Data-Face and Ontologies of Race

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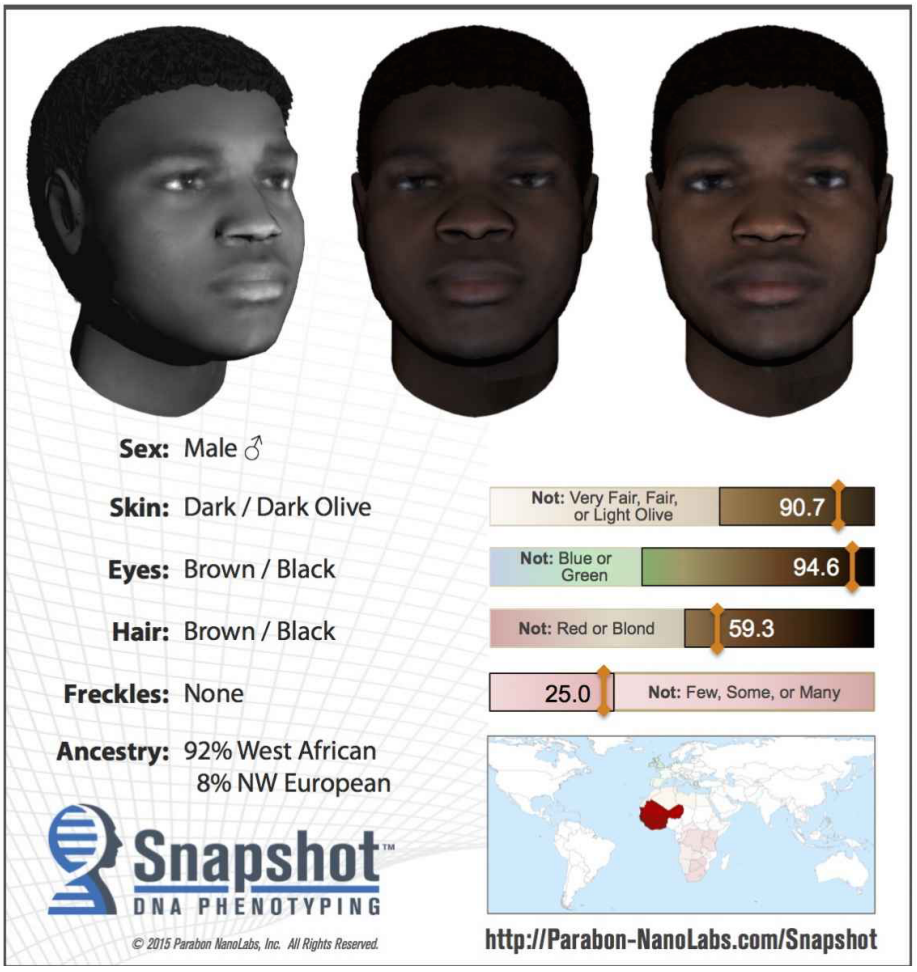
Race is back with a vengeance. The role of genetics and genomics can barely be underestimated in this resur*facing* of race. While geneticists would repeatedly assert that race and appearance have become irrelevant in their practice, social science scholars have alerted us to a "reinscription of race at the molecular level" (Duster 2006: 428). True, the molecularisation of similarities and differences is ubiquitous, rendering DNA and data interchangeable (Kay 2000). In this vein DNA and data are taken as 'archives' that can be mined to bring to the surface features that otherwise would remain hidden. Yet, I want to argue that what we are witnessing is not so much the molecularisation of race, but the return of the phenotype and the biologization of physical appearance. To be sure, the phenotype is not a quality to be found *in* the body or *on* its surface. Rather it is a quality *of* the body. It is a material semiotic assemblage involving diverse entities.

Forensic genetics is the field par excellence where the phenotype has come to play a key role. DNA found at a crime scene is conventionally used to include or exclude a suspect whose identity is known. Nowadays DNA research is also used to infer the identity of the unknown suspect. It is aimed at producing clues about the appearance of the suspect and thus providing leads for the criminal investigation. Inferring characteristics such as sex, ancestry, hair and eye colour, from the DNA, DNA-phenotyping, should give a *face* to the unknown suspect.

While DNA-phenotyping is largely a promissory science, with just a few physical markers in place, recently a US-based company is said to be helping solving a crime by producing a *DNA-photofit* of the unknown suspect.

The DNA-photofit produced by Parabon is based on collaborative research between the geneticist Mark D. Shriver (Penn State University, USA) and the expert in morphometrics Peter Claes (KU Leuven, Belgium). The data, the architecture and methods that underlies the photofit is described in a paper to which I will turn shortly (Claes et al 2014a).

But first this, while the DNA photofit of presumed suspect alludes to the esthetics of the portrait, a realistic rendering or a *snapshot* of an individual and his face, the diagram alerts us to it being a patchwork, a composite. The diagram generously invites us to attend to the issue of scale. Moving up and down, from the gene to the globe, from the individual to the population, from the molecular to the body surface, from face to race.



It is this issue of scale that I would like to pause with while thinking the question of digital ontologies. For might it be that the very ontology of the digital is its potential to *move* swiftly, as fast as light, between different *scales*, making and unmaking entities and producing an amazing level of complexity? And might it be that while digital technologies are often mobilized to make sense of and discover patterns in a complexity out there, the scaling up and own is a normative technology aimed at cleaning up the mess (the complexities produced by the digital itself) and producing homogeneity and singularity. A *snapshot* of reality as it really is.

In their paper Peter Claes and his colleagues (2014) engage in a complex approach to the study of face and facial variation. They study the face on the basis of genetic markers as well as facial landmarks based on 3D images of face. Their work is based on three populations: US American, Brazilian and Cape Verdean populations. In total they studied 592 individuals aged between 18 and 40

years as to reduced age-related facial morphology, from which they excluded individuals with a high rate of admixture. Effectively the three populations were genetically clustered according to European ancestry or African Ancestry; this paper as well as one paper that preceded it, talks of African and European ancestry facial forms. And this is puzzling because the paper opens with the claim to move away from "simple scalar measures", measures that have a long history in physical anthropology and its engagement of producing/knowing the racial type.

> Traditionally, such physical complexity is simplified by simple scalar measurements defined a priori, such as nose or mouth width or alternatively using dimensionality reduction techniques such as principal component analysis where each principal coordinate is then treated as a scalar trait. However, as shown in previous and related work, a more impartial and systematic approach to modeling facial morphology is available and can facilitate both the gene discovery steps, as we recently showed, and DNA-based facial composite construction, as we show here. We first use genomic ancestry and sex to create a base-face, which is simply an average sex and ancestry matched face. Subsequently, the effects of 24 individual SNPs that have been shown to have significant effects on facial variation are overlaid on the base-face forming the predicted-face in a process akin to a photomontage or image blending.

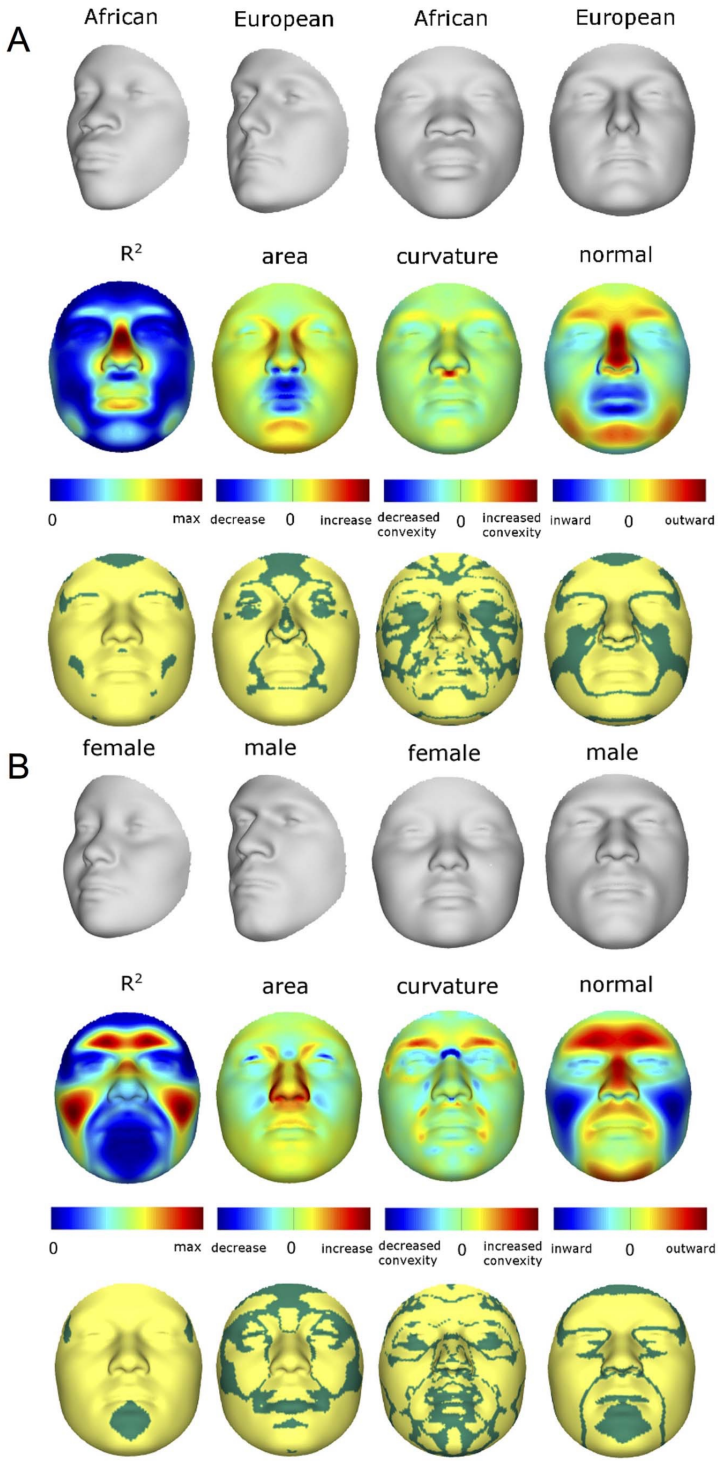
So here, already in the abstract, a huge complexity emerges. Analyses, "an impartial and systematic approach", of the 3D images of all 592 individuals has suggested 44 principal components (landmarks) on the basis of which all facial variation can be explained, or so we learn a bit later in the paper. Here the technology promises patterns that are invisible to eyes that trained to see facial morphology and difference through technologies of physical anthropology and craniofacial research. The digital promises to uncover the real. But then, going from the surface to the molecular, population genetics is called upon to produce a "base-face". Technically this is the average face compiled on the basis of 591 individuals (all subjects minus the subject whose facial shape is to be determined). But the analysis is not simply aimed at the individual. For the 24 SNP's to be brought into the equation as to determine the individual face, are statistically accurate only when analyzed within homogeneous populations. Hence the African and European ancestry populations. This means that the "base-face" is the base-face of the population to which the specific subject allegedly belongs (African or European). While ancestry markers are used to genetically cluster the 592 individuals to one of these populations, their subsequent faces are clustered accordingly. The 44 landmarks can then be used to correlate and determine the base-face of one of these populations. An operation not very dissimilar of the making of the racial type. Also in that old practice (although the old is always contemporary as well) the idea was to determine the average

as to find out the type to which the individual could be fitted in. Whereas data about the surface of the face together with population genetics help to produce the racial type, other genetics markers about facial morphology, the 24 SNPs, help to individualize the face.[1]

"facial variation are overlaid on the base-face forming the predicted-face in a process akin to a photomontage".

The samples were collected in the US, Brazil and Cape Verde, but the data has taken us to Africa and Europe, a time travel of sort. The digital operation that has moved us up and down and in and out of the body is finally likened to a photomontage. However, whereas the photomontage tends to reveal to the viewer its process of making, the faces produced in the analyses and the narration of the data rather contribute to a pre-given reality. Faces and races captured through the digital.

[1] Here, yet another repository, the Online Mendelian Inheritance in Man database, is introduced. The candidate genes were selected from that database by using the keywords "craniofacial" and "facial".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