more recent defenses of population pluralism, discussion of which would take me afield from the arguments of this paper.

⁴ See also Kaplan, Pigliucci, Banta (2015) for discussion of a race debate where problems are caused by a failure to offer a defensible way of recognizing biologically meaningful populations.

⁵ That is, the CIPC makes no claims about the concept of population in other domains, where it will likely differ at least in some if not many respects. My implicit claim here is that the proposed biological notions of race arise in ecological and evolutionary contexts, a claim that I take to be uncontroversial.

⁶ Jim Griesemer has suggested to me that the *strengths* of interactions, and not just their rates, might be important for the constitution of a population (consider, for example, a rare reproductive event that nonetheless contributes new and important alleles to the population). This is a topic worthy of further consideration; I find the suggestion appealing, although I worry about how one would measure relative strengths.

² Baum (1998) makes similar claims with respect to species concepts, distinguishing between a forward-looking *interbreeding species concept* and a backward-looking *genealogical species concept*.

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