Huong Phan

SOAN 335: Health, Medicine and Society

December 13, 2018

"Is genetics as a racist scientific endeavor?"

By the early 20th century, Darwin's theory of natural selection and Mendelian laws of inheritance has provided a new ground for scientific racism. Various studies examine the more inferior physical traits and social behavior of the more primitive African American population, claiming them to be hereditary and thus make the black Americans more susceptible to infectious diseases (Brandt 1978, 21-22). Eventually, this culminated into the eugenics movement across the US, which aimed to prevent infectious diseases from spreading by means of forced sterilization of black Americans. This paper will explore the rise of scientific racism, and reconciliatory perspectives between genetics research with the social construct of race.

The theory of evolution by Darwin builds on the principle of "survival of the fittest", meaning only the healthiest traits can survive and propagate to the successive generations, while other traits cannot adapt to the constantly changing climate and environment and thus are more vulnerable and die out over time. It was widely believed that evolution of *Homo erectus* into *Homo sapiens*, or humans, first happened in Africa (Chakravarti 2015, 8) and spread out to the other western and eastern parts of the world, so the African genes are considered not as evolved or healthy as the non-African genes, which had undergone the process of natural selection. This led to biological research on the physical differences between black and white population, with

scientists calling physical features of the black “defects” and “imperfections” (Brandt 1978, 21). Scientists argued that these features, coupled with the blacks’ “excessive sexual desire”, made blacks more vulnerable to sexually-transmitted diseases such as syphilis, which were even associated with criminalistic, insane behaviors (Brandt 1978, 22). From Mendelian laws of inheritance, scientists believe their children will definitely inherit the disadvantaged traits and behaviors that their parents possess, thus preventing them from being born would eliminate social ills and ensure greater peace and safety for the people (Lombardo 1996, 4). This marked the start of the eugenic movements in the 20th century, in which physicians and lawmakers began to practice forced sterilization and segregate the blacks from the whites in terms of public health efforts so as to prevent reproduction of the physically and socially unfit (Pernick 1997, 1769). However, the eugenic movement was heavily reviled for its propagation of unfair discrimination against the black population and inaccurate science. Despite bacteriologists’ claim that infectious diseases had nothing to do with heredity, eugenists insisted on the opposite argument (Pernick 1997, 1768). The movement also provided a breeding ground for xenophobia and extreme bigotry of the white population towards immigrants and black population (Cohen 4).

Looking back at the political perspective of the eugenics movement, I think genetics was not racist itself, but became racist when authoritative bodies use it to exert legislative power. Despite inherent flaws of genetics in accounting for disparities in health and social capability, it is still twisted in ways by the government or the court that fit the desired agenda. The eugenics movement, fueled by both inaccurate genetics knowledge and inherent discrimination, was not only a failure, but also a peril to society, despite its good intention of of improving the health of

the whole population. It not only coercively took away the sterilized people's right to give birth to children, but also unfortunately fell prey to cruel political agenda of ethnic cleansing and caused further social instability. The court ruling of Buck v. Bell is an unfair case of forced sterilization of Carrie Buck on basis of heredity from her intellectually disabled mother. The result of the case had already been predetermined, as all related parties including Buck's defense lawyer and doctor were eugenics supporters and had colluded to use Buck's case to lobby for the legalization of sterilization in Virginia prior to the trial on the approval of her sterilization (Lombardo 1985, 34). Even though she displayed normal intelligence and good behaviors (Cohen 2016, 5), her "defense" lawyer did not produce any arguments against assertions on Buck's mental defects and socially disturbing behaviors (Lombardo 1985, 51). In addition, the Nazi Germany's heinous version of eugenics mandated the sterilization of not only the "feebleminded, alcoholic, and epileptic" but also discriminated races, especially the Jews (Cohen 2016, 302). Under the law, more than 375,000 people were sterilized. The law, having become a vehicle for expression of underlying extreme bigotry and cruelty against certain races, raised doubts of whether eugenic sterilization was really a force that could enhance the society, or it could become merely a tool for cruel exertion of power or destruction of one race towards the other.

Nowadays, modern genetics researchers are much more very cautious to say that genetics account for all health differences. They accept to not have the full understanding of the genetics of every trait, and that not all traits may not always be inherited and genes can have variable effects. While past scientists believed that environmental factors did not affect the inherited

infectious cells (Pernick 1997, 1769), this has been proven wrong as it was found later that external factors can actually influence our genes to a greater extent than inheritance (Chakravati 2015, 1-2), meaning genetic alterations may happen any time when our bodies start to develop and change. Moreover, race as a genetics-driven concept has been increasingly questioned by not only anthropologists and but also scientists. In 1964, the groundbreaking human evolution study by Cavalli-Sforza and Edwards showed that physical traits such as skin color do not vary among native African and Australian since it depends on climate. It was also found that 85% of genetic differences happened within a racial group and only 15% accounted for interracial differences (Chakravarti 2015, 8). These findings discredit the categorization of race based on biological differences.

Instead of being a purely biological and genetic concept, race has been argued to be a social construct, and other non-genetic explanations for racial health differences also emerge. According to Nancy Krieger and Mary Bassett in "The Health of Black Folk: Disease, Class, and Ideology in Science", race was the social determinant of class rather than a concept based on biological differences. There was little strong support that the genetic indicators of biological differences can cause a disparity in health. Genetic diseases with a higher rate of deaths among blacks, such as sickle cell disease, make up only 0.3% of their deaths. Major causes of death such as heart disease or cancer, the authors argued, are more likely to cause suffering for the lower class than the higher class regardless of race, thus making socioeconomic status one of the more important factors than genetics in causing some diseases. For example, scientists considers socioeconomic status besides genetic differences as possible reasons for higher rate of death

from cancer of black and Hispanic children (Blakemore 2018). A study conducted to analyze the relationship between poverty levels and racial health differences showed that socioeconomic status has different impacts on chances of survival with respect to different types of cancer. For example, socioeconomic status account for 44% of differences in survival from acute lymphoblastic leukemia among black and white children, but only 28% in the case of acute myeloid leukemia. It also shows different impacts on different pairs of races compared, as it accounts for 73% of differences in survival from acute myeloid leukemia between Hispanics and white children, while the percentage drops to 28% between black and white children. However, it was also noted that some indicators which make up one's social class and other biological factors were not factored in the study. Nevertheless, overall, scientists now acknowledge the existence of non-genetic factors to explain health differences between different races.

Scientists also understand and acknowledge that genetic research presents as many promises as uncertainties and challenges. Through genetic ancestry testing, population geneticists study human genetic variations between different demographics due to human migration and the effects of natural selection (Royal et al. 2010, 664). In addition, epidemiologists use ancestry testing to study the distribution of different genetic variants present in mixed populations with more than one ancestry, and to eliminate statistical bias (Royal et al. 2010, 665). However, scientists emphasizes that its statistical uncertainties are unavoidable and ancestry testing results and interpretations should not be taken to be absolutely accurate (Royal et al. 2010, 668). This is because ancestry testing depends on data that is fairly recent and most likely not able to be good representation of populations that span several centuries (Royal et al. 2010, 668). Different

populations may also have the same genetic variants due to human as a relatively young species, so even a person with no recent Asian ancestry can be identified as having a small percentage of Asian ancestry (Wagner 2010, 242). Though the relationship between genetics and racial health differences were poorly understood, in recent years, scientists have taken gradual steps towards more comprehensive understanding of how our genetic differences, along with socioeconomic factors would lead to health differences across different races and even social classes. They have developed more sophisticated ways of identifying parts of the genes that are more apparent in one race than others and may cause greater risks of contracting genetic diseases. More advanced techniques of DNA sequencing and interpretation are used to find specific parts of the genome that indicates possibility of health and behavioral differences. For example, a study involves measuring the frequency of a fraction of genes that are more typical of West Africans discovered that this part contains various threats of prostate cancer (Reich 2018). Genetic variations that indicate different intelligence levels were also found as there are more important genes for neurological development found in Europeans who have more years of education (Reich 2018), indicating the effects of socioeconomic status on health. With genetics beginning to recognize both the inheritance factor and environmental factors' impacts on one's genes, it is certainly trying to move away from any racism and bias and focus more on finding the causes of genetic diseases.

A question still remains: if modern scientists argue for both the genetic and social impacts on any population's health and susceptibility to diseases, as well as present the inevitable statistical uncertainties and no absolute answers, why are non-white bodies still persecuted as being much

more disease-prone because of their race and treated with discrimination? Why is genetics science still associated with racial bias when scientists already acknowledge their insufficient understanding of human genome modifiability and examines non-genetic causes of racial health differences that have more to do with social class rather than race?

The answer lies in the scientific data misinterpretation and manipulation by non-scientists due to their own racism. In my personal opinion, from a purely scientific perspective, a reason for data misinterpretation would be the tendency to fall into a fallacy called "correlation equals causation". When a genetic difference is associated with risk difference of contracting a disease, it does not necessarily mean that the genetic difference is the cause of the risk difference. In genetic research, genetic difference is often the main factor examined in the risk equation, so it is easy for people to ignore other environmental or social variables as factors affecting the risks of disease. Scientific data can also be misinterpreted and twisted until it turns into the piece of "evidence" that racists and white supremacists use to "justify" their bias and superiority over other races. Despite its doubtful accuracy, DNA ancestry test become a tool of categorizing people into groups and let people assert their racially superior mentality (Harmon 2018). The irony in their using genetic data to justify their discrimination is that we usually disregard genetic data in identifying people's race. For example, President Obama is commonly referred as African American, despite his half European, half African ancestry. In addition, characteristics that exists in white people but do not exist in other races were made to be the signaling feature of superiority and more advanced evolution of the white people. For example, the white's lactose was simply because of a coincident mutation in the lactose digestion gene of European cattle

herders that supposedly switches off after childhood for most people (Harmon 2018). Scientific research process itself is also very complex, having to examine data of countless gene variants for numerous traits. To find genes that encodes behavioral traits like intelligence is challenging because intelligence encompasses many abilities such as memory, logical deduction skills and various others. The extent to which genes affect intelligence is thus very hard to measure, especially when we take into account of external factors such as upbringing, socioeconomic status that affect one's utilization of their brains in different ways.

Moving forward, rather than labeling genetics as racist, we should examine ourselves for our own bias, and look at the root cause of racial health differences, which is the history of racial oppression and slavery that leads to the social construct of race itself. Biological differences between the white and the black did not hold much significance until plantation owners preferred to choose black slaves because their striking appearances made them easily recognized during runaways (Krieger and Bassett 1993, 162), marking the beginning of the era of racial oppression and class divide in the US. Even before any study on any slight correlation between genes and susceptibility to diseases were done, genetic differences were cited as the reason of health differences to hide the fact socially-inflicted slavery of people with more distinct appearances were actually the reason that left them malnourished and thus more prone to diseases. This shows that it was and is not the study of human genomes that is to blame for any racism, it was and is the people that use their twisted version of genetics as a basis to claim superiority and an excuse for treating other people with different traits with much less respect than they deserve. The history of racial oppression against black population persists until today as black people are still

perceived as the lower social class that inherit the poverty from their slaved ancestors. In the context of American capitalist values that preach one's poverty being the result of one's indulgence, they are also blamed for their own poverty, their history of oppression and slavery disregarded.

In conclusion, after the disastrous consequences of the epitome of scientific racism called eugenics movements, genetics science have made great leaps in understanding how the genetic variants respond to diseases and modify due to environmental factors, and acknowledged the limitations to genetic knowledge as well as the complexities of our genes. However, it seems like some of our people can still be stuck in our racial prejudice and do not want to address the consequences of our abusive social relationships, which are wealth inequality and class divide among different races, to be the reason for racial health differences. Rather being inherently racist, genetics is made to be racist because of the people who make use of it as a reason for persecuting black bodies. Therefore, the "racist endeavor" here is not necessarily genetics, the study of how genetic expression affect our health or behavior, but the lengths people would go in manipulating scientific information that reveal their own racial prejudice.

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