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**Evolution and Ethics
of Eugenics**

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Abstract

In this article, I try to argue that, as eugenics is defined, it is very difficult to make a clear distinction between science (medicine, genetic engineering) and eugenics as a included field. And to set a line over which genetic engineering should not go further, according to moral, legal and religious norms. If we accept the help of genetics in finding ways to fight cancer, diabetes, or HIV, we also accept positive eugenics as they are defined now. And if we accept genetic screening, and interventions on the unborn baby, or abortion, we also implicitly accept negative eugenics. In addition, at government level, although eugenics are officially denied, it has been legalized in many countries until recently, and is still accepted and legalized, albeit in subtle forms, even these days. I used, in my work, the articles of Kenneth M. Ludmerer, " *American Geneticists and the Eugenics Movement: 1905-1935*", (Ludmerer 1969) Kathy J. Cooke, " *Duty or Dream? Edwin G. Conklin's Critique of Eugenics and Support for American Individualism*", (Cooke 2002) Jonathan Anomaly, " *Defending Eugenics*", (Anomaly 2017) John R. Harding Jr. " *Beyond Abortion: Human Genetics and the New Eugenics*", (Harding 2012) Michael Boulter, " *Bloomsbury Scientists*", Chapter Title: "The rise of eugenics, 1901–14", (Boulter 2017) Michael Ruse and Edward O. Wilson, " *Moral Philosophy as Applied Science*", (Ruse and Wilson 1986) and Sara Goering, " *Eugenics*". (Sara 2014) The section *Introduction* defines the term and classification modes. I then analyze various issues raised by the ethics of liberal eugenics on *New Eugenics*, and I have developed a special section for *The Future of Eugenics*, focusing on the human genome project. Finally, in *Conclusions*, I express my personal views on the current practice of eugenics.

Introduction

The term *eugenics* as a practice and field of study was invented by Francis Galton in 1883, in his book *Inquiries into Human Faculty and Its Development* (F. Galton 1983) based on the recent work of his cousin, Charles Darwin, the Mendelian genetics and August Weismann's theory of germ plasma, that says that hereditary information is transmitted only by germ cells from the gonads (ovaries and testicles), not somatic cells. (Blom 2008) Galton defined eugenics as "the study of all agencies under human control which can improve or impair the racial quality of future generations." Eugenics was later described as a social movement to improve the human species by using technology. (Harding 2012) The term has a strong negative valence due to its historical connotations about selective reproductive programs, concentration camps, and medical experiments and mass extermination promoted by the German Nazi regime in the Second World War. (Sara 2014)

The main concern of the first eugenicists, such as Karl Pearson and Walter Weldon of University College London, (Randall 2005) were the perceived intelligence factors considered to be correlated with the social class. In his speech "Darwinism, Medical Progress and Eugenics", (Salgirli 2011) Karl Pearson equates eugenics with a field of medicine. Some areas of medicine that are not commonly recognized as eugenic affect the human genes background. These include sterilization and surgical techniques that allow the functioning of reproductive organs. Even medicines that do not directly involve reproductive organs can alter the gene pool. (Harding 2012) Genetic abnormalities in such individuals are thus duplicated, modifying the genetic background. (J. F. Fletcher 1974) On this basis, such practices are widely accepted as more radical eugenic processes. (Harding 2012)

From the point of view of eugenics practice over time, it can be classified as positive and negative eugenics, (van Loon 1980) voluntary, compulsory or persuasive practice and promotion,

or state (eg, laws prohibiting incest and ask couples to be tested for disease and other disorders before marriage (Pizzulli 1974)) and private practice.

Positive eugenics encourages reproduction among those genetically favored: intelligent, healthy and successful. Negative eugenics aimed at slowing or stopping the reproduction, or even physically eliminating those physically, mentally or morally "unwanted". (Glad 2006)

Richard Lynn (Lynn 2001b) makes a classification of eugenics based on historical criteria and the ways in which eugenic methods can be applied. Thus classical eugenics include negative eugenics by providing information and services, ie reducing unplanned pregnancies and births (promoting sexual abstinence, sex education in schools, school clinics, promoting contraceptive use, emergency contraception, better contraceptive research, voluntary sterilization , discontinuation of pregnancy), negative eugenics through incentives, constraints and forcing (incentives for sterilization, teenage mothers pay for no pregnancy, incentives for women to use contraception, sterilization payments in developing countries, reduction of benefits for social assistance, compulsory sterilization of "mental retardation", compulsory sterilization of female offenders, compulsory sterilization of male offenders) and parental licenses, and positive classical eugenics include financial incentives to children, selective childcare incentives, taxing those without children, ethical obligations of the elite, and eugenic immigration. The new eugenics, also called liberal eugenics, include artificial insemination by the donor, egg donation, prenatal diagnosis of genetic disorders and termination of pregnancy fetal defects, embryo selection, genetic engineering, gene therapy, and cloning.

Thomas Hunt Morgan, in 1915, demonstrates that the idea of genetic mutation eugenics is not scientifically correct, stating that major genetic changes can occur outside the genetic heritage. (Blom 2008)

A long-term eugenism plan may also lead to the risk of genetic diversity being lost that can lead to a cultural "improvement" of the genetic background, as can be seen in many cases in isolated populations, the removal of characteristics considered undesirable by reducing by definition genetic diversity. (D. J. Galton 2002)

However, the debate on this issue has remained to this day: through a moral obligation to ensure the well-being of our future children, can contemporary practices be justified in their possible objectives, forms, justifications, and consequences from eugenic programs?

Contemporary philosophers distinguish between traditional "authoritarian" (coercive) and "liberal" eugenics currently promoted, (Agar 2004) based on free individual choice and pluralistic values.

Critics of eugenics argue through the susceptibility of abusing these policies to certain groups, the violation of human rights in the case of negative eugenics, and the loss of genetic diversity, leading to endogamy depression due to lower genetic variations.

Charles Darwin acknowledged the issue of dysgenic trends (the proliferation of people with traits that harm human well-being) of reproduction and the dangers of possible solutions. (Anomaly 2017) Darwin argued that social assistance programs for the poor and the sick are moral but also a threat to future populations by encouraging people with severe congenital illnesses and hereditary features such as low levels of impulse control, intelligence or empathy to reproduce at rates higher than other people in the population. This aspect was originally explored by Hermann Mueller and discussed by evolutionary biologist John Tooby. (Tooby 2016) Darwin was afraid that in developed nations "members of society make mistakes, and those who are degraded and often vicarious tend to reproduce at a faster rate than providential and generally virtuous members". (Darwin 1882, 138) Researchers in the field of intelligence recognize the so-called

Flynn effect, which relates to increasing IQ across the world, but argue that in developed countries it is decreasing: people with more education and income (correlated with superior intelligence) tend not only to have fewer children, but also delay reproduction in pursuing other goals. (Anomaly 2017) (Becke 1981)

In this article, I try to argue that, as eugenics is defined, it is very difficult to make a clear distinction between science (medicine, genetic engineering) and eugenics. And to set a line over which genetic engineering should not go, according to moral, legal, and religious norms. As long as we accept the help of genetics in finding ways to fight cancer, diabetes, or HIV, we also accept positively eugenics as it is now. And as long as we accept genetic screening, and interventions on the unborn baby, or abortion, we also implicitly accept negative eugenics. In addition, at government level, although eugenics is officially denied, it has been legalized in many countries until recently, and is still accepted and legalized, albeit in subtle forms, and today.

New Eugenics

Despite the Nazi horrors, in 1953, the new eugenics was founded, when Watson and Crick postulated the double helix of DNA as the basis of chemical heredity. (Hutton 1978) In 1961, scientists have deciphered the genetic code of DNA, laying the groundwork for code manipulation and the potential building of new life forms. After thirty years from the discovery of the DNA structure, the experimenters began to carry out the first clinical studies of human somatic cell therapy. (Robertson 1985)

In 1978 Repository for Germinal Choice was created, a sperm bank created in 1978 with the idea of collecting sperm from Nobel laureates, other brilliant people and athletes at the Olympic level. (Sara 2014)

Since the 1980s, genetic engineering has been widely used to genetically modify organisms and foods.

The practice of prenatal genetic tests identifies genes or unwanted genetic markers. Parents can choose to continue pregnancy or give up the fetus. In *Eugenics*, Sara Goering highlights that once the preimplantation genetic diagnosis occurs, potential parents can choose to use in vitro fertilization and then test early embryonic cells to identify embryos with genes they prefer or avoid. Because of concerns about eugenics, genetic counseling is based on a "non-directive" policy to ensure respect for reproductive autonomy. The argument for this counseling service is that we should balance parental autonomy with child's autonomy in the future. (Sara 2014) Specialists have not yet given a clear answer to the question of whether these practices should be considered eugenic practices, or if they are moral practices.

It is now possible to diagnose several genetically induced diseases. Some diseases result from a defect in a single gene, while others involve several genes. Screening for genetic abnormalities is a relatively simple process, based on a genetic profile, genetic information that may affect the choice of a marriage partner, and pregnancy monitoring. Decisions taken in these cases have eugenic implications. (Harding 2012)

The new eugenics supports the use of reproductive and genetic technologies to improve human characteristics and capabilities according to parents' preferences without state intervention. The term "liberal eugenics" was invented by the bioethicist Nicholas Agar, but since 2000 the term "libertarian eugenics" is preferred in the idea of a minimal state intervention. (Agar 2004)

Advocates of liberal eugenics highlight four main differences of the new eugenics compared with the past eugenics: it is individual and private (without State interference), it is optional, it presupposes pluralism of value (diversity), and the quality of science.

Dov Fox, professor of law at the University of San Diego, argues that the state should mandate secure, effective and functionally integrated genetic practices. (Fox 2012)

The United Nations International Bioethics Committee supports liberal eugenics, which should not be confused with the ethical issues of eugenics movements in the 20th century, but the objectors argue that the idea of human equality disappears, and discrimination and stigmatization is allowed against those who do not want or have no financial opportunity. (International Bioethics Committee 2015)

Critics of the new eugenics are based on current practices such as prenatal testing and selective abortion, as well as futuristic options such as improvement and design. Prenatal tests followed by selective abortion send a negative message: "It is better not to exist than to have a disability." (Saxton 2000) The negative message is harmful and can be considered a form of discrimination. This expressionist argument applies equally to the use of pre-implantation diagnosis. (Sara 2014)

Other critics, such as Bennett, are considering whether an appeal to impersonal or nonperiodic damage can remove us from the problem of non-identity without resorting to disturbing social justifications for an obvious individualist eugenics: "If a project is not interested in the welfare of particular people but in creating what those proposing this project believe is the best world possible, then this is exactly what eugenics is—promoting social and not personal goods. (Bennett 2009)

The utilitarian approach considers that the correctness and the mistakes of an action are determined by the usefulness of its consequences. If benefits are distributed to genetically disadvantaged or genetically engineered people, it is not important for utilitarian as long as the good is obtained. (Harding 2012)

Rawls objects to the utilitarian approach. Because birth inequalities and natural assets are not deserved, Rawls states that compensation is needed, proposing a theory of justice that exploits the inherent differences of individuals and uses them for the benefit of all, Rawls' principle of difference. (Rawls 2005) The principle of difference does not attempt to eliminate inequalities, but rather functions to minimize inequalities through increases.

Another issue of biomedical ethics, especially about genetic screening, is confidentiality. There is significant potential for third parties to misuse the genetic information of an individual. These third parties include employers, insurance companies and the state. Genetic testing can enable individuals and organizations to obtain an individual's genetic profile, identify their genetic vulnerabilities, and use information in interests contrary to the individual. The eugenic effects of such abuse are considered by John R. Harding Jr. (Harding 2012) to be similar to what is sometimes described as "social Darwinism." For this reason, some commentators claim that such information should be protected by law.

Among the most fervent opponents of genetic engineering and its eugenic implications are Christian theologians, especially Roman Catholics. Their main argument is that technology should not be used to overcome God's intentions. Arguments are the holiness of marriage, love, and the purpose of sex in procreation. Genetic engineering reduces the status of human beings from that of God's greatest creation to that of an object. (Tribe 1973)

Another moral/religious argument is that genetic engineering implies inherent judgments about the relative value of different lives - a judgment that critics claim is immoral in itself. There is also a fear that society's perception of genetic perfection will serve to ostracize other less fortunate members. (Jacobs 1977)

The arguments for regulating the use of genetic engineering, such as abortion arguments, focus on privacy. Parents should have constitutional privacy when deciding on procreative choice, contraception and abortion. If an infertile couple wants a child, the legislator should not prohibit the use of a breeding technology.

Supporters of genetic engineering even use the fear of eugenics to support their case. Southern California University Law Professor Alexander Capron believes that trying to ban a technique that will have some beneficial uses will surely lead to new eugenics in which someone or a group will decide which of the diseases will be treated and unwilling. (Capron 1985) Finally, it is claimed that the right to abortion implies an inherent right to engage in negative eugenics.

Moral arguments for the use of genetic engineering focus on the question whether there is an obligation to rescue a child if he needs medical care before birth. (Friedman 1981)

Opponents of genetic engineering claim that a fetus has rights that should be sustained. The argument is that life begins at conception and that all constitutional rights should assist the conceived child. The fact that the fetus is genetically different from his mother attests to his separate status. (King 1979) Referring to a moral personality capacity, (Rawls 2005) the argument is that life begins at conception and that all constitutional rights should assist the child conceived. (Wurmbrand 1986)

Jonathan Anomaly states that the primary principle is that a citizen may be required to submit a procedure if the cost to him is trivial compared to social benefits. (Anomaly 2017)

Michael Ruse asserts that thinkers often move away from naturalist ethics because of the belief that it leads to good co-operation and reduces righteousness to a mechanical process. Biological "altruism" can never be supposed to be authentic altruism. This concern is based on half truth. True morality, in other words, the behavior that most people or all people can share is

moral, lies in preparing to do "just" work at a personal cost. As outlined, human beings do not calculate the ultimate effect of each act on the survival of their own genes or those of their close relatives. They are more than replicating genes. They define each problem, weigh options and act in a manner consistent with a well-defined set of beliefs - with integrity, honor and decency. People are willing to suppress their desires for a while, in order to behave correctly. (Ruse and Wilson 1986)

The future of eugenics

The potential use of genetic engineering has brought back past eugenics into bioethics disputes. There are opinions, such as those of Nicholas Agar, according to which non-coercive eugenics programs are inherently ethical. (J. C. Fletcher and Wertz 1990)

Adherents of liberal eugenics argue that it is difficult to determine just what matters as an improvement (except for serious illness) and considers diversity to be important. For example, is it better for a child to be very smart? Some parents can choose a reasonable level of intelligence for the child, assuming they will have greater social opportunities in the latter case. (Agar 2004) In the case of genetic improvements, critics fear parents who can exaggerate certain traits, and suggest different limits on genetic intervention. (Sandel 2007) Parents' choices must not substantially diminish future choices for their children. (Agar 2004)

The central moral principle of biomedical ethics involves an obligation ""to confer benefits and remove harms." (Beauchamp 1979, 135)

Many theorists support the parents' ability to decide their children's genetics but contradict their obligation. In general, the idea is of a regulated system of the type considered by Robert Nozick, with controls to protect the well-being of future children and socially-valued goods (equal

opportunities, elimination of discrimination). (Nozick 1974, 315) It goes on the assumption that the treatment of the disease can be mandatory, while genetic improvement is not. (Parens 1998)

Buchanan et al. believes that parents should be required to choose a genetic treatment that promotes the health and wellbeing of the child but does not suggest that all potential parents would be required to seek advice on reproduction and to use in vitro fertilization. (Buchanan 2011) Such a requirement would be a violation of their procreative freedom.

Critics fear that parents might obsessively focus on certain characteristics by exaggerating them. (Sandel 2007) For this reason, eugenics advocates propose limits on genetic intervention for improvement. Sara believes that variations could include, for example. (Sara 2014)

- only improvements that will benefit future children regardless of the life plan they choose to pursue and do not strengthen the problematic social norms, (Agar 2004) or
- only improvements that preserve the child's right to an open future, (Davis 2009) or
- only improvements that keep open possibilities and protect some central nuclei of our human nature, (Glover 2008) or
- only understandings that rational people will agree to be in the best interests of the child. (Green 2008)

A "free-market" approach to the genetic development of children may result in a homogenising. Parents may be inclined to choose according to models accepted by society. In this case, improving technologies will "will grant racism and homophobia an unprecedented efficacy." (Agar 2004, 148)

One concern about the obligation to produce the best child in a particular society is that social norms may be discriminatory, so that in the end, for example, most children will be boys, extremists and heterosexuals. (Sparrow 2011)

Jonathan Anomaly believes that the current demography of developed countries is worrying because people with a higher IQ, higher education and higher income, reproduce at relatively low levels because they have many other activities, they consider priority, including creative activities, volunteering, entertainment and career. (Anomaly 2017)

The widespread acceptance of abortion as a eugenic practice suggests that there may be little resistance to more sophisticated methods of eugenic selection. More and more, prenatal diagnosis of genetic disorders is performed based on molecular tests for mental disorders. (Leroi 2006)

The geneticists highlight that comparative genomic hybridization (CGH) microarrays could be used to examine a single embryo or fetus for thousands of mutations. (Van den Veyver and Beaudet 2006) These matrices, which are based on bacterial artificial chromosome, can detect deletions and duplications of aneurysms.

An impediment to a total prenatal universal screening for all known mutations is the invasive nature of the procedure - it requires amniocentesis or chorionic sampling to recover cells from the amniotic sac, and the traumatic nature of the treatment. It is possible that in the future a total mutation screening will not be used in prenatal diagnosis, but rather in pre-implantation genetic diagnosis (PGD). As with prenatal diagnosis, PGD is generally performed only when a family medical history suggests that the embryo is at risk of a specific disease. (Braude et al. 2002) The procedure has spread rapidly, although it remains illegal in some countries.

Is it possible that one day, every citizen of an industrialized nation has survived, as an embryo, a PGD screen? Most do not think it is possible, as it is too expensive, inconvenient and limited. (Silver 2000) Nature invented an inexpensive, easy and pleasant way to conceive a child.

Some specialists, including Francis Crick, have suggested paying people not to reproduce or to establish a parental licensing scheme. (Crick 1963) There are reasons to support these policies. Such a policy would be effective only in the ideal case where there would be no corruption, bureaucracy, or black markets for pregnancy.

The human genome initiative was a fifteen-year study aimed at mapping and sequencing genes that constitute the human genome. Mapping determines the localization of genes on chromosomes, while sequencing identifies the parts of the gene. The initiative is geared towards the entire human genome, and so it will also provide information that would be vital for both positive and negative eugenic programs. (J. C. Fletcher and Wertz 1990)

The sequencing of the human genome can help us in human evolution. The human genome project can help us understand diseases for direct appropriate treatment, identify mutations that cause disease, and correct them.

The human genome project has made it possible to effectively modify the human species. Scientists such as Richard Lynn, Raymond Cattell and Gregory Stock have been calling for open eugenics policies using modern technology. (Lynn 2001a)

A "sperm bank of geniuses" was set up by Robert Klark Graham, of which nearly 230 children were conceived (the best-known donors were Nobel Prize winners William Shockley and J.D. Watson). In 1999, the sperm bank was closed, two years after Graham's death.

The project has generated many ethical, legal and social concerns regarding possible discrimination. Also, some authors have highlighted the need to address the possible social consequences of mapping the human genome. (Lock, Young, and Cambrosio 2000)

Paul Freund and Laurence Tribe claimed that the unborn have the right to random genomes. "The mystery of individual personality, resting on the chance combination of ancestral traits, is

the basis of our sense of mutual compassion and at the same time, of accountability." (Freund 1972)

Conclusions

Eugenic genetic engineering can help reduce disease and provide children with a healthy life, strength, intelligence, beauty and longevity. Research costs would turn into net and substantial financial benefits. At the same time, a society with clear class distinctions would develop. The problem may be where the line between genetic therapy and eugenics is drawn. Is there a threshold up to which genetic engineering can be accepted? Some believe that such a line would be immoral. And then, should we abandon genetic research because we can not decide where to stop, or are we forced to design each genetic trait that might be relevant? Argumentation can be based on values, or on faith.

Current negative eugenics attempt to attenuate illnesses, unwanted psychological or physical characteristics, while positive eugenics attempt to increase the prevalence of features that promote individual and social well-being (such as creativity or a healthy immune system). The basic issue is that we can not come up with a simple answer to distinguish between "doing better" and "no, getting worse." Whether we promote well-being or prevent evil, we should always ask "in comparison to what?" Coercive eugenics uses force to achieve these goals, while non-coercive eugenics use education, information, and social norms for it. The distinctions are not very clear. (Gyngell and Selgelid 2017)

The pressures for accepting eugenic genetic engineering are considerable. We can reduce illness, provide our children with a healthy life, strength, intelligence, beauty and longevity. There is already an economic polarization and a society with clear class distinctions, and those who refuse modern technology as an individual or social group will lose.

The issue that can be debated is the boundary between genetic therapy and eugenics, but this demarcation is very unclear. If we assume that genetic engineering is allowed to ease suffering, the problem is defining suffering. How much physical pain is needed to allow genetic engineering intervention? And what about other forms of suffering that are not physical, but rather emotional or psychic? (Harding 2012)

Is justified the assumption that parents should have the best possible child? Should we use a donated embryo or clone of the best embryo for this? Is it okay to create a clear list of features? The limited information we receive from prenatal testing or pre-implantation diagnosis may incline parents to private choices but would be underestimated to identify the best possible child. (Parker 2007)

There is also an aggravating effect of individual choices when they are often poorly informed or relatively biased.(de Melo-Martin 2004)

The parental genetic control tendency, left uncontrolled, threatens to change the nature and significance of the parent - relationships with children, from opening to spontaneous and unconditional love to design and manufacture: "the deepest moral objection to enhancement lies less in the perfection it seeks, than in the human disposition it expresses and promotes." (Sandel 2007)

There are the moral arguments that favor the use of genetic engineering: 1) the increasing number of diseases for which they are found in genetic components 2) the fact that these defects can be anticipated with increased accuracy just before conception and 3) that these defects can be discovered in the fetus in progressive stages. Thus, screening may even be mandatory under certain circumstances. (Harding 2012) But there is concern that by eliminating certain genes through genetic engineering, we can reduce the ability of species to adapt to changing environments.

Genetic engineering can increase the diversity of the human gene. The problem is whether the "plan" of nature is better than human ingenuity. Genetic engineering supporters argue that it would be more reasonable to "plan for the future even with imperfect information, than sit idly by waiting for the genetic roulette wheel to stop spinning." (Rosenkranz 1987)

Although efforts have been made to regulate genetic engineering research, nevertheless, no distinctions could be found between processes that have eugenic potential and other beneficial projects, such as cancer research.

But there is also the view that essential human dignity can be compromised by the child's realization that he is the product of genetic manufacturing. (Tribe 1973) No generation would have the right to make decisions for future generations by using genetic engineering. Consequences go beyond the fetus whose genes are designed.

There are people who claim that any attempt to draw such a line between the two extremes is immoral. The argument always depends on values, or maybe on faith.

In recent years, many authors say we have a moral obligation to produce children with the best chance of life. (Savulescu and Kahane 2008) As John Stuart Mill said:

"It is not in the matter of education only, that misplaced notions of liberty prevent moral obligations on the part of parents from being recognised, and legal obligations from being imposed... The fact itself, of causing the existence of a human being, is one of the most responsible actions in the range of human life. To undertake this responsibility—to bestow a life which may be either a curse or a blessing—unless the being on whom it is to be bestowed will have at least the ordinary chances of a desirable existence, is a crime against that being." (Mill 1859)

The issue of eugenic genetic engineering involves more than pure life and death of individuals, rather it is about the future of humanity.

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