2009

Genographic Reflections: A Course Based Experiment

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I sincerely thank him and his class at DePaul University in Chicago for sharing their critical insights and analysis of the “race” concept through an experience with unpacking ancestral DNA in the classroom. I invite you to be a part of this dialogue in future issues of the Newsletter.

In closing, I have to admit that it is intriguing to follow one’s ancestral path over the past 60,000+ years, but as is noted below, perhaps it is learning about our lack of genetic differences that is just as important. In a future follow-up article I will report on additional critiques that include positions of groups like the American Society of Human Genetics, and the tracking of my own ancestral genealogy or “Why my great-grandmother was not a Cherokee Princess” (as far as I know).

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**Genographic Reflections: A Course-Based Experiment**

I have been using the National Geographic Genographic Project (NGGP) as part of a lab for my anthropology course “Anthropology of Race and Gender” at DePaul University in Chicago. I am a socio-cultural anthropologist by training and have been asked by my Department of Anthropology to teach this course because of my interest in the subject and my research in medical anthropology. This is a ten-week course (we are on the quarter system) required for anthropology majors and minors. Most students are already in their junior year and have a foundation in cultural anthropology and archaeology. Many also have taken courses that explore the concept of race as a socio-cultural construct, but none have examined the idea of racial ancestry from a biological or biocultural perspective.

During the first week of class I introduce the NGGS lab to the students and explain that this is an opportunity to take part in a genetic test used to identify the maternal (mitochondrial DNA) or paternal (Y Chromosome) lineage of individuals. I use the NGGP website to explain the science of ancestry testing and the kind of results it provides (https://genographic.nationalgeographic.com/genographic/index.html).

Students are intrigued by the prospect of participating in a DNA analysis and during our class discussions students express their belief that this sort of test will “help me to better understand who I am.” One common assumption that students make is that members of their haplogroup (the term used to distinguish a population of individuals with similar ancestral DNA markers) will look alike and have family from the same part of the world.

Participation in the NGGP is strictly voluntary. This year, 15 people out of a class of 35 volunteered. The teaching assistant and I also participated. Our department paid for half of the cost to conduct the test and students were responsible for the other half (the total cost per Participation Kit was $99.95 plus shipping and handling). Nearly all of the students wanted to participate, but only about half felt that it was worth the cost. Students were presented with consent forms provided by the NGGP. I explained to volunteers that their results would be shared with the class as part of a larger project. Students who did not volunteer would have access to the results. All students were expected to produce an essay on the findings evaluating the merits of ancestral testing. The test takes approximately seven weeks to process (which is cutting it close for a ten-week course). During that time we cover topics such as the
anthropology of race, DNA and inheritance, modern evolutionary theory, and human origins and the Out of Africa theory. Students read two books, a physical anthropology textbook by Jurmain, Kilgore & Trevathan and Gould’s Mismeasure of Man. In addition they read and discuss several articles, including the debate on “Should Scientists Study Race and IQ” in the February 12, 2009 “Darwin 200” special issue of Nature, and two articles directly relevant to the NGGP because they examine the cultural implications of ancestry testing. The class readings helped inform students about the science behind the NGGP, the problems of studying race, and offered some perspective on how to understand their DNA ancestry results.

As the quarter progressed, students who volunteered began to understand that their initial assumptions about ancestral testing were inaccurate. Through class discussions, students identified several inaccurate assumptions:

- Race is a valid biological category.
- Race is inherited and passed to future generations.
- Racial ancestry can be measured and the results of DNA testing can identify distinct racial groups.
- NGGP results represent their primary racial ancestry.

Once the tests were completed and posted to the NGGP website, students retrieved their results on their own. The lab took place over two class periods. During the first class, students shared their results with the class and discussed their initial impressions. The discussion revealed several common confusions. First, the website talked about ancestry in terms of haplogroups rather than racial categories (i.e., African, European, Asian, Native American). Students tried to ‘translate’ their maternal or paternal haplotype into an accepted racial category, but discovered this did not always work. Students whom they phenotypically viewed as belonging to different racial groups sometimes shared the same haplogroup. Based on prior discussions about biocultural adaptations (e.g., the sickle cell trait and malaria), students assumed that haplogroups possessed distinct biological differences because they were associated with different ecological regions and subsistence strategies. Second, while students appreciated the NGGP’s explanation of the global migration of humans, they were confused about the emergence of different haplogroups. The information is presented in a manner that can be mistaken for an evolutionary sequence. The class, who was now well versed in dangers of evolutionary determinist thinking, critiqued the presentation of the haplogroups. They agreed that the NGGP made the L haplogroup, the oldest human haplogroup, appear to be the most primitive, while the H haplogroup, originating thousands of years later in the region of Europe, appear to be a more modern or recently evolved group of humans.

The second class was dedicated to a discussion based on two essays they prepared. The first essay asked students to explain why race is not a valid biological category in layman’s terms. I specifically asked for a non-technical piece because I felt that it would prepare them to discuss race with others who have not taken this class. In their essays, most students drew on the NGGP test to demonstrate that one’s “racial ancestry” depends on which point in the past one is referring to. In their responses they highlighted that the history of modern humans is relatively short compared to other species, humans are highly mobile, use primarily culture rather than biology to adapt, and are not reproductively isolated.

The second essay question asked students to critique Ancestral DNA Testing and explain why they think it has become popular. Their responses clearly identified all of the incorrect assumptions they initially made about ancestry testing providing a definitive and scientific answer to the question, “who am I?”
They realized that ancestry testing actually tells them very little about who they are with any certainty and is only useful for the study of population movements, not the specific ancestry of an individual. They also explained that this sort of test appealed to them at first because of the “scientific look and feel of it.” They were referring to sampling cheek cells and putting their DNA sample into sterile test tubes. Taking a cheek swab sample, viewing online videos of DNA analysis, and seeing the high-resolution report reinforced the belief that what they were receiving was a scientifically valid product (This is not to criticize the scientific procedures of the NGGP, I am only referring to the experiences and perceptions of students). Students compared ancestry testing to other kinds of DNA tests, such as medical DNA profiling, using advanced technology to better understand the “past and the future of us all.” Additionally, many students described how being a part of the NGGP project made them feel like modern/ scientifically progressive people who were using advanced technology to once and for all answer confusing and sometimes uncomfortable questions about identity.

Overall, the NGGP Ancestral DNA test was an excellent tool to create a positive learning experience for an anthropology course. It wasn’t just the NGGP results, but more so the critique of the results and realizing that their initial assumptions were based more on science fiction than fact that provided the positive learning experience. The exercise provided students with a good example about how easily even a well-informed public can misinterpret ancestral testing because of their cultural desire to reinforce racial distinctions through modern science. It demonstrates to students that the science of race is actually self-defeating because it does a better job of demonstrating there are fewer differences than there are similarities between humans. It also further problematizes the concept of race from a biological standpoint and forces students to engage with the concept in more productive social, cultural and historical ways.

Fortunately, none of the students felt “tricked” or “ripped off” when I asked them if they regretted taking the test. They felt that the process actually reduced their interest in their genetic ancestry and relying on DNA technology to answer the questions, “who am I and where do I come from?” However, they felt they were able to better articulate and appreciate arguments against the biological concept of race and the idea that racial groups vary in terms of IQ or other variables. They agreed that organizations like National Geographic, who they felt represented legitimate scientific pursuits, were capitalizing on contemporary interest/fascination with DNA tests. Some students argued that the NGGP didn’t go far enough to make clear the limits of the test, but “left the interpretation of the results as they pertain to us up to our own imaginations.” They pointed out that this raised ethical questions with them as consumers of this knowledge since they placed so much trust into National Geographic and these details were overshadowed by the website’s allure to “Discover YOUR deep ancestry…”

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