EUGENICS
PAST, PRESENT, AND FUTURE

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During the last century there has been a complete turnabout in public attitudes to eugenics. In the first two thirds of the twentieth century, most scientists and social scientists supported eugenics. In the United States, advocates of eugenics included the Nobel Prize winning scientists Herman Muller, Linus Pauling, Joshua Lederberg, and William Shockley, and leading psychologists Edward Thorndike, Lewis Terman, and William McDougall. Many prominent public figures also supported eugenics, including President Theodore Roosevelt; Charles Wilson, president of Harvard; Irving Fisher, president of Yale; David Starr Jordan, president of Stanford University; and Oliver Wendell Holmes, associate justice of the U. S. Supreme Court.

The European scientific community widely supported eugenics throughout the early twentieth century. In Britain, supporters of eugenics included the philosopher Bertrand Russell; geneticists Sir Ronald Fisher and Sir Julian Huxley; psychologists Charles Spearman and Sir Cyril Burt; economists John Maynard Keynes and Sir William Beveridge; Fabian socialists Sidney and Beatrice Webb; writers H. G. Wells and George Bernard Shaw; and politicians Arthur Balfour and Winston Churchill. In France, the Nobel Prize winner Alexis Carrell was a keen supporter of eugenics, and in Scandinavia and Germany eugenics had many supporters.

The tide of opinion began to turn against eugenics during the 1960s. In 1969 the American Eugenics Society ended publication of its journal *Eugenics Quarterly* and replaced it with *Social Biology*. Eugenics societies in Britain and continental Europe also put themselves into voluntary liquidation. Since 1970 eugenics has become in essence universally condemned.

How did such a change come about? And what exactly is eugenics? The word *eugenics* was coined in 1883 by the British social scientist Sir Francis Galton to mean *good-breeding* and consists primarily of attempts to improve the genetic quality of the population in respect of health, intelligence and moral character. The concept of moral character embraced law-abidingness, self-discipline, a strong work ethic, and a sense of social obligation. The eugenicists believed that health, intelligence, and moral character are partly under genetic control

and could therefore be improved by increasing the numbers of genes for them or, conversely, reducing the numbers of genes for genetic diseases, low intelligence, and weak moral character. To the eugenicists of the first half of the twentieth century, it seemed obvious that health is better than disease, high intelligence is preferable to low intelligence, and strong moral character preferable to weak moral character. And therefore, if the numbers of genes for health, intelligence, and strong moral character could be increased and those for disease, low intelligence, and weak moral character could be reduced, it would be desirable to do so.

To Galton and other eugenicists, there was a further reason for attempting to introduce eugenic measures. This was that they understood that in the second half of the nineteenth century, the populations of the economically developed nations had begun to deteriorate genetically. There were two reasons for this. The first was that improvements in general health, medical treatments, and welfare were reducing the mortality of those with genetic diseases, low intelligence, and weak moral character. Many of those who would formerly have died in childhood were surviving and having children, to whom they transmitted their undesirable genes. The second reason was that the more intelligent and those with stronger moral character had begun to have relatively few children, with the result that the genes for these qualities were being reduced in the population. The principal reason for this *dysgenic fertility*, as it came to be called, was that once the modern condom was invented and marketed in the early 1870s, the more intelligent and those with stronger moral character used this to limit their numbers of children more efficiently than those with low intelligence and weak moral character.

The eugenicists believed that the quality of civilization depended on the intelligence and moral character of the population. If the genetic quality of the population in respect of these qualities continued to deteriorate, they believed the quality of civilization would inevitably decline. Some of them, such as Sir Ronald Fisher, the professor of genetics at the University of Cambridge during the 1920s and 1930s, believed that the declines of classical Greece and Rome were partly due to a genetic deterioration of this kind, caused by the failure of the patrician class to reproduce itself.

Eugenics was both a developing body of scientific knowledge and a political program. Its scientific basis lay in the selective breeding of animals and plants that had been successfully practiced for centuries. In the middle ages, larger and stronger horses were bred to carry soldiers in heavy armor. Sheep and cattle were bred for greater weight and leaner meat. Different strains of dogs were bred for specialized functions, such as sheep dogs, hounds, retrievers and so forth. Racehorses were bred for faster running speeds. Fruits and vegetables were also bred for improved quality. The modern strawberry we know today was bred in a London garden in the first decade of the nineteenth century.

The scientific research program of eugenics consisted of the demonstration that intelligence and moral character are important determinants of scientific, cultural, and economic achievement, that these qualities tend to be transmitted in families from generation to generation, and that they are partly determined genetically. None of these was well established in the early decades of the twentieth century, but during the course of the century research in the social sciences and genetics showed they were all true. Eugenics was also an applied science with a policy agenda. This was to apply to humans the same techniques of selective reproduction that had been so successfully used for centuries to produce improved strains of animals and plants. In practical terms, this meant finding politically acceptable ways of reducing the numbers of children of those who were considered to have genetically undesirable qualities, who in those days were called the undeserving poor and are today known as the underclass. This was negative eugenics. Part of this program consisted of the establishment of birth control clinics for the provision of contraception to those who did not practice it.

Another component of this program, more controversially, consisted of the sterilization of the mentally retarded and criminals. The sterilization program was first introduced in Indiana in 1907. During the next three decades similar programs were introduced throughout the United States, in Canada, in Japan, and in most of continental Europe including Scandinavia, France, and Germany.

Both of these eugenic policy programs achieved considerable successes in the first half of the twentieth century. The knowledge and practice of contraception spread from the professional and middle classes to blue collar workers and then to unskilled workers and the underclass. This considerably reduced the dysgenic fertility of the closing decades of the nineteenth century and the early decades of the twentieth, although it was not entirely eliminated. There is still some dysgenic fertility throughout the economically developed nations and most of the remainder of the world. The sterilization programs also achieved a considerable measure of success. The mentally retarded tend to have mentally retarded children, so the sterilization of large numbers of the mentally retarded inevitably reduced the birth incidence of mental retardation.

The second policy objective of eugenics was to find ways of persuading genetic elites to have greater numbers of children. This was known as positive eugenics and the principal method proposed was the provision of financial incentives for elites to have children. It proved impossible in the western democracies to introduce any practical measures to further this objective. The only country where significant measures of this kind have been introduced and have had some success has been Singapore, where the former prime minister, Lee Kuan Yew was and still is a keen eugenicist.

From the 1960s, eugenics became increasingly attacked in the western democracies although there remain committed eugenicists in China, as well as in Singapore. In the western democracies eugenics was attacked on a number of

grounds. Otherwise sensible geneticists asserted that all genes are equally valuable, that disease is just as good as health, or possibly better because Beethoven might not have composed his late works if he had not suffered from a hereditary form of deafness; it was asserted that intelligence and moral character have no genetic basis but are wholly environmentally determined; that Hitler believed in eugenics and this proves that eugenics leads ultimately to the gas chambers. It was even asserted that the eugenicists did not understand genetics and if they had done so they would have realized that eugenic programs would not work because eugenics is a pseudo-science, like astrology. When it is considered that the majority of the most eminent geneticists of the first two thirds of the twentieth century endorsed eugenics, the assertion that the eugenicists did not understand genetics was ridiculous. In fact, all of these assertions were nonsense. Nevertheless, they were confidently advanced and books containing them were favorably reviewed in the literary pages of journals, newspapers, and magazines. No one dared contradict them for fear of being accused of supporting eugenics.

By the end of the twentieth century eugenics had become universally rejected and at the beginning of the twenty-first century a position has been reached that is unique in the history of science. From time to time scientists have advanced theories that are deeply unpalatable to contemporary beliefs. Galileo's heliocentric theory of the rotation of the planets and Darwin's theory of evolution are the leading examples. These theories were bitterly opposed by the church and by many others, but they were quite quickly accepted by experts and soon became part of the accepted body of knowledge. This is not what has happened with eugenics. The eugenicists established a body of knowledge that is indisputably correct. The core propositions of this body of knowledge are that throughout most of the world populations are deteriorating genetically in regard to their health, intelligence, and moral character, and that this is a serious problem that needs to be recognized and ways found of overcoming it. Yet this is no longer mentioned in textbooks of genetics, psychology, demography, or sociology, or discussed in serious magazines or papers. Eugenics has become the truth that dare not speak its name.

Nevertheless, from the 1960s, at the same time as eugenics was becoming rejected, a new eugenics was appearing and was to make considerable progress in the next three decades. This was the eugenics of medical technology. The three most important developments of the new eugenics have been the prenatal diagnosis of fetal genetic disorders, *in vitro* fertilization, and gene therapy. Prenatal diagnosis followed by the abortion of fetuses with genetic disorders began with the development of amniocentesis and was initially used for the detection of Down's syndrome. Later, other techniques of prenatal diagnosis have been developed including ultrasound scan, maternal serum screening, fetal biopsy, and chorion villus sampling. From the early 1970s, pregnant

women in the United States and throughout the economically developed world have been given these prenatal tests and been offered pregnancy terminations when genetic abnormalities have been identified.

The great majority of women have opted to have genetically impaired fetuses terminated and this has had a considerable impact in reducing the birth incidence of a number of genetic disorders. There have been huge reductions in the birth incidence of anencephaly (the absence of a brain), spina bifida (in which the vertebrae fail to develop properly), and Tay-Sachs disease (formerly known as amaurotic familial idiocy), and significant reductions in the birth incidence of cystic fibrosis, which is the commonest single-gene genetic disorder in European populations. The impact of prenatal diagnosis is likely to increase, as methods for diagnosing genetically impaired fetuses are improved. These procedures have had a eugenic impact in so far as they have reduced the genes for genetic disorders in the population.

The other medical technologies that are beginning to have a eugenic impact are *in vitro* fertilization and gene therapy. The eugenic application of *in vitro* fertilization consists of growing a number of embryos, carrying out genetic tests on them, discarding those that carry genes for genetic disorders and implanting those that are disease free. The eugenic application of gene therapy consists of implanting new healthy genes to take over the functions of those that are defective.

These techniques are still in their infancy but are likely to be developed in the future. *In vitro* fertilization is likely to be used to grow a number of embryos, test them for their genetic characteristics including not only possible genetic disorders but also intelligence, personality qualities, sporting abilities, and appearance, and implant those that the mothers consider most desirable. As these technologies become available, it can be anticipated that initially, they will only be used by a small number of affluent couples that can afford them. This will lead to more class-divided societies in which affluent couples who use embryo selection will have children with much higher IQs and sounder personality qualities than the rest of the population. Because IQ and sound personality qualities of a strong work ethic, motivation, self discipline, and the like are important determinants of educational and occupational achievement, the children of the affluent who are conceived by embryo selection will do much better than others in school and will fill almost all the places in the more prestigious universities and secure most of the top jobs.

In time, we should anticipate that embryo selection and possibly also gene implantation will come to be used by increasing numbers of couples to produce genetically superior children. However, we cannot envisage a time when it will be used by the entire population. There will always remain some who continue to have children by what will increasingly be regarded as the old fashioned way. These will become a genetic underclass of unskilled workers and unemployables. This will heighten class inequalities and tensions.

In the more distant future, we should anticipate that new genes will be constructed for greater intelligence, and possibly for certain personality traits such as creativity and greater persistence, and for enhanced longevity. Eventually these will produce a new species of humans capable of solving problems beyond our present capacities. Among these will be the colonization of other planets in anticipation of the time when the earth is no longer habitable and is pulled into the sun.

All these developments should be regarded as inevitable because once technologies become available that fulfill human needs, they are invariably used. The twenty-first century will be recognized as the time when humans took control of their genetic destiny, and this will be regarded as one of the greatest advances in history. It will be seen as the period in which the vision of the eugenicists of producing a genetically improved race of humans came to be realized, not by the selective reproduction methods of classical eugenics but by medical technology.

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