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Definition: **eugenics** from *Philip's Encyclopedia*

Study of human improvement by selective breeding, founded in the 19th century by English scientist Sir Francis Galton. It proposed the genetic 'improvement' of the human species through encouraging parents who are above average in certain traits to have more children, while ensuring those who are below average have fewer. It was discredited in the early 20th century, owing to its ethical implications and its racist and class-based assumptions.

Summary Article: **Eugenics**

From *Encyclopedia of Science and Technology Communication*

During the late 19th and early 20th centuries, a belief in biological determinism became the basis for the movement known as *eugenics*. For many, eugenics was seen as a secular religion, providing the modern world with a new, biologically based Ten Commandments. Eugenacists planned to create this better world by controlling and improving the inheritance of society's next generation. Despite this rhetoric of social improvement, 20th-century eugenics was associated with racism and ethnic bias, maintenance of the social status quo, support for the powerful over the powerless, and putting the interests of the native born over those of the newcomer. Before it was rejected as poor science and unacceptable social policy, eugenics was used against the interests of large numbers of Americans and against democracy. More contemporary advances in genetics and genomics are at the heart of a number of public policy issues currently being debated as to how this knowledge should be used; this entry provides valuable historical context for some of today's ongoing debates about genetic manipulation.

The history of humankind's desire to construct an explanation for varying levels of human performance and to improve the next generation of human beings can be traced to sources including Plato's (348-347 BCE) classic text, *The Republic*. In that volume, Socrates explains that human differences are best understood as a reflection of human essences. An individual's behavior is a direct expression of the stuff of which that person is made. And as those essences scale upward in quality from iron and brass to silver to gold, so too do the moral and civic qualities of the citizens who possess them, in this view. To reframe the argument in terms unknown to Plato or Socrates, we are what our genes make us; we are determined by our biology. And some have argued on this basis that human improvement depends primarily on manipulating and improving humanity's biological inheritance.

In the early 20th-century United States, native-born Anglo-Saxon intellectuals had become anxious about their status in the face of rapid social change. Since the end of the Civil War, increases in immigration, urbanization, crime, and social dislocation had transformed U.S. society. Rapid changes were also taking place in the life sciences, and eugenacists drew upon the work of August Weismann and Gregor Mendel to solve these vexing problems. With strong support from eugenacists, laws were passed that required the restriction of immigration from southern and eastern Europe, the segregation of those judged unfit; the rejection of interracial marriage; and forced state-sponsored sterilization. Regarding this last legislation, over 60,000 U.S. citizens were sterilized against their will. At the more popular level, school textbooks lauded the promise of eugenics, motion pictures warned of eugenic decline, and Fitter Families Contests offered medals to those of presumed eugenic excellence.

While not inconsistent with the state of scientific knowledge early in the 20th century, eugenics had lost its scientific support by the end of that century's second decade. Its lack of scientific legitimacy, disregard for human rights, and close association with the European Holocaust sealed its fate. By the end of World War II, early 20th-century eugenics was moribund. However, a combination of 21st-century parents' desire for perfection in their offspring combined with advances in molecular genetics and fertility treatments may make a 21st-century neoeugenics a possibility. It may be feasible to achieve the eugenicists' dream of changing and improving the human germ plasm, to undertake the as yet untested process of genetically modifying in vitro human zygotes. This does not necessarily suggest a return to the racist and antidemocratic eugenics of the past. If, unlike the eugenics of the past, there is to be a politically acceptable and morally responsible eugenics in the future, it will have to maintain currency with advances in life science, sustain a vision of a just society consistent with democratic values, and satisfactorily resolve the ethics of human manipulation.

British and U.S. Roots

Eugenics began in Britain with Francis Galton (1822-1911), who coined the term, meaning “wellborn,” in 1883. Galton observed that the leaders of British society were far more likely to be related to each other than chance alone might allow and concluded that it was the ruling classes' superior biological inheritance that determined their social positions. Finding nature far more important than nurture, Galton recommended competitions for potential marriage partners, thereby assuring that only “best” would marry “best” and, more importantly, that superior progeny would be produced.

In the United States, eugenics was a product of the Progressive Era, combining insights from the developing field of biology, a concern for human improvement, and a desire to control human inheritance. Its supporters, coming from across the political spectrum, urged the application of science to human betterment and focused on four major policy initiatives: the restriction of immigrants from southern and eastern Europe, the segregation of those judged socially unfit, the forced sterilization of the supposedly feeble-minded, and laws restricting interracial marriage.

As Daniel Kevles notes, this mainline form of eugenics was strongly associated with nativist and racist attitudes, and it achieved substantial success. For example, in 1924, in the face of increased immigration from eastern and southern Europe, Congress passed an immigration reform law requiring quotas based on the 1890 census, a time when the U.S. population comprised greater numbers from northern and western Europe. A decade later, these quotas would deny those trapped before the juggernaut of World War II access to U.S. shores. Also, in 1924, with the Supreme Court's *Buck v. Bell* case, supporters of eugenics succeeded in legalizing state-enforced sterilization. In the *Buck* case, a poor white girl was charged with having a “feeble-minded” mother, to being feeble-minded herself, and with giving birth to a feeble-minded child. In concluding for the majority and for sterilization, Chief Justice Oliver Wendell Holmes Jr. announced, “Three generations of imbeciles is enough.” However, as Paul Lombardo has reported, the concern for the purity of the nation's gene pool overpowered the facts in this landmark case. Carrie Buck's daughter was not feeble-minded; she was an award-winning elementary school student. Three generations had not appeared before the Court.

By the 1930s, a more moderate, nonracial, non-nativist reform eugenics had replaced its mainline counterpart. Using the IQ tests developed by eugenicists in World War I, it focused on meritorious individuals rather than on racial or family groups. Unlike mainline eugenics, reform eugenics provided a role for environment in human development. It supported human improvement through the marriage of

society's most talented individuals in combination with environmental reform, and high school science textbooks of the era supported this biologically driven, merit-based eugenics. While reform eugenicists focused on public schools to classify citizens based on their assumed innate capacities, they could not avoid the class-based nature of the tests or the segregated nature of U.S. society in determining social advance. Whether negative or positive, mainline or reform, eugenics legitimated the social status quo, supported the powerful over the powerless, and privileged the native born over the newcomer.

U.S. Eugenics: Responding to Rapid Changes in Society and Science

U.S. eugenics' success in restricting immigration, segregating the putatively unfit, supporting state-imposed sterilization, and limiting interracial marriage was not simply as an expression of social anxiety based on racism or fear of immigrants. While these were surely factors, its success is best understood as the interaction between society and science in a time of rapid change and modernization.

Social and Economic Developments

The period during which the U.S. eugenics movement developed was one of dramatic and socially unsettling changes in technology, demographics, and science. For example, between 1870 and 1910, 900,000 patents, a rough measure of technical and scientific advance, were issued in the United States. One effect of these advances when applied to industry was the transformation in the scale and structure of the U.S. economy. The great concentrations of wealth produced by industries such as railroads, meatpacking, and steel made famous the names of men such as Edward Harry Harriman, Cornelius Vanderbilt, and Andrew Carnegie. But it was also a time of profound economic imbalances. By the last decade on the 19th century, the top 1% of the U.S. population controlled more than 50% of the nation's wealth, while the bottom four quintiles controlled a mere 1.2%. Further, economic instability created a series of economic depressions or "panics" between 1873 and 1897.

The decades after the Civil War also witnessed massive waves of immigration to the United States. Coming first from western and then from eastern and southern Europe, immigrants settled in urban centers and suffered the dislocations of the Industrial Revolution. Between 1870 and 1900, 12 million persons immigrated to the United States. And an additional 13 million arrived between 1900 and 1914. By 1900, immigrants comprised more than half of the industrial workforce, and immigrant adults were the majority in 90% of cities with populations over 100,000. While they provided a way forward for these immigrants, these cities nevertheless suffered increases in crime, violence, disease, and economic instability.

Of the many challenges facing the United States in last decades of the 19th century and the turning of the 20th, however, perhaps none was as destructive as that of U.S. race relations. The end of Reconstruction in 1877 saw aggressive racism spread across the nation as violence against African Americans increased, and the 1896 *Plessy v. Ferguson* Supreme Court decision made segregation legal in education.

By the turn of the century, the position of U.S. native-born, Anglo-Saxon elite was challenged by economic instability, urbanization, deepening inequality, immigration, and racism. These were challenges that demanded a program of repair. And for those who would champion eugenics, rapid changes in biological science appeared to provide just the tools that were needed for such a program.

Advances in Life Science

The late 19th century, much like our own period, was a period of revolution in biology. Among the many

changes taking place was the rejection of popular environmentalist assumptions regarding human improvement. The French naturalist Jean-Baptiste Lamarck (1744-1829) had theorized that the muscles of the blacksmith developed through years at the forge would be transmitted to his children as “acquired characters.” This suggested that social improvement could take place through environmental reform. But experimental biology made the testing of theories central to scientific advance. And Lamarckism was demolished by the empirical studies of the German biologist August Weismann (1834-1914).

Weismann's work distinguished between *somatic*, or body, cells that died with the organism, and sperm and egg, or *germinal*, cells that were passed from parent to offspring. Germ plasm, as he called it, was continuous from generation to generation; it was unaffected by environmental change. The blacksmith's children would not be born with powerful biceps. For 20th-century mainline eugenicists, Weismann pointed to biological determinism as the basis for human improvement. If germ plasm was unchangeable and transmitted from generation to generation, then improving humankind required the control of the behavior of germ plasm's carriers. If Anglo-Saxon germ plasm was judged superior to that of Polish immigrants or of the “feebleminded,” then immigration restriction and sterilization would be scientifically justified.

In 1900, U.S. eugenicists also found support for their policies in the rediscovery of Mendel's (1823-1884) mid-19th-century breeding experiments. Mendel, a Moravian Abbott, carefully bred peas in his garden and recorded the patterns of inheritance of their different traits for generations. He discovered that if he controlled for traits such as size, color, and texture, he could predict the qualities of future generations with mathematical precision. He proposed that his plants' traits were expressions of what he called “determiners.” U.S. eugenicists believed that determiners in human germ plasm were expressed in a wide variety of complex moral, intellectual, and social traits. Lobbying for a series of social policies, these eugenicists assumed that single genetic elements controlled traits such as intelligence, patriotism, shiftlessness, pauperism, boat building, and a tendency to wander; by controlling the genetic elements, they believed they could control the traits. However, as Columbia University geneticists under the leadership of Thomas Hunt Morgan would soon discover, these simplistic Mendelian views were wrong.

The Demise of U.S. Eugenics

Beginning in the 20th century's second decade, Morgan and his students at Columbia began a series of groundbreaking studies of fruit fly genetics. Their studies revealed the remarkable complexity of the chromosomal inheritance of fruit flies and the role of environment in their expression. By implication, human intelligence and morality were far too complex to be understood or controlled in simple Mendelian terms. Mendelian, or mainline, eugenics was moribund. Yet the belief in biological determinism regularly returns, claiming a place in public policy using arguments based on bell curves and postulating genes for complex human behaviors. It is, of course, true that there are direct and unambiguous links between specific genes and medical conditions. Huntington's disease and Down syndrome can be traced directly to genetic and chromosomal errors. In these cases and in others, biology determines human health and behavior. But the consensus of the geneticists who have studied the issue is that the determination of complex human behavior by genes alone is not so easy to demonstrate.

Conclusion

While we are again living in a time of profound scientific and social transformation, the eugenics of the 20th century is not likely to return. But the possibility of making permanent changes in a zygote's DNA, changes transmissible to future generations, may become a possibility in the future through the process of inheritable genetic modification. Insofar as this would be the realization of the eugenic goal of modifying of the germ plasm of future generations, the prospect of a 21st-century neoeugenics is worth considering. Parents are already using preimplantation genetic diagnosis to achieve what Michael Sandel calls “perfection” in their offspring. And as the *Wall Street Journal* reports, surveys reveal that prospective parents express interest in using this technique to select for athletic ability, height, or intelligence.

But care must be taken not to see a potential neoeugenics as synonymous with its early 20th-century counterpart. Unlike the popular eugenics of the 20th century, so closely linked to racism, class bias, and anti-Semitism, tomorrow's neoeugenics will have to meet the strictest of criteria: It will have to maintain currency with advances in life science, it will have to sustain a vision of a just society consistent with democratic values, and it will have to satisfactorily resolve the ethics of human manipulation.

See also

Ethical, Legal, and Social Issues (ELSI), Gene, Gene Therapy, Human Genome Project, Mendel, Gregor

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