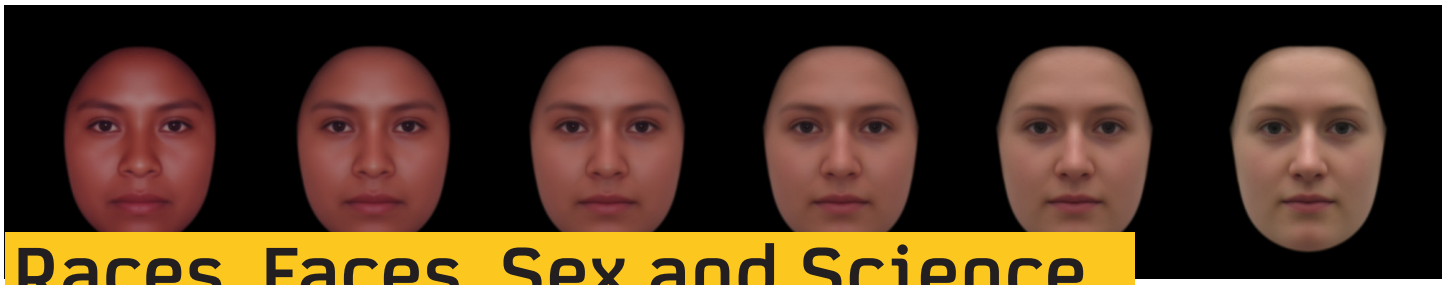

# Races, Faces, Sex and Science

Science writer and former broadcast meteorologist Katrina Voss looks at why we don't all look the same

In the last 20 years race and desirability have become much more thoroughly (or at least much more publically) linked. There has been a shift in what we find 'attractive'. The blond, WASPY "All-American" idols of my teenage years – Farrah Fawcett, Christie Brinkley, Cheryl Tiegs - have been replaced by a very different ideal of beauty and status. At least in mainstream culture, racial "purity" no longer commands cachet. Quite the opposite. Today's idols and stars - Tiger Woods, Barak Obama, Halle Berry, Jennifer Lopez to name a few - show that Euro is out, and exotic (or "multiethnic" in American English, "mixed-race" in British English, and "admixed" in Scientist English) is in.

But this doesn't always sit well in our society. When my geneticist husband Mark Shriver, an apparently white man, discovered a small percentage of West African ancestry in his own family tree, he made the discovery public with pride and without hesitation. A little more than a year ago, during a transatlantic African slave trade conference at Harvard, a black colleague praised him for his "bravery" in being open about his own mixed-race roots. I was astounded. How was such an admission "brave"? I believe my husband is brave in many ways, and were it 1950, his public revelation of recent African ancestry would count as such. But in 2008?

And this unease with race extends to the laboratory. Sadly, those scientists who dare to study racial difference, and population diversity, meet with much resistance. The question often asked is, 'but why do it?' Avenues of scientific inquiry that make no grand claims about disease risk and health benefits are often dismissed with cavalier disapproval. This is especially true when "race" enters into the equation. Research into population differences in eye colour, hair texture, or nose shape are often pooh-poohed as the idle preoccupations of hacks or the sick obsessions of eugenicists. Some critics conclude that if it has no curative or preventive purpose, it isn't worth

the lab space or the journal ink. But the scientists who study human diversity beg to differ. They are fascinated by questions like, where does this human diversity come from, why do we look different to each other? They look at how our genetic ancestry is linked with observable, physical traits, and how it is linked with past and present standards of attractiveness. So why and how do these differences exist?

Charles Darwin, who was equally fascinated by these questions had the first inkling. He correctly observed that all humans are closely related to each other, but that despite our similarities evolution has acted (and continues to act) differently and much more quickly on the superficial differences we notice most in one another - such as hair texture, pigmentation and facial features.

Two centuries later, the genomic era is validating Darwin's observations with many examples of genetic similarity across populations. It is also showing that the genes controlling the superficial [racial] differences we see are the product of a much more rapid rate of evolution. Geneticists are still at an early stage in this work, but a Darwin-predicated pattern seems to be emerging: superficial traits are evolving faster because they are on the surface. These genes are acting like plasticine and are being moulded by the environments they have been exposed to.

Some of these superficial differences are the result of Darwin's more conventionally accepted natural selection. For example, lighter skin evolved at low ultraviolet radiation levels at higher latitudes; innate immunity to infections evolved in response to local pathogens and the ability to digest milk evolved in populations with a history of dairying.

However, Darwin had another idea to explain the mystery of population diversity. He put it down to competition between men, sexual attraction between the sexes, and notions of beauty. In his 1871 book, The Descent of Man and Selection in Relation to Sex, Darwin put forward the idea of sexual selection as a complement to natural selection. Sexual selection is still widely accepted today and it describes the effect sexual attraction and competition can have on a physical trait. The more a trait or quirk - like a peacock's flamboyant feathers - is deemed attractive the more prevalent this trait will become in a population. A fashion-determined preference for a particular look can propagate that look in a population. If it's deemed beautiful it will spread like wildfire. Darwin wrote about the scientific validity of superficial traits evolving "in order to excite or charm those of the opposite sex."

Modern scientists agree with Darwin that sexual selection has played a key role in recent human evolution but how it has acted in producing some of the racial and population differences is an important question not yet resolved. For example, red hair is not found in every population and may well be the result of ancestral populations finding the trait attractive, and thus choosing redheaded mates. Blue

eyes are generally confined to Europeans and may be another trait that evolved through sexual preference. Likewise, women in some populations tend to carry more fatty tissue in their breasts, while others tend to store it in their buttocks. Ancient historical views of beauty may be written in our genes, explaining some of the human diversity we see around us today. But we don't know enough. In 2009, some genes that vary from one population to another are known - like those that determine malaria resistance or lactose tolerance, while those determining lip shape, hair growth patterns and breast size remain mysterious. We might say that when it comes to superficial traits, science has only begun to scratch the surface.

Sadly those scientists who dare to scratch away at that surface are often pilloried or dismissed. In a world that is ever more preoccupied with the applications science has to offer, rather than the pure science that has been the prime driver behind many of those applications, there are many critics. Is finding disease genes nobler than finding facial shape genes? Surely the more immediate benefit of one project should not render another ignoble.

When it comes to thorny issues like race, genetics, sex and beauty, emotions are bound to cloud discussions. Still, we should remember that science is about letting the chips fall where they may. Genetic science especially is still in its infancy so we cannot afford the luxury of picking and choosing our avenues of inquiry. To quote sceptical scientist, Michael Shermer, "Science, like life, is messy and haphazard, full of quirky contingencies, unexpected bifurcations, serendipitous discoveries, unanticipated encounters and unpredictable outcomes." Why not adopt a blunt, unprejudiced acceptance of whatever information we are lucky enough to uncover, whether that information illuminates risk of disease or facial symmetry? After all, basic research is often the springboard for discoveries made many years later. As Darwin himself noted, the species that survives is not the strongest or the smartest, but the most adaptable to change. Such is the case for the scientist's survival, as well.

**Katrina Voss**