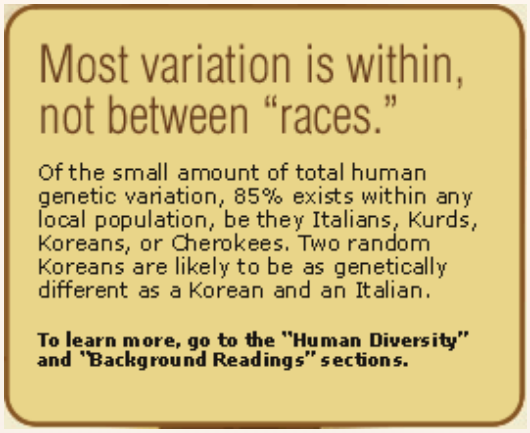
Evo and Proud

Peter Frost's anthropology blog, with special reference to sexual selection and the evolution of skin, hair, and eye pigmentation

SATURDAY, NOVEMBER 5, 2011

Apples, oranges, and genes



Publicly funded misinformation. Source: **PBS website**

In human genetics, a 'population' is a group of individuals who share ancestry and hence genes. This sharing is not absolute. There is always some gene flow from outside, and sometimes "outside" means another species. We humans, for example, have received genes not only from Neanderthals and Denisovans but also from … viruses.

In addition, new gene variants are constantly arising through mutation. Most of them are harmful or useless. But some are useful and will thus spread through the population.

So below the species level, and often even at the species level, population boundaries tend to be fuzzy. Genes vary both between and within populations.

You've undoubtedly heard that there is much more genetic variation within human populations than between them, this being true even for the large continental populations we used to call 'races.' This was the finding of the geneticist Richard Lewontin (1972), and others have concluded likewise. You've probably not heard, however, that the same kind of genetic overlap exists between many sibling species that are nonetheless distinct in anatomy and behavior (Frost, 2011).

How come? First, keep in mind that genes vary a lot in adaptive value. Some are little more than 'junk DNA.' Others code for structural proteins that form the building blocks of flesh and blood. Others still are very important because they code for regulatory proteins that control how other genes behave and, hence, the way an organism grows and develops. The last kind of gene accounts for only a tiny fraction of the genome. Most genes have modest effects, or none at all.

Second, keep in mind that different populations occupy different environments and are thus exposed to differences in natural selection. In most species, these differences are due to physical environments that differ in climate, vegetation, and wildlife. Humans also have to adapt to cultural environments that differ in social structure, belief systems, and technology.

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https://twitter.com/frost61h (click on image)

L'homme n'est ni ange ni bête, et le malheur veut que qui veut faire l'ange fait la bête — Pascal

Welcome to my blog! For the most part, this page will be an extension of my website, with comments relating to my research. But it will also branch out into more general discussions of human evolution.

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In either case, when a gene varies between two populations the cause is probably a difference in natural selection, since the population boundary also separates different selection pressures. Conversely, when a gene varies within a population this variation is less likely to have adaptive significance. It hasn't been flattened out by the steamroller of similar selection pressures.

This is one aspect of "Lewontin's fallacy." Within-population variation isn't comparable to between-population variation. It's like comparing apples and oranges.

Another aspect of Lewontin's fallacy is that natural selection within a population exercises a leveling effect only on phenotypes, and not on genotypes. If two gene variants have a similar phenotypic effect, natural selection will take longer to replace one with the other. Sometimes, this sort of diversity will persist indefinitely because epidemics often spare individuals whose surface proteins are somewhat different from those of their neighbors.

Thus, within-population variation tends to consist of different gene variants at different loci whose effects nonetheless point in the same general direction. To some degree, these variants can stand in for each other. If one is absent, another one might do the trick. This is probably why population differences are more sharply defined if several gene loci are compared simultaneously. If we chart how each gene varies geographically and then superimpose these maps on top of each other, the resulting composite map will show population differences in sharper relief (Edwards, 2003; Mitton, 1977; Mitton, 1978; Sesardic, 2010).

This point has been made by Emmanuel Milot, the principal author of the paper I reviewed in my last post. His research team found that the time between marriage and first birth steadily shrank among succeeding generations of French Canadians on Île aux Coudres (Milot et al., 2011). In the land-rich environment of the New World, there was strong selection for married women to get pregnant faster. A genetic difference has thus developed between French Canadians and the French who remained in France.

But this difference is not due to a few genes. As Milot points out, natural selection tends to produce effects at many different genes:

> "We should not think that there are genes that code specifically for age at first reproduction. In fact, this type of trait is probably influenced by hundreds, even thousands, of genes. These genes act on other characteristics, like body weight at birth, age at first menstruation, or even personality traits, which impact on age at first birth" (Bourdon, 2011)

This point is important. If two populations differ at one gene, and if the difference is sensitive to natural selection, they probably also differ at many other genes. The same selection pressure that caused one difference has almost certainly caused others. Typically, we see only the tip of the iceberg —a gene variant that produces an obvious effect in affected individuals, such as illness. Most gene variants, however, don't cause medically recognized illnesses, and their effects also tend to be subtler.

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Mon amour, Irina

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About Me

Peter Frost

Anthropologist. I've published mainly on sexual dimorphism in human skin color and on the

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Posted by **Peter Frost** at **4:13 PM**
Labels: **genetics**, **natural selection**, **population**, **Richard Lewontin**

11 comments:

Anonymous said...

Your explanation of Lewontin's Fallacy suggests that the "PBS position" represents a giant step backward in relation to the scientific understanding of racial difference that prevailed, say, in the 1870s, when Charles Darwin published "The Descent of Man," where he quite matter-of-factly considers the "arguments for classing the races of man as distinct species," and finds quite a number of reasonable ones.

In fact, the science of genetics is being misconstrued for political purposes in order to propound an understanding of racial difference that is probably considerably less scientifically accurate than the common sense belief in racial difference that prevailed all over the world for thousands of years.

According to that universal and common sense point of view, black Africans are more related to one another than they are to Koreans.

That statement, however, is heresy in today's political climate, where schoolchildren are brainwashed to believe that they're just as closely related to people whose ancestors grew up on different continents as they are to their own families.

What is the purpose of all of this brainwashing?

Apparently, to persuade Caucasians to accept their own disappearance from the earth as an utterly insignificant event.

November 6, 2011 at 4:13:00 AM EST
Sean said...

Childbirth was dangerous so women might be selected for an optimistic attitude. In men optimism would be also be

evolutionary origin of European hair and eye colors.

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selected for when and where there were good opportunities for expansion. I have read several times of the can-do attitude of North Americans compared to European.

November 6, 2011 at 4:00:00 PM EST
Kiwiguy said...

Unbelievable that PBS still have that on their website. I actually complained to PBS a few years ago about the misleading documentary 'Race the Power of an Illusion'. I received a prompt response from the executive producer Larry Adelman. He provided an attachment which provided a more detailed explanation and he also queried why I was concerned about the existence of races.

Channel 4 in the UK had a similar misinformation campaign a couple of years ago which included an article by Jonathan Marks. To their credit they at least allowed comments on their webpage, so I was able to point out they were relying on the Lewontin Fallacy and my comment received a number of 'likes'.

November 6, 2011 at 11:03:00 PM EST
Anonymous said...

Jonathon Marks...Larry Adelman, Hmmmmmm- Lewontin, Hmmmmm

November 7, 2011 at 3:30:00 AM EST
Ben10 said...

True, of course, and we talked a lot about that. 'Race' has no biological meanings with a precise, quantitative definition. However, 'subspecies' has. If 'race' is a term used to define human 'subspecies' then a quantitative evaluation confirm that yes, human ethnic groups qualify to be sub-species, at least for John Goodrum:
http://www.goodrumj.com/RFaqHTML.html
The numbers are the numbers, but we can still decide to change the threshold for human subspeciesness, but to the absurd cost of ignoring obvious differences in other species. Although that could be funny: if a Tiger IS actually a Lion, there is no need to worry about the endangered 'lions' in Asia, because there are plenty of them in Africa, same about the 'Polar bears' who lives in the Rocky Mountains, or the Grizzlies of the polar circle.

But what is the point, for some 'scientists' to ignore the numbers?
Well, consider a parasitic species, such as the Cuckcoo bird. Obviously the baby cuckoo has no interest being recognised as a foreign species by its hosts. If he could, the cuckcoo would deny any racial differences,insisting that there is no such thing as a parasit or a host. Apparently the host birds believe this, but does the Cuckoo, even the 'scientist cuckcoo', really believe he is a Magpie? here i quote last anonymous:'hmmmmmmmmm'

November 7, 2011 at 11:51:00 AM EST
Henry Harpending said...

Notice also that there is a subtle sleight-of-mind in the formulations of Lewontin's 'finding' (It was published previously by Luca Cavalli). Given that 15% of the diversity is among groups and 85% within, we are diploids so of the 85% half is between individuals and half is between alleles within people. Having said this, it is absolutely right that this is comparing apples and oranges.

Henry Harpending

November 8, 2011 at 11:14:00 AM EST
Peter Frost said...

Anon,

In the late 1980s I was an antiracist activist and even sat on the board of directors of an antiracist organization. At the time it seemed to be the moral thing to do, and I suspect many feel the same today. Keep in mind that some people change more slowly than others, and some never change at all.

I left the movement because I felt it was moving away from the Left and defense of the working class. Today, that process is pretty well complete. Knowingly or unknowingly, antiracists have become little more than apologists for globalism. They even get much of their funding from corporate donors (who wish to justify their outsourcing and insourcing of employment).

Not long before I left, we received a poster for distribution. It showed a white man yelling "You're stealing my job" at a dark-skinned person. What struck me was the way the two were portrayed. The white man had a bald head, a hideous face, and a huge beer belly. He was also dressed in overalls, presumably to show he was a manual laborer. In contrast, the dark-skinned man was neatly dressed and normal in appearance.

On seeing that poster, I shuddered. It was the sort of hateful caricature that once had been the stock in trade of racists.

There seems to have been a strange role reversal. What the racists once were, the "antiracists" have become. What the antiracists once were, the "racists" have become. I'm talking here about the willingness to use rational argument, as opposed to invective and propaganda.

When I mention my misgivings to antiracists, I usually get a blank stare. Or they'll say I'm making a big deal over nothing. Or they'll say that a wrong done for a good cause is not like a wrong done for a bad cause.

Ben10,

It's not that simple. Most people don't think deeply about what they believe. They believe whatever is normal for their social milieu. Undoubtedly, certain beliefs will thrive in certain milieus and perish in others. But most people don't ask themselves why their milieu has become oriented toward certain beliefs.

Henry,

Yes, a lot of within-group variation is actually within-individual variation. But let's suppose we factor out the latter. Can we still legitimately compare within-group and between-group variation? In my opinion, the two are qualitatively different. Within-group variation has less adaptive significance than between-group variation.

November 8, 2011 at 3:57:00 PM EST
chris said...

Out of curiosity, have you done a post about your 'awakening' of sorts to HBD or non/anti anti-racism? About how you came to the position you are at now and perhaps how others like you, or in that movement, can be persuaded to your current position?

I personally have always gotten the impression that modern leftists arrive at their political positions because that's whats most popular and what appeals most to their emotions and hence any rational argument about the positive (as opposed to normative) merit of their positions would subsequently fall on deaf ears. I have a suspicion that when it comes to convincing modern leftists one has to appeal to their emotions/baser instincts in order to persuade them.

November 17, 2011 at 6:46:00 AM EST
M said...

" I received a prompt response from the executive producer Larry Adelman. "

Your counter-response ought to have been: "Why are you so worried about race?"

November 17, 2011 at 6:50:00 PM EST
LeotheLion said...

What I don't understand is why we should be so tied to the resulting differences between races? Most of the things that we might reasonably care about such as intelligence or "tendency to succeed" are absolutely social constructs. Whereas it might just be true that substantive genetic differences cluster around racial distinctions, due to a long and particular history of population isolation, those differences only amount to differences we care about to the extent that we want to place a value on them.

Unlike racial distinctions, intelligence is variably and subjectively defined; furthermore is itself a product of the

values of historically dominant populations. Thus it seems we have to make a two pronged decision: (1) are we to accept only one form of intelligence as the "true" form of intelligence? Is there no space for a diversity of intelligence (mathematical, physical, artistic, creative, linguistic, spatial etc)? (2) if we are to indeed only value one kind of intelligence, are we going to define it based on standardized tests such as the IQ test (which has been consistently revealed to be culturally biased, learnable, and ultimately merely revealing of a person's ability to take the test, and not of some kind of universal "intelligence")?

It seems that the measures that we use to create a hierarchy of racial distinctions are wildly subjective. More productively we can chose to value the nuances and subtleties of both our between and within race characteristics as opposed to limit ourselves to whatever genetic domain we happen to have been born into. If it is to be shown for instance that "Negroids" are better at something than the race I belong to, am I to deny myself the opportunity to succeed in that endeavor? Hell no. Even if that endeavor was not merely a socially constructed thing, such as taking the IQ test or playing a sport or grooving to a rhythm (or whatever other endeavor to which we like to ascribe racial differences), but was something slightly less socially constructed like jumping or running, I personally deserve the opportunity to try and succeed in that endeavor.

There will never be and has never been complete homogeneity or heterogeneity of our genetic makeup; analogously, the very traits that we place a value on change over time. If we are to say for instance that Negroids are better at a sport and thus Negroids are a better race the obvious rebuttal would be that I just don't care about the ability to play that sport and in fact no one did before that sport was invented and given mainstream value. Certain kinds of intelligence weren't even acknowledge at certain points in history and some that used to be given legitimacy are now rendered unimportant. Take for instance social and emotional intelligence, a category of intelligence that we highly value and is now highly built into our evaluations of children in any public school system across the country. We don't even know yet how that kind of intelligence correlates to racial distinctions. And if it so happens that that particular kind of intelligence correlates to a non-White race, are we to switch allegiances? Of course not. Our allegiance cannot be based on such transient and ephemeral correlations.

Although I know my argument stands in the face of many of the beliefs and commentary of people on this forum I do hope people will respond in the spirit of critique and intellectual growth here.

April 18, 2013 at 6:35:00 AM EDT
Anonymous said...

Muslim-majority countries have been having child marriage that included sex with children under 10 since the beginnings of Islam in a continuation of pre-Islamic traditions. Arab girls have later ages of first menarche than American black girls. Fat mass drives menarche, not whether sexual activity was taking place, even over the span of well over a thousand years.

April 22, 2017 at 8:37:00 AM EDT

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