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The concept of bioethics and the risks of genetic engineering

By

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Abstract

Bioethics is considered a standard science that focuses on acceptable human behavior within the context of issues related to life and death. It brings together various disciplines concerned with the conditions required for human life in the current framework of scientific advancements, knowledge, medical techniques, and biology. Thanks to technology, it has introduced new topics for discussion that were not previously raised. Today, technology has gone beyond controlling the external nature and has extended its reach to sacred internal aspects related to humans. This has sparked discussions about genetic engineering applications. Advocates emphasize the importance of not compromising the dignity of living beings while recognizing that genetic engineering applications can contribute to disease prevention. They also stress the importance of preserving the freedom of scientific research that serves humanity and maintaining a delicate balance that aligns scientists with public opinion to prevent any transgressions that could harm humanity as a whole.

Keywords: Bioethics, genetic engineering, scientific research, euthanasia, abortion.

Introduction

Scientific progress has played a prominent role at the beginning of the twentieth century, leading to transformative changes in all fields, including human-related areas, especially medicine and biology and their applications. As a result of these applications, philosophy has encountered novel problems that were not previously raised prior to the advancements in medicine and biology. These inquiries have now shifted towards ethical dimensions and the attempt to find suitable solutions regarding the future of humanity and its fate amidst these medical paradoxes that have become tidal. Hence, bioethics emerged as a universal reference to confront the challenges posed by scientific revolutions in several domains.

As a result of this progress, leaps, breakthroughs, and scientific revolutions have emerged, bringing about radical changes and fundamental developments in human life. Many of these advancements were considered unimaginable, and some were beyond human imagination. However, individuals have ventured into their scientific applications, which could have potentially led to the destruction of humanity, starting with the atomic bomb (Hiroshima 1945), which resulted in numerous diseases. Consequently, the trajectory of science has continued to escalate, prompting international public outcry and ethical societies to call for cessation of human experimentation due to its violation of human dignity and desecration of sanctity. This is where bioethics assumes its role.

What is bioethics? what are its domains? How has bioethics established international principles through the perspectives of philosophers and societies? What are the obstacles that

threaten the exploration beyond ethics, particularly concerning genetic mutations and life sciences? And what is the philosophical stance on the applications of genetic engineering?

The concept of Bioethics

Indeed, we can precisely define the concept of bioethics as the integration of biological knowledge and human values. The term "bio" refers to life, and "ethics" pertains to morality. The concept of bioethics emerged in the late 1960s in North America, specifically in response to the questions raised by advancements in the fields of biology and medicine. It is considered a fusion between knowledge in the field of biology and human values.

G. Durand presented several definitions of the term bioethics in an attempt to grasp its terminological meaning. According to Pierre Dechamp, bioethics is the normative science of human behavior that can be accepted in the realms of life and death[1].On the other hand, according to David Roy (D. Roy), bioethics involves studying the set of conditions required for responsible management of human life or the human person within the context of rapid and complex advancements in knowledge and biotechnological techniques. Durand arrives at a definition that he finds satisfactory, stating that bioethics is the exploration of the set of requirements for respecting human life and the individual, and promoting them within the biomedical sector.[2]

Bioethics is considered a normative science that focuses on human behavior that can be accepted within the context of issues related to life and death. It brings together multiple disciplines that are concerned with the conditions required by human life in the current framework of scientific advancements, knowledge, and medical and biological technologies[3].

According to David Roy, the director of the Bioethics Center, bioethics is a multidisciplinary study of the set of conditions imposed by responsible management of human life (or the human individual) within the framework of rapid and complex developments in biotechnological knowledge and technologies. It is the philosophical study of the ethical discourse generated by significant advancements in the fields of biology and medicine. It concerns itself with the ethical issues that have emerged in the relationships between life sciences, biotechnology, medicine, politics, law, and philosophy, including theology[4].

Bioethics can be defined as the ethical philosophy that dictates moral and cultural values. It is essential in various domains such as human reproduction, organ transplantation, therapeutic testing, euthanasia, animal rights, and more. It provides a framework for addressing the ethical dilemmas and making informed decisions in these areas. The term 'bioethics' was first coined in 1970 by the American scientist Van Rensselaer Potter in an article titled 'Bioethics, Science of Survival.' This concept calls for the creation of a new discipline that explores the intersection of biology and human values. It emphasizes the need to integrate scientific knowledge with ethical considerations in order to address the challenges of our survival. Indeed, as evident from the content of the term, bioethics represents the intellectual domain associated with modern biomedicine technologies, aiming to reconcile scientific research with the respect for human dignity[5].

1. Jacqueline Ross, Contemporary Moral Thought, translated by Adel Al-Awa, Awaidat for Publishing and Distribution, Lebanon, 2001, 1st edition, p. 106.
2. Murad Wahba, The Philosophical Dictionary, Dar Qabaa Haditha, Cairo, 5th edition, 2007, p. 35.
3. Jacqueline Ross, Same reference as above, same page.

4. 4Title: Biotechnology: The Power of Technology and the Clash of Values
5. The article titled 'Biopolitics: The Ethical Necessity of God's Disappearance!' by Nabil Fayyad, published on Saturday, 2nd of January, 2010, on the Al-Awan website. http://alawan.org/article6575.htm

Biopolitics is one of the major challenges for the philosophy of the coming age. It represents ethics built in the present to form a complete ethical framework in which biology and medicine operate according to values. It signifies the project of utilizing biological sciences aimed at improving the quality of life. The author intended through his works to highlight the importance of aligning scientific and technological progress with the ethical dimension, which means incorporating this development with ethical constraints.

Biopolitics is also known as life ethics or vital ethics. Jean Bernard, in his book "From Biology to Ethics," described it as arising or being revived, originating from Greece through the American concept of bioethics. It is glorious, triumphant, adorning and filling the expressions and language of statesmen, politicians, philosophers, thinkers, sociologists, lawyers, legislators, and other intellectuals with various meanings. It sometimes encompasses a broad and general field, covering traditional ethics, and at other times it is more specific and precise in its own connotations: the science of ethics, as inspired by ethical thinking or its applications. The significance of the matter, linked to the development of biology, has made ethics and biopolitics almost synonymous terms.

In his lecture titled "Biopolitics and the Challenges of the Coming Philosophy," Dr. Mohammed Jadidi considered the term biopolitics to signify a distinct space for ethical discourse that encompasses all sectors regarding the directions of medical research and its related therapeutic applications.

Overall, it generally refers to the dominant thinking over the past twenty years, across various subfields, regarding the issues raised by biomedicine. However, upon examining the roots of this term - considering that its emergence coincided with the development in biology in the early 1970s - one would find that the first person to use it was not the American scientist Potter Reischauer but rather the German Protestant theologian Fritz Jahr (1895-1953) in an article he published in 1927. Jahr used it once in a text, but he was unable to establish himself in the history of bioethics as a crystallized concept, which was accomplished by Potter at the beginning of the 1970s. This also does not mean (in this context) that the content of the term is not at all connected to ancient eras. Implicitly, from this statement, it can be understood that history often vindicates those who have been overlooked, as in the case of the term "biopolitics," where it becomes apparent that it was not a specific invention of Potter Reischauer but rather crystallized during different stages of human life through what is commonly referred to as medical ethics.

From the Biological Revolution to Bioethics

J. Bronowski states that the most profound changes brought about by the 20th century, in terms of scope, are the shift in our perspective regarding nature and the placement of humans in relation to it. Although this transformation in our understanding of nature and biology is hardly widely recognized, biological knowledge continually leads to a change in human self-perception. Moreover, it not only leads to a change in self-perception but also adapts this self to govern its behavior. The concerns raised by scientific advancements in biology are not unfamiliar, except for those associated with achievements or dreams. Biotechnology (genetic engineering) on the one hand, and its relevance to human values on the other hand, have

contributed to the development of humans through culture and biology. Humans have evolved to become rational beings (humans) through the development of cultural skills, distinguishing humans as planners whose plans rely on logical analysis (knowledge) and those great strategies we call values. It is through these values that behavior is directed towards solving seemingly impossible problems arising from the imbalance between individual desires and societal needs. For the betterment of humanity and the human social fabric, and its deeply influenced values affected by human engineering1.

As previously mentioned, biology has intersected with various other sciences to the extent that different branches have emerged, interconnected with biology and those sciences. Each of these branches has achieved its own development and established its own laws, despite their interdependence. For example, Biochemistry is a branch that emerged in the early 20th century but has rapidly evolved in recent years. Similarly, there are fields such as Bioclimatology, Biophysics, Biogeography, Molecular Biology, Embryology, Cytology, Medical Biology, and finally, Genetic Engineering. Each of these branches has become a distinct discipline in its own right, although they rely on and benefit from interdisciplinary collaboration with other branches.

Embryology

Embryology is concerned with studying the structure and development of living organisms from the moment of fertilization until the moment of birth, specifically focusing on the embryonic stage of the organism. This study includes understanding the process of fertilization, the challenges faced during this process, and attempting to find ways to treat the embryo during pregnancy. Additionally, with the help of modern technology, this field aims to identify the gender of the fetus before birth. One of the significant contributions of this field to humanity is addressing the issue of infertility through two methods2: Artificial Insemination (AI) and In-Vitro Fertilization (IVF), also known as test-tube babies.

Artificial Insemination does not refer to the use of non-sperm substances for fertilization. Rather, it refers to the process through which pregnancy occurs, which is different from the conventional method that humanity has been accustomed to since the beginning of creation. It involves the use of an artificial insemination tool without any sexual intercourse between the male and female. The first medically-based artificial insemination procedure took place in 1884. These procedures are only performed after a thorough examination of the couple to ascertain the causes of infertility.[4]

1. "Fouad Zakaria, Scientific Thinking, Al-'Alam Al-Ma'rifa Series, National Council for Culture, Arts and Literature, Kuwait, 1978, p. 250."
2. "Nahed Al-Baqsimi, Genetic Engineering and Ethics, previous reference, p. 76."
3. "Ahmad Shafiq Al-Khatib, 'Dictionary of Scientific, Technical, and Engineering Terminology', Lebanon Library, Lebanon, 1984, p. 85."
4. "Nahed Al-Baqsimi, Genetic Engineering and Ethics, previous reference, p.77".

The reasons for using these methods primarily revolve around one of the spouses being infertile, or experiencing difficulties that prevent successful pregnancy, or concerns about the transmission of a genetic disease to the children. In the latter case, a donor may be sought, sometimes in exchange for compensation. If the wife is unable to conceive, a woman who carries the pregnancy instead of the wife is referred to as a "Surrogate Mother." Both methods raise numerous ethical, social, and religious issues and challenges.

One of the notable transformations that occurred in the field of artificial insemination in the early 1970s was the establishment of a "Sperm Bank," an idea implemented by an American businessman. The purpose behind it was to preserve sperm from a collection of geniuses for use in artificial insemination. The development of a method to freeze the sperm contributed to the implementation of this idea and enabled the birth of exceptionally gifted children. Dr. Hermann Muller, a Nobel laureate in science, was one of the early proponents of this concept. He believed that we could use artificial insemination to improve the quality of the human race by obtaining sperm from individuals who possessed intelligence or other desirable traits, and then fertilizing women who also possessed desirable traits. The result would be a generation of highly intelligent and healthy individuals[1]. The American businessman, with the assistance of Dr. Muller, sought to collect the required material from around the world and store it in a specialized bank. However, this idea faced objections from scientists and the public opinion.

However, the purpose of sperm banks has evolved to serve another goal beyond improving the human race. They now aim to assist couples who are unable to conceive naturally, addressing the humanitarian issue of infertility in one or both partners[2]. Presently, these banks provide couples with the desired sperm, often from anonymous donors to prevent any personal relationship from forming between the donors and the couple. This also eliminates any future claims to parenthood from the donor.[3] However, doctors face significant challenges, including ethical, legal, social, religious, and health-related issues, when dealing with sperm banks.

The anonymous volunteer is often unknown even to the doctor, and the only available information for selection purposes is the external characteristics that aid in the process. When it comes to medical conditions, it is difficult to ascertain them, even if the doctor requests the volunteer's personal history. The maximum information that can be known is the blood type and the absence of sexually transmitted diseases. It is challenging to determine non-apparent genetic conditions[4].

1. Nelson, «Human Medicine», Augsburg Publishing House, Minneapolis. Minnesota. 1973, p109
2. Nahed Al-Baqsimi, the previous reference, page 78.
3. Anderson, J, K.1«Genetic Engineering», Zondervan Publishing House, Michigan, 1982, p29.
4. Nahed Al-Baqsimi, Genetic Engineering and Ethics, Al-'Alam Al-Ma'rifa Series, National Council for Culture, Arts, and Literature, Kuwait, issue 1974, page 78.

Genetic Engineering

Despite the numerous and extensive applications of genetic engineering, it only requires a few basic steps to transfer foreign DNA and express it in the host cell. Genetic engineering became possible only when scientists discovered the exact nature of genes before 1950. These genes were found to carry certain hereditary traits from one generation to another[1]. These steps include:

1 Manipulation of DNA, particularly in terms of isolation, amplification, and modifications...
2 Cloning of DNA and its expression in both nuclear and non-nuclear cells[1].

Gradually, the term Genetic Engineering began to circulate among people, signifying that this field itself constitutes one of the most significant scientific revolutions. It is a true revolution that relies on the building blocks of life, namely cells and their genes. This revolution involves three fundamental sciences these sciences, namely genetics, cell biology, and embryology, are based on the concept of controlling the genetic makeup of humans, thus enabling the programming of human traits according to predetermined designs. Consequently, scientists began to modify or tamper with the fundamental characteristics of humans, specifically the genetic code. The Human Genome Project could not have been accomplished without parallel advancements in information technology required for recording, indexing, searching, and analyzing the billions of bases that make up the human cell. The integration of biology with information technology led to the emergence of a new discipline called bioinformatics. What can be achieved in the future will largely depend on the ability of computers to interpret the vast amounts of data generated by genomics and proteomics[2], as well as constructing reliable models for phenomena such as protein folding. Scientists aimed for the betterment of humanity and recognized that genetic diseases are inherited from ancestors to descendants. It was observed that an individual may develop a disease that was not present in their parents, but upon further research, it is discovered that their grandparent or grandparent's sibling had the same disease. Examples of such diseases include mental disorders, diabetes, or visual impairments. In order to eradicate these diseases, scientists sought to eliminate disease-causing strains through gene technology. They achieved some success in alleviating human suffering through genetic engineering. Additionally, they aimed to protect humanity from persistent diseases that have previously devastated populations, such as plague, smallpox, and malaria.

Then they turned to the process of cloning with the intention of eliminating differentiation in terms of height, weight, vision, or mobility. They dealt with genes and cells, but the challenge was that the human body consists of millions of cells, making it difficult to extract parts from each cell to achieve genetic engineering[3].

1. http://www.scienceclarified.com/Ga-He/Genetic-Engineering.html#ixzz472Fr1HNB
2. The Sharabi, Stuttgart, 2002/2003, p. 231.
3. Francis Fukuyama, Our Posthuman Future: Consequences of the Biotechnology Revolution, translated by Ihab Abdel-Rahim Mohammed, Emirates Center for Strategic Studies and Research, Strategy, 1st edition, 2006, p. 97.

The world was taken by surprise in 1997 when the scientist Ian Wilmut successfully cloned the sheep named Dolly. This breakthrough in cloning technology opened the doors for further experiments. Subsequently, in the United States, the cloning of two monkeys from cells was announced, and in Japan, the successful cloning of frogs was reported. However, when it came to the prospect of human cloning, the world stood against it.

Fields and Areas of Biotechnology

Defining biotechnology has established valid criteria in various fields encompassed by biotechnology, through the call for responsibility. Hans Jonas advocated for control over reproduction and genetic manipulation. Finally, the counterbalance to power over the neural network is required, as the power of power is as necessary as it relates to our biological foundation, making us fully responsible. The control over reproduction necessitates redefining responsibility within an ethical framework. From contraception to artificial insemination, thereby altering the landscape of childbirth, Jonas argues that while people may criticize

biotechnology for artificial procreation, shouldn't we instead consider that biotechnology finds its greatest field of contemplation here? Shouldn't we establish a set of principles that define the types of experimentation and common practices?

As Jonas points out, the child is a primary subject of responsibility. Responsibility finds itself confronted with mixed circumstances, such as cases involving two biological mothers, one contributing the ovum and the other the uterus. Forms of reproduction belong to biotechnology and revolve around a central idea, which is the concept of responsibility. Then the discussion shifts to genetic control and the issues surrounding genetic engineering. Techniques of recombinant DNA technology, which emerged in Stanford, California in 1971, facilitated the transfer of genetic material into another cell. Here, a series of concerning clashes began, as they were altering the genetic heritage.

This became a cause for concern among scientists, leading to the organization of the Asilomar Conference in 1974 in the United States. As a result, they decided to temporarily halt research related to genetic engineering. In 1975, the moratorium was lifted, and genetic engineering began to be regulated by strict and precise laws. It developed under tight scrutiny, becoming linked to responsibility, as highlighted by Jonas, along with the principle of respecting human dignity.

Furthermore, as demonstrated by J. Bernard, partial genetic manipulation is possible, such as organ transplantation, as well as interventions in the genetic makeup of human beings to obtain the best possible outcomes. Hence, it is necessary for bioethics to be involved in the field of genetic engineering in order to avoid, on the one hand, any reckless manipulation of nature and, on the other hand, to reject any interference or temptation related to eugenic improvements.[2]

1. Abdul Moez Khattab, Human Cloning: Is it Against Divine Will? Dar Al-Nasr for Islamic Printing, Cairo, n.d., p. 28.
2. Jacqueline Ross, previously cited, p. 112.

Subsequently, scientists address the control over the neural network. The expansion of neuroscience and advancements in psychopharmacology raise concerns about controlling the neural network from the perspective of Jean Bernard. Neural cell transplantation, according to Bernard, can unleash disorders. He poses the question, "When a large number of implanted cells exist in various types of transplantation, and the targeted areas are centers of higher functions, can a person be altered? And should all of these interventions be allowed? Thus, the control over control appears to be essential. Isn't humanity threatened by knowledge itself? While genetic engineering has the potential to be a weapon for eliminating the most vulnerable, surgical psychology can pose an aggression against human personality.

Consequences and Limitations of Bioethics

The advancements in biology and the rapid progress of technology have led to the formation of committees, such as the French Committee on Theoretical Ethics in the 1960s or 1970s. With the increasing development of human experimental medicine, there was a need for ethical regulation, either in the form of theoretical ethics or the science of duties. The Nuremberg Code, established in 1947, emerged as a reference for physicians interested in the ethics of therapeutic theory.

Afterwards, the field of bioethics expanded to an international level. However, Jean Bernard emphasizes that it went through two stages. The first stage involved the formation of committees on theoretical ethics related to hospitals and universities. Then, a second stage emerged, involving national committees. Nearly twenty countries established their own dedicated committees after France (1983). This committee attempted to transition from theoretical ethics to legislation, which was approved by the Constitutional Parliament in June 1994. It pertained to the human body, stating that it cannot be subjected to trade or its inheritance. Article 16 of the law states: "The law ensures the primacy of the individual, prohibits any attack on their dignity, and guarantees respect for the human being from the beginning of life.

Indeed, these laws and regulations aim to preserve the dignity of the individual, making eugenic practices subject to strict condemnation. The ideology of eugenics seeks to improve the supposedly pure race and eliminate others, advocating for the improvement of the genetic makeup, as the Nazis notoriously did. According to the mentioned law, the enforcement of any practice related to eugenics or the manipulation of individuals is punishable by twenty years of criminal imprisonment. Lastly, the text predicts the potential danger of commercializing and producing human embryos for commercial purposes and seeks to protect them.[1]

One of the obstacles that go beyond ethics, especially in relation to the mutations associated with the life sciences, is secularism.

1 Jacqueline Ross, the aforementioned reference, page 118.

Secularism claims to solve all philosophical and human problems through science and seeks to glorify science, seeing it as the solution to all problems. However, when secularism attributes any knowledge of significance solely to scientific knowledge, it obscures the human dimension or the core values of the problems at hand. The situation that is only fertile through positivist science, which dismisses the highest issues of the mind, is no less problematic than secularism, as they are intertwined. While secularism turns away from considering the individual, it obscures the fundamental aspects of theoretical ethics, foundational principles, and the study of values that should enlighten all aspects of bioethics. They should not be viewed solely as a science of duties but rather as a realm of intellectual work. In other words, instead of being a science that signifies knowledge left to itself and aimed at legislating everything, secularism fails to fulfill its role effectively.

When we inquire about the presence of secularism and positivism, Husserl responds by stating that they emerged in the era of Galileo. During that time, they expelled experiential knowledge from the subjective sensory qualities of the universe into absolute objectivity. The field of life sciences has developed new connections with secularism, and the flourishing of these sciences has nourished secularist aspirations in intriguing ways.

From this, we affirm that the dual danger of secularism and technology (which sees technology as capable of solving all problems and issues) is looming on the horizon. It is necessary to adhere to the bioethical imperative or the necessity of bioethics in biological practice. We should not fear science or technology itself but rather the delusional dream associated with them, which calls for a responsible approach to bioethics. Preserving the body and prioritizing it, along with the principle of responsibility, are the foundations of bioethical principles[1]. Medical experiments call for the principle of justice, as poverty may not be the cause of human trafficking, and corrupt wealth may play a role in it. Jean Bernard asserts that in the Middle Ages, religious figures claimed to possess the truth, but the development of

sciences proves that the truth is revealed by the future alone. If the positions and visions of religious figures in the past were fortified by illusions and claims of possessing ultimate truth and their barriers, today everyone is convinced of the necessity to soften those judgments, dogmas, and claims of monopolizing truth. Only the future is capable of presenting solutions that we do not expect today to problems that touch the borders of ethics and theology[2].

The success of secular bioethics depends on our acceptance of the success of secular ethics. Therefore, specifically, the principle of responsibility, as previously mentioned with Jonas, is complemented within secular bioethics. It replaces the principle of autonomy with the principle of allowance or openness, which becomes the basis of the secular approach in bioethics, accompanied by the virtue of ethical tolerance.

1- Jean Bernard, La bioéthique, Flammarion, Paris, 1994, p253: Jean Bernard, Bioethics, Flammarion, Paris, 1994, page 253.
2- Jean Bernard, La bioéthique, p97: Jean Bernard, Bioethics, page 97.

Gilbert Hottois sees this as the enhancement sought by secular bioethics: "Secular bioethics, which makes peaceful coexistence and voluntary cooperation of ethical individuals and ethical communities possible, is the foundation of every bio-politics within limited democracies, meaning respected pluralistic democracies that safeguard individuals and their properties[1].As secularism is a neutral space capable of achieving peaceful coexistence and positive dialogue through bioethics, it serves as a mechanism to embody a new humanity embarked upon by democracy, despite its shortcomings. Both democracy and secularism need each other. Democracy is followed by the secularization of life, manifested through methods of election, approval, and voting on laws and proposals related to the body and its medical aspects.

In light of the growing influence of technology and secularism, religious advocates have found themselves isolated, prompting them to engage in discussions on bioethical issues. Even doctors, lawyers, philosophers, sociologists, economists, legislators, and all citizens have recognized the necessity of participating in these dialogues and committing to the ethics of discussion. As a result, proponents of secularism and technology continually adapt bioethical laws, challenging judgments that respond to the increasing demands for freedoms. These freedoms have been concentrated in generations of human rights, which have emerged from successive waves that are not easily relinquished. This has led theologians to stand as spectators on issues that have become widely debated, such as abortion, cloning, euthanasia, same-sex marriage, gender reassignment, and the right to die, all of which religious authorities consider forbidden and prohibited.

The need for ethics in science is an essential and inseparable relationship. Their connection is as strong and intertwined as the relationship between thought and emotion. Both are necessary for society and should be of concern to all those who care about the well-being of communities and seek to improve their conditions[2]. This calls for ethics to accompany science, especially in the current era where humans feel that they are losing the privacy that God has endowed them with. Consequently, associations have emerged to safeguard human dignity and stand against anyone seeking to disrupt the tri-dimensional order (human, divine, and natural).

Philosophical Perception to Genetic Engineering

In 1975, some scientists expressed their desire to halt certain experiments related to genetic engineering and explore the matter further while implementing some regulations.

However, this action opened the door to a significant ethical dilemma. Intervening in the course of science is not a new phenomenon; we recall the suffering of Galileo and many others in the past. These interventions were often driven by authority and religion. However, intervention in the modern era has taken on a new form. This prompted scientists to issue an open letter calling for the suspension of experiments and urging caution in conducting further trials.

1- What is Bioethics?" by Gilbert Hottois, published by Librairiephilosophique J. Vrin, Paris, 2004, p. 71.
2- Abu Saat Al-Husri, Opinions and Discussions on Science, Ethics, and Culture, Arab Unity Studies Center, Beirut, 1985, p. 35.

In line with this, scientists at the Asilomar Conference formulated guidelines concerning the safety and security of laboratory workers, as well as the well-being of society. Nevertheless, the American society expressed its discontent and resistance towards these developments.

The question arises about the reason behind the fear that has gripped public opinion regarding genetic engineering. Fear arises from the unknown, as this ignorance pushes us to feel concerned, as Roland Maye suggests: "If one does not have a certain degree of freedom, they will never experience anxiety." [1]Fear is associated with an unknown future. Concerning the fear of genetic engineering, Ingehardt states: "Because genetic engineering, in its negative sense, has not yet reached what can truly frighten us. Therefore, contemplating it in this sense is a futuristic thought."It has been able to decipher the genetic makeup of humans, decode genetic codes, manipulate genes, discover insulin and substances that combat pollution in the seas, uncover certain unknown genetic diseases, and understand the nature of cancer. Fragmentation of genes and their recombination are considered among the greatest triumphs, but they also carry numerous hidden risks behind them.

Among these concerns, scientists have focused on the safety aspects associated with laboratory experiments, such as the potential transmission of a genetic organism outside the lab, leading to the spread of epidemics and diseases, or the transfer of a genetic organism to a microbe that poses a threat to humanity. For example, in the United States, scientists conducted experiments on strains of bacteria that cause plague and smallpox, resulting in many volunteers becoming infected in the process.

The concerns of the general public stem from the fear of a chaotic world, even if regulations are in place. There is a fear that scientists may pursue mad objectives, such as creating a genetically engineered microorganism, virus, or uncontrollable human entity. Similar fears arose with the emergence of the 2020 coronavirus, which resulted in the loss of many lives.Technology can also fall into the hands of a great aggressive dictatorial power seeking to exploit various technologies to control the world. Countries with aggressive regimes may exploit scientific discoveries like this to enhance the power of their citizens or their ability to mercilessly crush their enemies[2]. If such a discovery were left in the hands of politicians like those who made the decision to use the Hiroshima bomb, it would undoubtedly be exploited in the worst possible way. Alvin Toffler shares a similar view, stating, "Our possession of this rapid, cumulative knowledge of genetics will enable us to produce human strains on demand, especially in a world still dominated by the idea of racial bigotry. If that happens, can we struggle for a world in which skin color becomes uniform?"[3]

1- Imam, Abdul Fattah. "Karkeegoud: The Pioneer of Existentialism." Vol. 2. Dar Al-Thaqafa Publishing and Distribution, Cairo. Page 338.

2- Zakharia, Fouad. "Scientific Thinking." World of Knowledge Series, National Council for Culture and Arts, Kuwait, 1978. Page 256.
3- Saleh, Abdul Mohsen. "Scientific Prediction and the Future of Humanity." World of Knowledge Series, National Council for Culture and Arts, Kuwait, 1984. Page 224.

Genetic engineering does not pose a threat to human existence unless it seeks to transform and change humans into another being, altering their behavior to make them aggressive, peaceful, or devoid of free will. However, genetic engineering also holds benefits for humanity through its ability to control genetic diseases. The fear of its negatives does not prevent scientists and communities from establishing legal regulations. Some scientists address future problems through our present, as Clover states: "The decisions we make for the future may not be fair to future generations because we judge based on our present values[1]." This perspective suggests that future generations may welcome genetic interventions contrary to the expectations of present-day scientists, as it could potentially benefit humanity in the future. The concerns of scientists are not only about tampering with humans but also about the fear of errors that could lead to the destruction of all. This has prompted many institutions to adopt the role of overseeing biological studies and acting as mediators between scientists and the public, explaining the latest scientific research, its benefits, drawbacks, and the responsibilities of researchers towards their work and humanity as a whole.

The fear of scientists as a responsible for future generations in the context of genetic engineering arises from its direct interaction with humans, their cells, and tissues. Any mistake in this regard carries the scientists' responsibility, which has led scientists to establish objective guidelines that govern their behavior in conducting experiments and engaging in public debates to inquire about genetic engineering applications. Therefore, does the public have the right to intervene, and does the world have the right to refuse to answer? For example, scientists have succeeded in fragmenting DNA, but in the future, they may reassemble it by adding parts from other DNA. However, the behavior of this new composition cannot be predicted, and it may pose a danger to humans.

One of the risks of genetic engineering is the emergence of cloning, which scientists predict could lead to a terrifying new nightmare threatening humanity. This has led some scientists to contemplate the possibility of humans entering the gene market, where we can design our children or create copies of ourselves. Scientists have even speculated about the possibility of creating a "green" human. One of the risks associated with cloning is the potential elimination of the concept of family and parents. Clones may not require a mother or father and could be created as mere numbers within cloning institutions or even through machines, lacking the emotional and sensory experiences that occur during natural pregnancy for a biological mother.

As the state assumes control over the institution responsible for cloning, it will exert influence by imposing specific traits to select the chosen elite. However, intellectuals have raised questions regarding the criteria for determining this elite group. Even if this technology is deemed beneficial, its dominance over humanity and erosion of individual freedoms raise concerns about its inherent goodness. The future society that emerges may witness a loss of personal liberties and the erosion of human dignity. Conversely, proponents of cloning argue for unrestricted scientific pursuits, envisioning future generations embracing and pursuing these achievements.

2- Nahidah Al-Baqsimi, same reference, page 207" in English.

Nevertheless, it is imperative not to overlook logical and scientific discussions, while simultaneously establishing adaptable legislation that can be revised to align with human interests. Thus, we must confront reality rather than evade it, safeguarding the freedom of scientific inquiry, which has historically been paramount (as exemplified by the experiences of Galileo and Copernicus). Manipulating the destiny of researchers and scientific exploration should be vehemently avoided.

Conclusion

Biopolitics is a nascent field in philosophy, and for philosophy to maintain its relevance and prominence, it must attend to present-day issues, coexist with them, and engage in contemplation based on this reality. Technological advancements have facilitated the emergence of new subjects for discourse that were previously absent. Today, technology not only extends its dominion over the external aspects of nature but also permeates sacred internal dimensions pertaining to human beings. According to Didier Sicard, "Biopolitics transcends mere scientific challenges; it embodies a perspective on life, on the essence of our humanity, on our capacity for communal living, with particular emphasis on attentiveness towards others, especially the vulnerable. It constitutes a robust biopolitics grounded in overarching principles, whether religious or rational... However, if it neglects to consider the preservation of the humanity of others, it becomes null and void, and, more perilously, it assumes the guise of a mask that enables the precise avoidance of this responsibility."

The evasions mentioned are exemplified by genetic engineering, which encompasses a range of scientific and medical techniques aimed at combating hereditary diseases. This is where the need for bioethics arises, serving as the ethical framework that regulates the behavior of researchers and scientists, guiding them in accordance with global ethical, medical, scientific, and logical principles. It is through this framework that technology is practiced, adhering to the conscience of the world, governing behaviors, and preventing transgressions. However, there have been numerous medical transgressions, such as unauthorized abortions, the creation of test-tube babies using non-consensual eggs or sperm, euthanasia, organ trafficking, and mafia syndicates involved in these activities.

It is imperative to respect the dignity of living beings while also ensuring that applications of genetic engineering contribute to disease prevention. We should uphold the freedom of scientific research that serves humanity's best interests while also safeguarding the autonomy of scientists. It is crucial to maintain a delicate balance that aligns the views of scientists with those of the general public, preventing transgressions that could potentially jeopardize humanity as a whole.The advancements that scientists dream of are still distant. Undoubtedly, as we approach the envisioned future described by scientists, we will undergo changes, and our value system and thinking will also evolve. It is true that our scientific and ethical thinking may need development from now in order to prepare ourselves for that time.

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