

## BOOK REVIEW

### **Dangerous muddle**

Review of

### **In the Name of Eugenics**

(with a new preface, 1995)

DANIEL J. KEVLES

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In more than one culture, it has long been believed that human beings differ significantly at birth—differ, that is, with respect to the capabilities that they will exhibit as adults. Perhaps the oldest, as also the most pernicious, explicit enunciation of this belief is to be found in the Indian caste system, which also incorporated sociological prescriptions that took into account the presumed innate differences between one person and another. The rise of modern biological science, especially genetics, appeared to offer to many of its practitioners a rational option to deal with the problem of a perceived inborn stratification of abilities. That option, involving selective breeding aimed at improving the racial qualities of future generations either physically or mentally, came to be called eugenics. Two substrategies emerged: positive eugenics, whereby the breeding of high-quality humans would be encouraged, and negative eugenics, by means of which the less innately capable would be discouraged—if not prevented—from having children. The book under review contains a racy and engrossing account of the history of eugenic ideas. In parallel with the science, pseudoscience and social engineering engendered by eugenic thinking, Daniel J. Kevles offers striking pen-pictures of the men, professional scientists mainly, who spearheaded the eugenics movement (mirroring their gross underrepresentation in science, hardly any women figure in the story except in relation to the general issue of the emancipation of women).

All of them equated, in greater or lesser degree, science with progress; none with more self-assurance than Francis Galton, the upper-class Englishman generally credited with founding the field—‘Founder of the Faith’ in Kevles’s words. Born in the same year as Mendel (1822), Galton asked, long before the discipline of genetics was established, whether the skill of plant and animal breeders might not be transferred to the breeding of humans so that the undesirables were got rid of and the desirables multiplied. He had convinced himself that heredity governed not only physical features but also talent and character: a disproportionate fraction of distinguished jurists, statesmen, poets and painters belonged to the same families. Thus began, via a confusion between correlation and cause, the ‘science’ of eugenics. A life-sketch of Galton, embellished with quotes, is highly entertaining (Galton of Americans: “... enterprising, defiant, and touchy; impatient of authority; furious politicians; very tolerant of fraud and violence; possessing much high and generous spirit, and some true religious feeling, but strongly addicted to cant”).

Galton’s ideas, reinforced as they appeared to be by sound mathematical analysis, gradually won over converts—including his cousin Charles Darwin, who until then had ‘always maintained that excepting fools, men did not differ much in intellect, only in zeal and hard work’. Karl Pearson was the most significant of the early faithfuls.

He, together with Walter Weldon, set up the statistical groundwork for biometrics, the study of measurable biological traits, which (it was hoped) could be used to estimate the role of heredity in determining mental ability. For example, by comparing the correlations for intelligence between two siblings with their correlations for physical traits believed to be uninfluenced by the environment (such as eye colour), Pearson thought he could disentangle the effects of nature from those of nurture. The results appeared to be too good to be true: the correlation coefficients for physical characters equalled 0.5, as did those for intelligence. 'We inherit our parents' tempers, our parents' conscientiousness, shyness and ability even as we inherit their stature, forearm and span', he concluded in 1903. Kevles points out that the argument that equal correlation coefficients mean equal forces of heredity is specious.

A number of distinguished and undistinguished scientists took up the cause of eugenics. Charles Davenport headed a newly established laboratory for the study of evolution in Cold Spring Harbor, New York. He hoped that by collecting extensive family pedigrees he could justify his hunch that there was an innate hierarchy of mental abilities that was superimposed on hierarchies of race and social standing. Because the conviction was there, the 'evidence' was found; traits that ran in families were assumed to be genetically based. Feeble-mindedness and so-called immoral behaviour were favourites for study, especially since each was imagined to cause the other. Laws that permitted the sterilization of inmates of mental homes with hereditary mental disabilities were placed on the statute books in the United States and many courts went along with their implementation. In the 1930s alone, about 30,000 people were sterilized as a result. Eugenic sterilization measures were enacted in Sweden, Denmark, Finland and an unnamed Swiss canton. In Britain, however, sterilization was considered indefensible under natural law. In Germany, Hitler's government pushed through an act that provided for the sterilization of anyone who suffered from hereditary disabilities including 'feeble-mindedness, schizophrenia, epilepsy, blindness, severe drug or alcohol addiction, and physical deformities that seriously interfered with locomotion or were grossly offensive'. The Nazis succeeded in getting around 225,000 people sterilized within a period of three years. Euthanasia was introduced later as an even more effective eugenic measure; to begin with these policies were free of racial overtones but the oversight was soon corrected. Eugenic ideas stimulated public debate. Bernard Shaw initially expressed enthusiasm (that waned later when he realized that his own birth might have been prevented) but G. K. Chesterton remained vigorously opposed, associating eugenics with the 'same stuffy science, the same bullying bureaucracy and the same terrorism by tenth-rate professors that have led the German Empire to its recent conspicuous triumphs'. Bertrand Russell thought that opposition to the government of the day could well be taken to 'prove imbecility, so that rebels of all kinds will be sterilized: The lawyer Clarence Darrow wondered whether 'breeding would be controlled for the use and purpose of the powerful and the unintelligent'. Gradually a coalition of scientists emerged to argue against naive eugenic theorizing; it included J. B. S. Haldane, Julian Huxley, Lancelot Hogben and H. S. Jennings.

A large section of the book is devoted to the IQ fallacy—the fallacy that intelligence is a 'thing' that can be measured, just as any quantitative trait can, and its heritability computed. (*The Mismeasure of Man* by S. J. Gould contains a more detailed account of the entire sorry episode including the story of Cyril Burt, his fabricated data and their contemporary revival.) It is undoubtedly correct to say that the level of performance on a standardized test of mental ability can be treated as a phenotypic trait like any other;

and using the appropriate data, its heritability can be computed. But in the absence of reliable information as to the extent to which environments (including maternal influences) and genetic inputs vary, assertions regarding the 'genetic basis' of intelligence are meaningless. One chapter deals with Lionel Penrose and the path-breaking Colchester survey which established for the first time in a convincing manner that certain hereditarily transmitted traits could impair mental function, for example PKU and Down's syndrome. Also, Penrose's study made it apparent that the origin of mental abnormalities could be traced to an interaction of genes and, in a broad sense, the environment (for example, in the case of PKU, the diet), thereby calling into question the naive assumption that genes caused traits. Theoretical population genetics had shown that the weeding out of a recessive gene from the population was liable to be an extremely slow process. These developments, in combination with the news of the horrendous attempts of the Nazis to practise sterilization as a means of racial improvement, began to evoke an increasing sense of disquiet regarding simplistic eugenic thinking.

Support grew instead for what Kevles calls Reform Eugenics, the creed that genetic knowledge must somehow further human improvement. Reform eugenics was in part self-deluding, with class-laden concepts such as 'anti-social character' forming part of its language. However, it served a useful purpose too, by suggesting, in opposition to the prevailing opinion in medical circles, that genetic knowledge could be of some value in the treatment of disease. So, for example, it would be to the advantage of both society and families if individuals affected by a genetically dominant disease could be persuaded not to procreate. H. J. Muller, R. A. Fisher and J. B. S. Haldane were all, in this sense, reform eugenicists. Fisher remained long troubled by what he convinced himself were the consequences of an inverse correlation between fertility and position in the social scale; he argued in favour of family allowances to encourage the professional and clerical middle classes to have more children. Indeed, the little-discussed final five chapters of Fisher's famous treatise (*The Genetical Theory of Natural Selection*, 2nd revised edition, Dover, New York, 1958) can be read as a lament on the inevitability of civilizational decline, were some recipe such as his not to be followed. The adduced reasons were that one, infertility was an important cause of wealth; and two, as a consequence of this, the social promotion and extinction of the more capable members of a nation was guaranteed. It is sobering to ponder that an attractive hypothesis could induce even a Fisher to lower his critical guard. Muller advocated artificial insemination with the help of sperm from the 'biologically best' donors. ('How many women ... would be eager and proud to bear and rear a child of Lenin or of Darwin!') Typically, Haldane wrote a prophetic book that, along with farsighted speculation, highlighted in the outrageous style that was his hallmark the prospective gains to be derived from a policy of *in vitro* fertilization (an 'increased output of first-class music to ... decreased convictions for theft').

The establishment of human genetics—from '... a quiet hobby ... to one of the most complicated and demanding disciplines in the whole of science'—as a scientific discipline in its own right went hand-in-hand with advances in biochemistry, with increasingly sophisticated studies of inherited variations, and with improvements in techniques of chromosomal analysis. Kevles surpasses himself in describing the triumphs of modern cytogenetics: the doubt-ridden acceptance of the diploid human chromosomal number as 46, the identification of the anomalies associated with Turner's and Klinefelter's syndromes and with the translocation found in familial cases of Down's syndrome. Studies on variant forms of haemoglobin played a leading role in

tracing the links between genes, proteins and disease as also between the environment and disease. Both cytogenetic and biochemical advances developed in parallel with the advent of molecular biology.

As Kevles observes, while human genetic research may have been spurred in part by reform-eugenic goals, a burgeoning acquaintance with the complexities of heredity made any form of eugenics appear increasingly indefensible even in principle. At the same time, it was clear that a knowledge of inherited traits could be beneficial. Genetic counselling was early recognized as an important service, as was prenatal screening. Increasingly sophisticated techniques of analysis made it easier to quantify predispositions, and the prevention of reproduction based on informed choice became a viable option. Concomitantly, the realization grew that improved therapeutic measures would exact a price: there would be a decrease in the overall intensity of selective forces that kept down the frequency in the population of harmful recessives. As Muller pointed out in a famous address ('Our load of mutations') the human genetic load, already big, would continue to grow. The increase in numbers of the human population as a whole, and the decrease in quality of life that this entails, has been a topic of vigorous discussion from the 1960s onwards. And then, from the late 1960s, it became fashionable once again in Western intellectual circles to talk of a possible relationship between intelligence (as quantified by that quasi-deified concept, the intelligence quotient) and heredity, specifically racial origin. Comforting illusions, in combination with sloppy science, produced ostensibly logical arguments in support of the proposition that 'non-white' children were innately less intelligent than 'white' children. William Shockley, a Nobel laureate in physics, proposed an examination of the hypothesis that the population of the United States was deteriorating genetically because of 'retrogressive evolution through the disproportionate reproduction of the genetically disadvantaged', a feature more marked among blacks than whites. The Sociobiology debate entered the scene at around the same time and created a major stir. Insofar as the discussions pertained to human beings and human culture, it was fuelled—as Kevles remarks wryly—by different varieties of presumptuousness. Displaying a lack of discrimination that stubbornly persists, genes encoding the possibility of a range of behaviours were conflated with genes coding for behaviour; and evolutionary fitness was assumed to be a fixed property of a genotype considered without any reference to its environment.

And so to the present. The New Eugenics has become an accepted part of scientific discourse if not of therapy. One has at hand methods to screen for variant genotypes, to manipulate genes and, in effect, to change the genetic heritage of future generations. This has aroused a great deal of excitement in scientific circles; and, if anything, a greater degree of unease among members of the lay public. Part of the unease derives from the fact that as medicine has become increasingly scientific, reductionist and mystifying, its practitioners are perceived to exhibit steadily decreasing levels of care and empathy. Besides, the 'public' is not a homogeneous entity with regard to its attitudes to medical intrusion: consider the finding, shocking to many but evidently not to all, that after sex determination tests carried out over a period not long ago out in Bombay, 2999 or so female foetuses were aborted as against a single male foetus. If sex can be a cause for prenatal discrimination, why not the possession of a particular DNA sequence—especially if, as some fear, large-scale gene sequencing conjures up the image of an ideal, 'normal' human genotype? The contemporary version of naive eugenic thinking goes by the name of gene therapy. On occasion its virtues are so trumpeted as to suggest that it could be a public-health measure: of all places in India,

where the absence of access to safe drinking water and lack of sanitation stand out as glaring health problems.

One would imagine that as of today, in 1997, eugenic ideas would be of historical interest at most. Sadly, that is not the case. The ethnic cleansings that took place in Rwanda and the former Yugoslavia were particularly brutal applications of eugenics. The passage of eugenic legislation a few years ago in China has been linked to an increase in the number of children suffering from minor accidents of birth who are abandoned. And then there was the news recently that up to the year 1976, Swedish governments had forced about 60,000 women to undergo sterilization because they were 'of poor or mixed racial quality'. Racial hygiene is reported to have been used as an excuse for sterilization in Switzerland until the 1970s. From the reasonable proposition that tinkering with the genotype might help in some situations, it is not difficult to delude oneself into thinking that such tinkering is desirable in general. At the heart of such musings lies the same old fallacy of genetic determinism that continues to beguile a great many people, however firmly genetic analysis teaches us that the effect of a gene is context-dependent and that pleiotropy is the rule rather than the exception. Not only are long-held convictions difficult to dislodge, especially when they reassure, but the tools of molecular biology enable would-be parents to carry out a personal eugenic program of their own. Given the enduring seductiveness of the search for genes that code 'for' particular traits, especially mental traits, surely it will not be long before physicians offer prospective parents the choice of avoiding progeny that lack one or the other 'behavioural' gene. And how much longer will it take for someone to offer to introduce desirable genes? To quote Kevles, 'The specter of eugenics hovers over virtually all contemporary developments in human genetics'.

The historical sweep that he brings to bear in this marvellous book should make us ponder over the tenacity of eugenic theories. What does it say about our thought processes and the social structures that foster them? In addition to a gripping text Professor Kevles provides copious notes and an essay on sources. He weaves personal histories into the history of the field so skilfully, blending anecdote, hard science and—albeit in a restricted sense—sociology, all in the correct proportions, all with enviable style and verve, that it is only after putting the book down that you realize you have been instructed while being entertained. I have only three minor quibbles. To begin with, the book was first published in 1985. It remains readable and topical, but one cannot help noticing that the republication in 1995 is handicapped by missing out on the many momentous happenings since then (in spite of a new preface). Secondly, engaging as the notes are, a proper bibliography would have helped. And finally, apart from the aside concerning Nazi Germany, the book is restricted almost entirely to developments in Britain and the United States. Were other countries that far behind?

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