

Race, eugenics, and the canceling of great scientists

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In these febrile times, reassessment of our histories triggers conflict and polarizes views on campuses and in the media. The tearing down of statues, the de- or re-naming of buildings and institutions, the so-called “canceling” of historical figures have all become part of the fabric of our public discourse. Science and scientists are not exempt from this scrutiny. In our reappraisal of some of the foundations of Western thought, and the ills that plague our societies today, we find that the histories of biology, of anthropology, and by extension the shallower story of human genetics, are inextricably bound to colonialism and European expansion. We have given this era positive-sounding names—the Scientific Revolution, or the Enlightenment—but it was, of course, also an age of ubiquitous racism, of plunder, subjugation and slavery. At that time, newly emerging science—or more correctly, what we would now regard as pseudoscience—was marshaled into the colonialization projects of European countries from their inception, and used to justify the exploitation of countries, resources and people.

Most obviously, the legacy of the invention of race (primarily based upon pigmentation: see Jablonski, this issue) from the 18th century onwards is present with us today, in the language that we use to describe populations, and in the stereotypes associated with the folk taxonomies of race. This is despite the fact that genetics has clearly and repeatedly demonstrated that racialized groups do not make biologically meaningful categories, and that racial purity is pure myth (see AAPA Statement on Race and Racism, and Reich, 2018 for review).

Many of the most significant players in the history of the life sciences have foundational roles in both the scientific practices that we use every day, and in the creation of racial taxonomies, or the principles and enactment of eugenics policies around the world. We rightly celebrate the pleasing Newtonian principle that we see further by standing on the shoulders of giants. We are not nearly as good at recognizing that our view can be obscured because those giants may also have been bastards. Karl Linnaeus, whose binomial taxonomy we universally use to this day, described four racialized subspecies of *Homo sapiens* in the 10th edition of *Systema Naturae* (Linnaeus, 1758)

(a fifth, *Homo monstrosus* included mythological humans, such as Patagonian giants and Alpine dwarves): *afēr* (meaning African), *americanus*, *asiaticus*, and *europaeus*. The first phenotype in his taxonomy is skin pigmentation, followed by unequivocally racist value judgments: *afēr*—black skinned, lazy, cunning, females without shame and ruled by caprice; *americanus*—red skinned, with straight black hair, zealous, stubborn and ruled by customs; *asiaticus*—severe, haughty, greedy, and governed by opinions. But *Homo sapiens europaeus* is “Gentle, acute, inventive, and governed by laws.”

Kant, Voltaire, Johann Friedrich Blumenbach, Samuel Morton and many other thinkers of this era concocted similar schemes, with similar racisms to that of Linnaeus, or modified with new anatomical data to explain the origin of our species and human biodiversity (Jablonski, 2012). It would not be reasonable nor realistic to go through every significant scientist in this history to assess their political views, nor is it necessary as most are not honored with posthumous tributes. With a “great man” view of the history of science though, a few stand out as being scientific goliaths on whose shoulders' entire fields rest, who are celebrated today, but whose views are contemptible by our modern standards.

1 | GALTON AND FISHER

A couple worth scrutinizing for their significance in the life sciences is Francis Galton and Ronald Fisher. Both have been subject to reassessment in the last couple of years, and both have had their names removed from prestigious prizes, lectures, and buildings. In June 2020, the U.S. Committee of Presidents of Statistical Societies permanently retired the R.A. Fisher Award and Lecture, and within days, the Society for the Study of Evolution also announced that they would be renaming the R.A. Fisher Prize. In the United Kingdom, the Cambridge University college Gonville and Caius, where Fisher was an undergraduate, fellow and President, removed a stained-glass window commemorating his work.

As for Galton, his defenestration at University College London followed a formal enquiry into its own significant history of eugenics. Galton's name was removed from the campus (as was that of his first disciple, the statistician Karl Pearson; pictured together in Figure 1).

These names should be very familiar to anyone who has worked in anthropology or genetics. Fisher was undoubtedly one of the greatest scientists of the 20th century, as was Galton for the 19th. Their combined bodies of work are integral to the foundations of statistics, psychology and evolutionary biology.

2 | FRANCIS GALTON

Galton's scientific and cultural influence is profound. He was instrumental in developing forensic fingerprinting, produced the first weather map, did foundational work on synaesthesia, debunked phrenology, invented the dog whistle, and a novel way to cut round cakes. He conceived twin studies, and gave us the blighted phrase "nature versus nurture" to describe the distinction between the relative influence of genetic inheritance and environmental constraints.

Galton formalized the modern conception of eugenics in the late 19th century, and indeed invented the term (p. 24, Galton, 1883). Though the idea of the betterment of a population via selective breeding is much older than Galton, he developed the scientific concept by encouraging the procreation of couples with desirable traits (positive eugenics), and discouraging those with undesirable qualities (negative eugenics). Galton was Charles Darwin's half cousin, and greatly admired him. Much of his rationale for eugenics was drawn



FIGURE 1 Francis Galton (right), with Karl Pearson, 1909 or 1910

from Darwin's work on evolution by both natural and artificial selection. Galton's proposed application of selective breeding of humans for the general improvement of a people was reliant on a 19th century and thus simplistic notion that characteristics such as intellectual and physical capabilities or psychological disorders are biologically heritable, and therefore could be modified or eradicated from a population.

Global political support for eugenics came from the height of power. In his years in government in the UK until he enlisted in the army in 1915, Winston Churchill frequently spoke and wrote positively about eugenics. In 1910, he asked the British Home Office to look into sterilization of the "feeble-minded," in the terminology of the time, based on Indiana's eugenics legislation, that had come into force in 1907, the first in the world. In 1912, Churchill spoke of using "Röntgen Rays"—X-rays—to sterilize men and women, and he included sterilization in early drafts of what became the 1913 Mental Deficiencies Act (British Medical Journal 1912). The sterilization laws were removed at the third and final reading of the bill, but legalization to institutionalize British people remained, under four categories of undesirability: Idiots, Imbeciles, Feeble minded people and Moral Imbeciles, as was the Edwardian parlance for all manner of psychological, cognitive and mental health conditions. Similar views were held by the most senior politicians in the United States. "Society has no business to permit degenerates to reproduce their kind" wrote Theodore Roosevelt (Roosevelt 1913, his presidency 1901–09) in a letter to the eugenicist Charles Davenport. "Some day we will realize that the prime duty, the inescapable duty of the good citizen of the right type is to leave his blood behind him in the world, and that we have no business to perpetuate citizens of the wrong type."

Galton's work was taken up in many countries, and most obviously enacted under the deranged policies of the Nazis during the Third Reich and the Holocaust. In the United States, and a few other countries, the forced, involuntary and often secret sterilization of "undesirables" was embraced enthusiastically. From 1907, when Indiana passed the first state mandate, until 1963, forced sterilization was legally administered in 31 states, with California the most vigorous adopter. In the 20th century, more than 60,000 men and women, though mostly women, were sterilized for a variety of so-called undesirable traits—men frequently to curtail the propagation of criminal behaviors. Though eugenics and scientific racism are distinct, eugenics policies disproportionately affected minority groups in many countries. Native American women were forcibly sterilized in their thousands, and as late as the 1970s, black women with multiple children were being sterilized under the threat of withheld welfare, or in some cases without their knowledge. The legacy of these eugenics programs persists: in 2020, there were credible allegations that women detained in U.S. Immigration and Customs Enforcement facilities had undergone unnecessary gynecological procedures, including hysterectomies.

3 | RONALD FISHER

Galton founded the Eugenics Record Office at UCL in 1904, (which evolved into the Galton Eugenics Laboratory in 1907, and its living

descendent is the department of Genes, Evolution and Environment, of which I am a member). He also endowed a professorship: Ronald Fisher was the second Galton Professor at UCL, after Karl Pearson stood down in 1933 (Grimm, 1981).

During his decade at UCL, Fisher formulated many of the foundations of modern evolutionary biology and statistics. Much of what is taught on standard statistics courses in all universities is from Fisher: significance tests, the T distribution, the F distribution, maximum likelihood, and much more. He coined the term “variance” (Fisher 1918, and invented the concept of the analysis of variance (ANOVA). With these techniques, Fisher, along with his UCL colleague J.B.S. Haldane and Sewall Wright at the University of Chicago, effectively founded the field of population genetics. The mechanics of evolution by natural and sexual selection can only be understood via population genetics, much of which is detailed in the first half of Fisher’s classic 1930 book *The Genetical Theory of Natural Selection*.

Fisher’s strong political views were intrinsically linked to his work in studying heredity. From a young age, and throughout his life, he was a vocal supporter of eugenics. He first foray into this field was when he founded the Cambridge University Eugenics Society as an undergraduate in 1911 (see Figure 2, Fisher in 1913).

At that time, eugenics was not perceived as the toxic idea it is seen as today. The concept that the overall health of a human population could be improved via the encouragement of selective breeding, or by sterilization, was broadly supported by many, and across political divides. The second half of *The Genetical Theory of Natural Selection* is effectively a treatise on eugenics, suggesting tax incentives for middle class people to have more babies, and attributing the fall of



FIGURE 2 Ronald Fisher, 1913

ancient civilizations (such as Rome) to the inverse relationship between fertility and “value to society”. Fisher served on the board of the Committee for Legalizing Eugenic Sterilization which advocated for the sterilization of “feeble minded high grade defectives” (Blacker, 1931).

Eugenics fell from favor after the atrocities of the Second World War became known, but Fisher clung to his beliefs, including by expressing sympathy toward the eugenics policies of the Nazis. He also defended the former Nazi scientist Otmar Freiherr Verschuer. During the war, Verschuer worked with Josef Mengele, and used samples obtained from Jews murdered in concentration camps. Verschuer was never convicted of war crimes, reinventing himself as a geneticist after the war, but remained a eugenicist until his death in 1969 (Weiss, 2010). Whether Fisher was fully aware of Verschuer’s direct associations with Nazi experimentation on people is not known.

4 | ADDRESSING A PERNICIOUS PAST

One of the key philosophies of history is that we should not judge people from the past by contemporary standards. This principle, however, can be deployed to exonerate historical figures. Instead, in attempting to understand them and their legacies, it is possible to contextualize their views with those of their peers.

Fisher’s views on race are no less palatable than his eugenics, but were out of step with the mainstream even in his own time. He refused to endorse the 1950 UNESCO statement on the *nature of race*, which declared race as a social construct, with little basis in genetic variation. His complaint was based on the grounds that human groups profoundly differ “in their innate capacity for intellectual and emotional development” (Brattain, 2007).

Another refrain sometimes heard is that de-naming or removing tributes to historical figures erases history. This, of course, is obtusely incorrect. To blindly commemorate people with significant legacies is itself the erasure of history, as those tributes offer no context or analysis of their work. They merely assert monolithic unquestioning greatness. Posthumous celebration of individuals is inherently a political act, and their subsequent removal from the public sphere does not erase history, it forms it. These moments are opportunities to learn and teach the history of our fields.

A reasonable question is “where do we stop?” Is everyone subject to this posthumous ignominy? This is a difficult question to address, and certainly there is notable inconsistency in who becomes the subject of de-naming. David Starr Jordan was the founding president of Stanford University, the seventh president of Indiana University, and was a vocal eugenicist. His name was removed from multiple physical locations on the IU campus in October 2020. The name Kellogg though remains unchallenged and tightly bound to breakfast cereals and other foods, despite the fact that John Harvey Kellogg was also a rabid eugenicist, who founded The Race Betterment Foundation in 1906 with prominent eugenicists Charles Davenport and Irving Fisher; they published their meeting reports in this very journal, with papers such as “The practical application of eugenic principles”, and “Race deterioration and

destruction with special reference to the American people”, by Aleš Hrdlička (Bean, 1929). Kellogg also launched a Eugenics Registry with David Starr Jordan on its board. We can but speculate that the modern association between the name Kellogg and a global megalithic food corporation offers some nominal protection from scrutiny in the public eye.

In the 19th and early 20th century, western cultures were less racially tolerant than today, and eugenics enjoyed bipartisan support. But that is not to say that everyone was equally fervently in support of racist or eugenics policies, and there was certainly a plurality of opinions. In biology, two obvious examples that counter the views of Galton and Fisher come from other scientific titans: Charles Darwin and J.B.S. Haldane. Darwin was broadly supportive of Galton, but was also a liberal and an abolitionist, and argued against the racial fixity or essentialism that many of his peers believed. Haldane was vocally opposed to the eugenics arguments of Fisher and others (apart from for heritable disorders), on the scientific grounds that they would not necessarily work, and on political grounds that both Jesus Christ (poverty) and Beethoven (deafness) would never have existed (Haldane, 1938).

Darwin himself is not exempt from historical reassessment. Though expressing essentially humanist views throughout the *Descent of Man* (1871) and arguing against racial categorizations, that book also contains passages that today jar as being both scientifically specious and politically outmoded. “We may also infer” he writes on page 361, “from the law of the deviation from averages, so well illustrated by Mr. Galton, in his work on 'Hereditary Genius', that if men are capable of a decided pre-eminence over women in many subjects, the average of mental power in man must be above that of woman”. On race, he speaks of how the “civilised races of man will almost certainly exterminate and replace throughout the world the savage races” (p. 105).

These, and other descriptions by Darwin of differences between the sexes and various human populations, are well documented. However, it is also clear that these views, neither atypical or extreme for his time, were not a major part of his overall body of work, nor a central thesis in the *Descent of Man*. The same cannot be said for either Fisher or Galton. Furthermore, their work had intentional direct policy implications for social engineering, which, at least in Galton's case, were enacted around the world for much of the 20th century. These distinctions require discussion, scholarship, context and nuance, and above all, they should be intellectually honest.

How we choose to recognize or honor these men is up for discussion, but of course should be informed by facts. We cannot deny the greatness of the works of Galton, Fisher and others. We effectively honor their legacies by continuing to teach and use their methods, and we can choose to expand our teaching to include their political views, their motivations and the cultural context in which they operated. At UCL, the history of eugenics and scientific racism is taught on compulsory undergraduate courses for biologists and medical students, as has been the case for several decades. However, it may be that this is unusual globally, and perhaps this anomaly can be explained by the historical presence of Fisher, Galton, Pearson, and others at UCL. In my opinion, courses on statistics or biology that cover the science that these men invented should also include their political and cultural contexts.

The argument that their political views are not part of their scientific corpus is false—their politics were integral to their science.

Most scientists—I think it is fair to say—did not fall in love with their subject in order to spend time learning and teaching the pernicious histories of our fields. Nevertheless, if you teach anthropology, or human genetics—the ocean from which human variation is drawn—you have little choice but to speak of race, and the history of eugenics. It is incumbent upon us all as a community to incorporate history into our teaching, and an awareness of that history into our research, not just because it is interesting, but because they inform our current practices in ways that we are sometimes barely conscious of. We cannot and should not abandon nor trash the scientific works of Galton, Fisher and others on whose shoulders we stand. Their techniques are in constant use, for the betterment of science and all humans, and these are formidable legacies. But we can choose not to honor their names.

CONFLICT OF INTEREST

A.R. certifies that he has no affiliations with or involvement in any organization with any financial interest in the subject matter or materials discussed in this manuscript.

AUTHOR CONTRIBUTIONS

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REFERENCES

- Bean, R. B. (1929). Proceedings third race betterment conference. *AJPA*, 12(3), 487.
- Blacker, C. P. (1931). The sterilization proposals: A history of their development. *Eugenics Review*, 22(4), 239–247.
- Brattain, M. (2007). Race, racism, and antiracism: UNESCO and the politics of presenting science to the postwar public. *The American Historical Review*, 112(5), 1386–1413.
- Darwin, C. (1871). *The descent of man, and selection in relation to sex*, London: John Murray.
- Fisher, R. A. (1918). The correlation between relatives on the supposition of mendelian inheritance transactions of the royal society of edinburgh. *Transactions of the Royal Society of Edinburgh* (Vol. 52, pp. 399–433).
- Galton, F. (1883). *Inquiries into human faculty and its development*, London: Macmillan.
- Grimm, H. (1981). Fisher Box, Joan: R.A. Fisher, the life of a scientist. *Biometrical Journal*, 23(3), 315–315. <https://doi.org/10.1002/bimj.4710230313>
- Haldane, J. B. S. (1938). *Heredity and politics*, London: Allen and Unwin.
- Jablonski, N. G. (2012). *Living color: The biological and social meaning of skin color*, Los Angeles: University of California Press.
- Linnaeus, C. (1758). *Systemae Naturae* (10th ed.). Stockholm: Salvius.
- Reich, D. E. (2018). *Who we are and how we got here*, Oxford: Oxford University Press.
- Roosevelt, T. (1913). Letter to Charles Davenport. In *Eugenics record office*. Long Island: Cold Spring Harbor Retrieved from <https://www.dnalc.org/view/11219-T-Roosevelt-letter-to-C-Davenport-about-degenerates-reproducing-.html>

- The Mental Deficiency Act. (1912). The Mental Deficiency Bill. *British Medical Journal*, 2(2707), 1397–1399. <https://www.bmj.com/content/2/2707/1397>
- Weiss, S. F. (2010). After the fall: Political whitewashing, professional posturing, and personal refashioning in the postwar career of Otmar Freiherr von Verschuer. *Isis*, 101(4), 722–758.

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