

AN ETHICAL EVALUATION OF EUGENICS VIS A VIS THE PRACTICE OF PRE-IMPLANTATION GENETIC DIAGNOSIS

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Abstract

It is worthy of note that the scientific system is progressive in nature and tends towards human and societal advancement. Francis Galton, following the model of Darwinian Theory of evolution which holds that species do change as a result of natural selection, introduced Eugenics. He proposed that through eugenics, human beings could take charge of their own evolution by getting rid of the undesirable and by multiplying the desirables. This view was greeted with much criticism and didn't record much success. But with the rise of gene-therapy and pre-implantation genetic diagnosis; which is a scientific technique that entails using in-vitro fertilization to ensure that a baby does not possess a known genetic defect of either parent; after genetic analysis of embryos so formed, only those free of defect are implanted in the mother's womb; we are beset with the revival of eugenics. This work aims at evaluating the values and moral implications of eugenics in its varied shades and attempts to proffer recommendations that will give the practice more ethical acceptability.

Keywords: Bio-ethics, Eugenics, Pre-implantation Genetic Diagnosis, In-vitro fertilization, Gene-therapy, Ethical evaluation, Morality.

Introduction

From antiquity, human beings have continuously sought both the advancement of self and environment in which they thrive. This drive towards human and technological advancement gave rise to what should constitute the rationale for these developments, or the limits to it. It is against the backdrop of man losing his humanity and personhood in the mess of this quest for human advancement that the concept of eugenics is been put through ethical scrutiny. In the Macmillan reference USA (1998:175), Eugenacists intended the term eugenics to denote "the science of improving human stock by giving the more suitable races or strains of blood a better chance of prevailing speedily over the less suitable". They hoped that; "through eugenics, human beings can take charge of their own evolution". This view met its waterloo because its precepts devalued the human person and reduced man from an ontological being to a circumstantial one. But with the rise of gene therapy which entails; " the insertion of normal or genetically altered genes into cells to replace defective genes in the treatment of genetic disorders"; and the subsequent diversification into pre-implantation genetic diagnosis ; which involves the "detection of genetic defects that cause inherited diseases in human embryos and altering the genetic code to rid the embryo of such defect before implantation", we are again confronted with a scientific development that bears a eugenic undertone. The whole concept of eugenics generally questions the dignity of the human person and with the rise of gene therapy and pre-implantation diagnosis; we are once again beset with a scientific trend of eugenics with various facets that devalue the human person.

This paper questions the problem of selective embryology and genetic screening of embryos. Is there a rational justification that makes this practice universally tenable? The act of using pre-implantation genetic diagnosis to select a child free from a hereditary defect in order to use an organ from it to cure a living child, raises the problem of treating human being as a means to an end, instead of an end itself. The possible future use of pre-implantation genetic diagnosis is something that requires thorough ethical consideration. What should constitute the limit of the practice? There is the possibility of the use of pre-implantation

genetic diagnosis for cosmetic purposes thereby giving rise to an age of ‘designer babies’. Should such be allowed? What should constitute the moral permissibility for having a genetically enhanced human being? These constitute the problems which this work will exhaustively try to proffer solution to.

Therefore; this study focuses on the extent to which morality should accept this bio-medical practice. Needless to say that this practice, on one hand, has a positive logical and pragmatic bearing in application (i.e. when it tends towards the curbing of germ-line diseases); yet the danger inherent in it, is that, this practice has the tendency to go overboard in its application if not monitored, apparently because of man’s exigencies to go beyond his limitations, or out of his desire to create what is good. In either case, the task of this research is to use selected ethical theories in resolving the above questions on what is needful to be done in this practice and what is not (i.e. to set boundaries on what should or should not be done in the practice of pre-implantation genetic diagnosis).

Exposing the Concepts of Eugenics and Pre-Implantation Genetic Diagnosis (PGD)

Sir Francis Galton (1822–1911), cousin of Charles Darwin (1809–1882), in 1883 coined the term “eugenics.” In his book “Inquiries into human faculty and its development”. From 1883, Galton loosely defines eugenics as “the cultivation of race,” or “the science of improving stock”. In the introductory part of the book, Galton made a general remark which aims to demonstrate what his intention was:

My general object has been to take note of the varied hereditary faculties of different men, and of the great differences in different families and races, to learn how far history may have shown the practicability of supplanting inefficient human stock by better strains, and to consider whether it might not be our duty to do so by such efforts as may be reasonable, thus exerting ourselves to further the ends of evolution more rapidly and with less distress than if events were left to their own course.

This introductory remark by the father of the concept of eugenics predisposes our mind to better appreciate the nature of the project which was not only meant to be a theoretical construal, but was intended to gain state wide accreditation and implementation. Scholars are not in a haste to accept the premises of the scientists and the medical practitioners, hook, line and sinker; rather they are more inclined to inspect this invention by a rational scheme to determine the true nature or import of such technology to the general being of man.

For Lombardo, Paul, (1996:1&3), Eugenicists wanted to improve the human species. They believed that crime, insanity, disability and sickness could be solved within just a few generations through selective breeding. Towards that end, they tried to stop the unfit from reproducing and passing their allegedly inferior genes to the next generation. Charles Darwin pioneered the assumption that Nature would ordinarily weed infertile men and women and their inferior sperm and eggs out of the gene pool, but technology is preventing that from happening by providing means for infertile men and women to procreate using artificial reproduction.

Another goal was to save money. Eugenicists recognized that some disabled men and women could not support a family, but believed these individuals could at least support themselves, and by doing so, reduce the number of children with heritable defects who otherwise would burden taxpayers and social services. Therefore, they viewed sterilization as key. Eugenicists also wanted to relieve human suffering. In their view, parenthood weighed

heavily upon the unfit and life itself was a burden to offspring with heritable defects. Thus, Karl Pearson, a prominent British eugenicist, described eugenics succinctly as; ‘the better not born doctrine’.

On the other hand, **Pre-implantation Genetic Diagnosis (PGD)** is a modern bio-medical practice, which is intended to help the medical practitioner in screening the embryo through the process of in-vitro fertilization, to determine the genetic status of the embryo before it is implanted into the uterus for gestation. According to Mosby’s medical dictionary (2009:9th edition), pre-implantation genetic diagnosis is an assisted reproductive technology which entails the determination of chromosomal abnormality in the embryo before it is transferred to the uterus.

Pre-implantation genetic diagnosis is a newly developing field within the branch of genetics. It is also referred to as embryo screening. It involves a series of procedures performed on embryos prior to implantation, hence the term; pre-implantation genetic diagnosis. These procedures involve the verification of the genetic make-up of embryos before they are transferred into the mother’s womb. Hence, pre-implantation genetic diagnosis combines two areas of science namely: In-Vitro Fertilization (IVF) and Genetic Testing.

According to Hussey, N. and Norman, R.J. (2003:1-5), Pre-implantation genetic diagnosis was first executed in 1989 at the Hammersmith Hospital in London. The advantages of this technique extend far beyond basic in-vitro fertilization (IVF) and basic prenatal genetic testing. PGD makes it possible for embryos to be screened for over 40 genetic diseases prior to transfer into the female’s reproductive tract. Of the many possible tests, some disorders that can be screened for include cystic fibrosis, sickle cell anemia, Duchene and Becker muscular dystrophy, Huntington’s disease, spinal muscular atrophy, Tay-sachs diseases and Marfan syndrome. In addition, those diseases that are linked specifically to male or female can be eliminated by choosing those embryos that are not of the sex that may carry the disease. For Aldous , Huxley, (1965) the information collected from the screening guarantees that only those embryos that are not carriers for the respective genetic disease will be implanted into the mother’s uterus. Chromosomal abnormalities such as aneuploidy (a condition of a missing or excess number of chromosomes), can also be detected through PGD, thereby avoiding miscarriage or therapeutic abortion of a pregnancy. By the year 2000, 300 babies had been born with the help of PGD, with a single attempt at the procedure of pre-implantation genetic diagnosis costing as much as \$10,000.

At this juncture it is pertinent to categorically state that PGD is not essentially evil, going by the primary frame work that brought it to being; rather it became the theme of ethical discourse because of the multifarious potentialities it has to influence the being of man in both useful and un-useful ways. The problem of PGD is not in the concept but rather in its use which will constitute our next discussion. PGD originally was developed for families affected by serious inherited genetic illnesses (Munné & Wells, 1992) and has been used by families to avoid having children afflicted with such diseases as cystic fibrosis, Tay Sachs disease, Fanconi Anemia, and sickle cell anemia (Verlinsky et al., 2002). According to Karen, Sermon et al. (2002), it also has been used to detect mutations linked with adult-onset disorders. Although PGD was initially developed to detect serious disorders, more recently PGD has been used in an effort to improve success rates in infertility treatment. For Yury, Verlinsky et al (2005), Chromosome analysis is used as an adjunct to standard IVF to detect abnormalities in chromosome number, called aneuploidy, that arise during egg or embryo development and often lead to Down syndrome, birth defects, and the failure of embryos to implant or develop normally. This use of PGD according to A.P. Ferraretti et al.(2003), often is referred to as pre-implantation genetic screening (PGS), and some IVF providers recommend PGS for patients

who have had repeated miscarriages, are over 35, or have had repeated IVF failure. According to the Centers for Disease Control and Prevention, 2005 Assisted Reproductive Technology (Art) Report (2007), more than 1% of all U.S. newborns are IVF babies, and well more than half of IVF patients are over 35.

Pre-implantation Genetic Diagnosis as Eugenics

A popular dictum has it that change is the only constant factor in life; and joining his voice to the trend, Ndiamefo, citing Karl Popper in *Broad Approach to History & Philosophy of Science*, (2015:245) as postulated in his program termed *falsificationism* that “nothing can be proved conclusively”. Being a philosopher of science, Poppers’ postulation can be interpreted to mean that the end of any scientific enterprise is the beginning of a new one. This Popperian interpretation bears a proximate reference to the relationship between the concepts of eugenics and Pre-implantation Genetic Diagnosis. This relationship can be better appreciated by referring back to previous discussions on eugenics. Eugenics as it were, was created out of a mentality or a certain system of thought that geared much towards the propagation of good breeds of human beings, as against the defective ones. But unlike eugenics, PGD offered or rather presented a technological structure that can help bring the eugenic mentality to fruition. In other words, PGD came as a tool that has the capacity to effect or implement the eugenic system of thought in contemporary time. The concept of eugenics as propounded by Francis Galton gained a bad reputation and became a dirty word, following the Jewish racial hygiene perpetrated by the Nazi regime led by Adolph Hitler. But just like every concept, the eugenic fideists, while toning down their activism, sought other means of continuing the ideal of the movement. The intense research into genetics in the mid-19th century and the subsequent diversification into in-vitro fertilization (IVF) and Pre-implantation genetic diagnosis (PGD), paved way for the reintegration of eugenics into the annals of scientism.

Inasmuch as the contemporary system of PGD and Genetic Testing has the same objective as the eugenic movement (which is; the cultivation of race and breeding of good breeds of human beings), yet, it doesn’t imply that modern medical means bears any causal relationship with eugenics. This is because; research into genetics had been running concurrently with that of eugenics, but at a slower pace. When Gregor Mendel first discovered the role genes play in the being of man in 1865, his discovery was discarded on the ground of its utopian speculation, but in the mid-20th century, Mendelian genetics was rediscovered and intense resources was allocated to enhance and facilitate the research into genetics. It is only coincidental that genetics started to flourish right about the time that eugenics started diminishing. The fact that genetic practices like gene testing and subsequently IVF and PGD incorporates the Ideals of eugenics does not mean that modern genetics was born out of

eugenics, rather it implies that modern genetic means, provided a technological framework that absorbed the ideals of eugenicists and as such furthers the aims of the movement in contemporary time without been encumbered with the bad reputation it gathered in the mid-19th century.

Having sketched a skeletal framework of the relationship between eugenics and other modern genetic means like genetic testing, IVF, and most especially, PGD, it is evident that even though the eugenic movement seemed to have been extinct following the Jewish racial hygiene, yet its precepts is still extant in contemporary time *via* Pre-implantation Genetic Diagnosis. Hereafter will ensue, an ethical evaluation of the nature of Pre-implantation genetic diagnosis in the light of its eugenic character. The aim of this ethical quest is to assess the moral

permissibility of the practice, taking its various modes of expression into account and hopefully delineate clear ethical lines to the use of the technology and other subsequent like technology. This is to ensure that progressivism is not enthroned at the expense of individual human welfare and dignity.

Ethical Implications:

A Teleological Evaluation of Pre-Implantation Genetic Diagnosis

According to Partridge, Eric (1977:4187), etymologically, the word teleology is derived from the Greek word *'telos'* which means 'end, purpose', and *'logia'*, which means 'a branch of learning'. Teleological moral theories therefore, locate moral goodness in the consequences of our behavior and not the behavior itself. According to teleological (or consequentiality) theory, all rational human actions are teleological in the sense that we reason about the means of achieving certain ends. Moral behavior, therefore, is goal-directed. It is therefore the case that from a teleological point of view, human behavior is neither right nor wrong in and of itself. What matters is what might happen as a consequence of those actions in any given context. Thus, it is the contextualized consequences that make our behavior, good or bad, right or wrong. This implies that in any case that one thinks about the consequences of any actions while making moral decisions, such a person is applying teleological moral theory. The teleological moral theory is an umbrella that covers some consequentialist or end-oriented theories like; Situationism, Hedonism (egoistic & altruistic) and Jeremy Bentham's Utilitarianism. The teleological discussion on PGD will be based on Jeremy Bentham's utilitarian principle.

Jeremy Bentham defended the 'principle of utility' or 'greatest happiness principle' as 'that principle which approves or disapproves of every action whatsoever, according to the tendency which it appears to have to augment or diminish the happiness of the party whose interest is in question', Or, 'that principle which states the greatest happiness of all those whose interest is in question, as being the right and proper end of human action'. If we simplify this a little more, we can say that utilitarianism claims that an action is right if it leads to the greatest happiness of all those it affects, (i.e. if it maximizes happiness) otherwise, the action is wrong. The utilitarian principle stresses that the greatest happiness should be the goal of our actions, (i.e. what we hope to bring about). According to the dictates of this principle, our actions are judged not 'in themselves', e.g. by what type of action they are (a lie, helping someone, etc.), but in terms of what consequences they attract.

Having discussed the utilitarian principle this far, the question most pertinent in our mind should be; how does the utilitarian moral theory come to bear on the concept of Pre-implantation Genetic Diagnosis. In order to answer this question, it is important, for the sake of clarity, to review one or two modes of expression of PGD, and bring the utilitarian theory/principle to bear on them; using the tenets of the theory to evaluate the moral standpoints and permissibility of the practice of PGD.

Before the advent of PGD, pre-natal testing was the available means for prospective parents to check for either the sexual disposition of the embryo or check for embryos with deleterious genes. The knowledge gotten from such tests will determine the will of the parents towards the embryo. In this case, if the embryo is found to be defective, or not to reflect the sexual choice of the parent, such parent has the option to abort/terminate such pregnancy since it is in contradistinction to their will. In contrast to the above method of prenatal detection of the sexual or genetic status of an embryo and subsequently, abortion, following negative result; PGD offers a more sublime method of reaching the same goal. In PGD, eggs are fertilized in vitro (in a test tube), and the resulting embryos are screened for either genetic defects or sexual

orientation. The embryo with the needed sex, or in the case of genetic disposition; free from such genetic defects, is then implanted into the womb of the woman for gestation; while the defected embryos are discarded or in a case where more than one embryo is found to be good, such embryos are cryo-preserved for future use by the parent.

Bringing the principle of utility to bear on this case, it can be obviously inferred that the use of PGD for sex selection and de-selection of defective genes is more expedient and result oriented, and thus, more desirable than the alternative (abortion). Given the choice, most people will readily accept the method of PGD in reproductive and health related issues because it saves all involved the stress of conceiving and aborting (i.e. submitting to the natural lottery) till the desired embryo is realized. To this end, it can be seen that PGD affords expedient means of solving this human medical and non-medical issue. This expediency and utility which PGD affords can be viewed as the hub that justifies it as an appropriate moral position in a utilitarian perspective. The concept of PGD generally aims at improving the quality of human life, and by so doing, responds with positive results to the choices and desires of various people (parents). These objectives of PGD augur well with the tenets of the utilitarian and thus, readily stand in as the rationale or moral standpoint for the practice of PGD.

Another utilitarian case for the practice of PGD can be underscored by taking cognizance of the various kinds of diseases or health anomalies today which have made it impossible for some couples to conceive. In some cases, couples who could even manage to conceive may not be able to carry the child to term. This situation is one that often has a discriminatory/stigmatic effect on the psyche of those affected. In some other cases, couples who married late tend to have issue with conception (usually due to menopause in women) after marriage. This health and culture threatening situation is one of the problems which the use of PGD have solved for man. PGD now makes it possible for even the infertile man, or the woman who have reached menopause to have offspring. This is made possible through the use of IVF whereby the female ova is fertilized with a sperm in a test tube, and once fertilization occurs, the embryo is then transferred into the uterus of the woman for gestation. In cases where the health situation of the patient might make it impossible for the child to come to term; such parent has the option for surrogacy (in which another woman carries the child to term for the mother).

For the utilitarian, PGD offers more dexterity in the cause of human progress and produces more result to the teeming health, social, and cultural challenges that surround man. In other words, PGD is a clarion response to the health and cultural challenges facing the contemporary man. Some cultures favour the propagation of the male sex to that of the female, mainly for ritual purposes and continuity; while almost everyone desires to beget a healthy child. These various needs of man have been resolved using the technology afforded by PGD. To this end, the happiness of most members of the society (especially those with some disability) has been secured, since they are no longer limited to their current situation. This possibility which PGD provides, according to the utilitarian, is what makes the practice desirable and as such, well.

According to the hedonistic calculus enunciated by Bentham, which was intended to serve as a guideline in the search for pleasure; the seventh criteria of the calculus talks about 'extent', which states that any sort of pleasure that can be enjoyed by the greatest number of people should be preferred to the pleasure that is enjoyed by a lesser number of people, and the fifth criteria of 'fecundity', which holds that the pleasure that is likely to produce, or lead to further pleasures is to be preferred to the pleasure that is non-productive (Omeregbe, Joseph, 1993:234-235). These two criteria in Bentham's hedonistic calculus augur well with the trend

in the conception of the PGD technology; for PGD aims mainly at human happiness and also productive in its acts. Bearing in mind that happiness to the greatest number is the ultimate end of the utilitarian, it therefore summarily implies that, in as much as PGD offers humanity a better chance at quality life, then it is good and should be unreservedly utilized. On this note, utilitarianism can therefore be viewed as a philosophy of expediency in the sense that it promotes/encourages progress without reservation. It focuses on the end, not on the method. Inasmuch as PGD proffers viable options to the health problems of man, yet, it will be foolhardy to compromise the dignity of the human person on the altar of progress. The utilitarian understands that happiness is a quality that human beings desires always; but this vision is impaired in relation to the method for actualizing this happiness. Even though, man tends towards the promotion of the 'good life', yet it is worthy to underscore the limitation that poses as encumbrance to a just utilization of what is said to be 'good'.

Utilitarianism is widely adopted as a moral standpoint in the development of many fields in technical know-how. It is especially adopted by specialists in the medical sciences. This is because it offers flexibility in moral choices which confronts them in the process of carrying out their duties. For the medical practitioner, such choices like, a parent's desire for a particular gender, without which an alternative course of termination would be requested; or the choice of selecting an embryo free from a defective gene and the discarding of defected embryos, constitute moral choices which confounds the intellect of the medical practitioner at every point in time. This is because; he is morally and professionally bound to save lives. Always confronted with dilemmas of this nature, the medical practitioner is keener to adopt the principle of utility in line with his work. This is because utilitarianism will advocate that in a dilemma, he/she should tread the path of least evil. Utilitarianism will most vehemently stand in for choices that will promote greater happiness as its end than the means to such happiness. And in this sole motive, does it lose its value for the human person. The human being is not an instrumental value and neither is he an object that should constitute a thing of pleasure or displeasure to other human beings. The principle of utility is expedient in use, but expediency does not stand in as a justification for the objectification of the human being. Issues in relation to the human being should be guarded by a well-structured system, which will seek the protection of the human person above all else. It is also noteworthy that the flexibility which utilitarianism gives in moral choices, can, in most cases, be given to arbitrary use by the agents. This arbitrary use usually stems from man's individual idiosyncrasies and the desire to exceed certain boundaries. This underscores the fear which the possible future uses of PGD instigates in man. With the growth in PGD technology, there is a growing fear for the possibility of the use of PGD to customize babies. Such possibility will eventually lead to an age of designer babies and super humans. At this point we ask; when these super humans appear, what then shall the rest of the human race become? The answer to this question is not farfetched; we become degenerates, defected and will be imperatively discarded (this informs the central message of Nietzsche's prophecy). To this end, the tenets of utilitarianism should be checkmated, especially in its application to the human person. Objects and things should be unreservedly utilized as means to human happiness; but human beings should not be used to further other ends, because a human person (embryo, child, adult and disabled) is an end in itself. Instead of discriminating against different categories of human beings, efforts should be concentrated on making life bearable to all.

Having outlined the general perspective of the utilitarian in this form; what have been established so far is the fact that under the utilitarian moral theory, the concept of PGD is found non-deficient in the sense that it seeks the well-being of man in all its sphere of expression. But the fact that the theory of utility can stand in for PGD at any time does not imply that PGD is

totally justifiable. Therefore, in order to have a clear and unbiased appreciation of the concept under discussion, it is important to also consider this concept in the light of the opposite; deontological ethical theory.

A Deontological Evaluation of Pre-Implantation Genetic Diagnosis

According to Wikipedia, Deontology is derived from the Greek word '*Deon*' which means 'obligation, duty'. It is the normative ethical position that judges the morality of an action based on rules. It is sometimes described as 'duty' or 'obligation' or 'rule based ethics', because according to Eric Partridge, rules binds you to your duty. In deontological ethics, action is more important than the consequences. Deontology is often defined by contrasting it with one of its chief competitors, consequentiality. While consequentiality claims that we only have one moral duty: to do as much good as possible; deontology denies this, and asserts that there are several distinct duties, not all of which depend for their status as duties on considerations of value alone. Deontologists believe that one has a duty to act in a way according to the rules and regulations. The best-known deontological theory is the one established by Immanuel Kant in the 18th century, which is now known as the Kantian Ethics. In his theory, Kant argued that in order for one to act in a morally or ethical manner, one has to act out of duty because he or she agrees that the consequences of the action are not as important as the intention of the person who performs the action. Deontological theory provides a basis for special duties and obligations to specific people, which can be observed clearly in a doctor-patient relationship. In this specific relationship, a doctor's most important duty is to assist their patients medically in any way they can, and making sure that no harm is done towards their patients. However, one may argue that it is difficult for people to know exactly what their duties are. This is because, unlike the medical profession, some duties and obligations are not written but are based on understanding; for example, one's duties within the family. Kant defended his argument by explaining that our understanding regarding our duties can be derived from our unique nature as human beings because unlike any other living things, humans are uniquely rational. Based on this rationality, Kant derived the basic morality, which he later called the categorical imperatives. Quoting Kant in her work, "ethical implications of PGD", Angelina, Patrick Oleson, (2013:27) stated that in accordance with Kant, rules should comply with categorical imperatives which hold that: (1) moral rules should be universal where it will apply to all rational moral members of the community rather than to just some, (2) all persons should be treated never simply as means but also always as ends in themselves and (3) members of the community should join hands in making the law as well as living by them.

Kant sees his ethics as applying to all, and only rational beings. It was clear to him that animals are not rational beings, thus our duties to them could not be decided using his ethics. These rational beings also include babies, the insane, the comatose and the severely retarded. Kantian ethics do not offer any basis for limiting what we may do to such beings or indicate what our positive obligations to them are. Kantian ethics provides moral bedrock for the deontological evaluation of the concept of PGD, and thus becomes the take-off point in this deontological evaluation. Kant's ethics is a strictly deontological (principle-based) theory, and deontological ethics judges the morality of an action based on its ability to follow a rule. Kant believed that for an individual to act ethically, he should be motivated by a desire to do his duty and to do what is right. Ethical decisions should be made by considering the nature of the act itself, not the consequences. The authority for Kant's ethics was reason alone, which is good when properly used. If we act with the intention of fulfilling our duties, we have met our ethical

obligation. Kant believed in moral duty, as seen in the central method of his theory, the categorical imperative. A categorical imperative is a general axiom that is not itself a moral rule but a means of arriving at specific moral rules that apply to everyone (Wilken, S., 2011:75). Kant's (1958:252) first categorical imperative states, "*act only on that maxim whereby thou canst at the same time will that it should become a universal law*". Every action a human takes is based on a maxim or rule of action. Kant believed humans should not act in a way that cannot be universalized for everyone.

Kant's second categorical imperative states: "so act as to treat humanity, whether in thine own person or in that of any other, in every case as an end withal, never as means only". This implies that humans are not equal to the sum of their parts; rather, they have value and dignity simply because they are humans. This categorical imperative demonstrated Kant's belief that people have inherent value. To put it in other words, he said, "Now I say that human beings, and in general every rational being, exist as ends in themselves, not as mere means for arbitrary use by another will".

Kant's views agree with the ontological personalism perspective on personhood, which states that by a human being is meant, a person by his very nature. Kant's views on reason and human knowledge demonstrate how he viewed each human with value. All persons have value based on their humanity, not on the functions they are capable of. In contrast, empirical functionalism reduces humans to a sum of their parts and their utility to the world. Kant, on the other hand, understood that humanity could not submit to the objectification or the modification of human persons.

Before going further on this discussion, Kant's introductory remark in his *Grounding for the Metaphysics of Morals* will be helpful to keep in mind in order to consider the ethics of PGD:

Nothing in the world can possibly be conceived that could be called 'good' without qualification except a good will. Mental talents such as intelligence, wit, and judgment ... are doubtless in many ways good and desirable; but they can become extremely bad and harmful if the person's character isn't good — i.e. if the will that is to make use of these gifts of nature isn't good.

If one's will, reason, and character are not good, their end goal will not be good. The end goal of PGD is to eliminate genetic diseases, which is good. However, careful observation of the means to get to that end shows flaws in reason and character. Before going further on this discourse, it is important to briefly consider the potential benefits of PGD.

PGD offers many benefits to those involved; the biggest of them being that it significantly lowers the risk of giving birth to a child with a genetic abnormality. Bringing a child into the world with a genetic disease could potentially strain the family and the society that the child lives in. If the parents are carriers of genetic disorders, PGD can give them assurance that their children will not be affected by the disease, since only the genetically normal embryos will be placed in the uterus. Furthermore, PGD lowers the miscarriage rate and increases the probability of a successful and uncomplicated pregnancy. Parents can also use PGD to select the gender of their embryo to avoid sex-linked disorders. PGD can benefit families with a sick child who requires a stem cell transplant. The parents can utilize PGD to identify an embryo who can genetically match the sick child's tissues. After the child is born, stem cells from the umbilical cord can be collected and transplanted into the sick child.

Having outlined the benefits of PGD, the lingering question is; what would Kant's response be to each of these potential benefits? It is clear that the main purpose of PGD is to test embryos for genetic "*flaws*". If through the use of PGD a genetic disease is detected in an

embryo, the embryo is discarded. This implies that these genetically flawed embryos are destined for destruction. Then we ask; how can society value its members when it is trying to eliminate some of them? To this end, PGD denies the human value and dignity of each embryonic person. One possibility for PGD is its use for genetic enhancement of offspring. Should parents have the right to choose specific traits for their child? In the future, PGD may increasingly become a tool to screen for non-medical traits, such as height, baldness, intelligence, or memory. Assuming Kant believed that embryos were human beings, then, genetic enhancement violates his categorical imperative to never treat a human as a means to an end. Moreover, Kant believed that the morally right way to act begins with the argument that; “*nothing can possibly be conceived in the world, or even out of it, which can be called good, without qualification, except a good will*”. Things that are usually good, such as intelligence, fail to be good without qualification. If parents use PGD to genetically enhance their child to be more intelligent, they fail to do good because their method of reaching this end is unethical.

The only thing that is truly good in itself is a good will, and this is only good when the individual chooses to act out of duty. It is not ethical to use PGD to choose physical characteristics of offspring, even with good intentions. On another hand, even if preventing genetic disorders through PGD does not treat humanity as means to an end, it may lead to discrimination and possibly a form of modern eugenics. At this point it is safe to ask; what defines a disability and at what point can we choose to select against a trait? For example, fertility specialists can use PGD to diagnose Down syndrome. If PGD caused fewer Down syndrome children to be born, the children who are born with Down’s syndrome would become socially ostracized, and it would be difficult to mainstream them. Eventually, PGD could create a world of “*designer children*” where genetic engineering of offspring becomes routine.(Sullivan, D. 2010:11-33) From a Kantian perspective, if PGD were universalized and all embryos had PGD, many genetic diseases and disabilities would become obsolete. If PGD were to be applied on a large scale, eventually over multiple generations, the number of people with “desirable traits” would increase and the number of genetically disabled people would decrease. Wesley Smith (2003:41) has stated, “As history repeatedly has demonstrated, once we accept the pernicious premise that some people are ‘superior’ to others – the core principle of eugenic thinking – we open the door to great evils”. Based on the principle of distributive justice and the categorical imperatives, Kant would disagree with PGD because it is not accessible to everyone. It would discriminate against the disabled and create a superior and inferior class of humanity. Not only would PGD discriminate against the disabled, but it would also discriminate against the poor. According to The American Society of Reproductive Medicine, the average price of an IVF cycle and PGD in the U.S. is \$12,400 and \$3,550, respectively (Robertson, J., 2003: 465-467). It is extremely unlikely for insurance to cover PGD; therefore, only the rich can pay for it. PGD therefore goes against Kant’s categorical imperative because it cannot be universalized. Furthermore, on the basis of distributive justice, this marginalizes and discriminates against the less fortunate, the less educated, and those with lower incomes.

Another concern with PGD is its use in gender selection or “*family balancing*.” The ability to choose the gender of one’s child opens up a plethora of ethical issues. If a family wants a boy but ends up with a girl, they may be unhappy with their “*product*.” Accepting a child as he/she is, regardless of her gender, is part of what makes the bond between parents and their children strong. If parents can choose the gender of a child before birth, then parents may begin to reject his/her other “*flaws*” before his/her life even begins.

In some cases, parents have used PGD to match an embryo's tissue to an existing child afflicted with a genetic disease. Such a "savior" embryo can then be a source of bone marrow and other stem cells for transplant into the affected sibling in the hope of a medical cure. Embryos should not be created and implanted for the sole purpose of benefiting another human. Embryos are not products that can be accepted or rejected depending on whether or not they meet certain requirements. Using PGD to create babies for their "spare parts" is unethical. Again, it violates the Kantian categorical imperative. According to Kantian ethics, when an action cannot be universalized, that action is absolutely prohibited. PGD cannot be used in every situation; therefore, Kant would not agree with PGD. Kant would not deliberately seek out to destroy humans with disabling conditions, and PGD denies the inherent value of embryos with genetic mutations or disabilities. Furthermore, Kant would regard IVF as ethically impermissible because it uses embryos as a means to an end. If everyone had IVF, there would be millions of leftover embryos that would be discarded.

In conclusion, the questions PGD raises are complex and significant. Although PGD offers the possibility of reducing the number of genetic diseases and bettering society, it violates Kant's categorical imperative on multiple levels. Kant would argue that PGD is not ethically justifiable, and that while PGD is not currently widespread, it has the potential to escalate into a modern form of eugenics. As seen in the past, once a society embraces eugenics with the goal of bettering the human race, it becomes easy to actually harm humanity.

Conclusion

The progress recorded in the realm of science and technology; and more precisely, in bio-medical sciences, with such technologies as gene-mapping machines, have leaned the thoughts of scientist towards the concept of "genetic determinism". This concept stipulates that one is the product of his gene. That human action, emotion, social class and behavior is more or less determined by the genetic disposition of the person. Thus a popular catch phrase has it that 'people are poor because they have defective genes' (Bowman, James E, 1998:302) Assuming that we are to accept the premise of the scientist, then, we will soon lose our humanity in our quest for perfection.

Having come this far, it is obvious that the concept of eugenics is one that stems from racial Prejudice and individual idiosyncrasies. This is well captured by the fact that the eugenic sterilization laws targeted only the poor people and people of other race. Such inhumanity meted out to human beings out of sheer fear of racial domination constitutes not only an injustice to one or some, but an injustice to the entire human species. This can be better appreciated by referring back to the Jewish racial hygiene by the Nazi regime, which was orchestrated on the foundation of eugenic laws. The bad perception that eugenic had in the years after this, goes to show that such laws should not be made to target the corporate existence of the human race. The issue of difference in race, which was the core trigger of the eugenic concept; raises such questions like: what makes us human? Is it color, continent, language, culture, or simply the fact of belonging to the same species (*Homo sapiens*)? The differences, we so often see in others could not have been necessarily drawn out from their belonging to this class; rather, difference arises out of culture, exposure and individual idiosyncrasies. The issue of eugenic which targeted human beings would not have arose if this was understood by the instigators of the concept. Be that as it may, nature has proved that any aberration must in time be corrected. And this was exemplified in the Global perception of eugenics after the Nazi effect.

The advancement in science, which followed the rediscovery of Gregor Mendel's genetic theory, became a new trend in bio-science in the mid-20th century. With the

diversification into in-vitro fertilization and pre-implantation genetic diagnosis; man is again confronted with a technology that bears a eugenic character. PGD bears an unmistakable resemblance to eugenics. The difference lies in the mode of operation. Just like eugenics, PGD seeks to improve the human gene pool, by multiplying the desirable and denying the undesirable the chance to come into full existence. This it does through the discarding of defected embryos and implantation of embryo's supposedly free from defects into the woman uterus for gestation. Progress in PGD opens up vistas of possibilities with the technology, which resulted in the use of PGD for sex selection, HLA matching, detection of late on-set diseases, and so on. These possibilities which PGD provides became the foundation for the fear of PGD being able to screen for special qualities like eye colour, intelligence, height, beauty, etc. PGD raises a lot of issues, regarding its true intent. Scientists claim that PGD is not eugenics; that the end of PGD is neither the cultivation of race nor the decimation of the human species: rather what it seeks is the improvement in the health structure of human beings.

To this claim, this work responds by asking; if PGD is meant for the betterment of the health structure of the human species (which is an all-inclusive category), then why is it unaffordable to everyone, but only to the rich. Statistics shows that in the state of California, in the United States of America where PGD is widely practiced. The practice of PGD is not covered by any health insurance scheme, and individuals who solicit the aid of PGD, does that out of their own personal purse, with a single attempt at the procedure costing as much as \$10,000. To this end, if PGD is for the good of the human race, then why are they alienated from the possible fruits of such technology? An in-depth look into these basic issues shows that, even though PGD effects positive change in the health structure of people, yet it discriminates against a particular section of the human species (the poor). And as such, is not universally and equally beneficial to all. This may harbor such implications that will lead to different kinds of differentiation in people in the future; not only racial, but also health differentiation and differentiation based on normality or abnormality.

The use of PGD for sex selection will eventually, if not regulated lead to absolute patriarchy and to the marginalization and subjugation of the female specie. This is because, the structure of the global society is patriarchy based, and people tend more towards the reproduction of male than the female (especially in Africa). So in essence, PGD for sex selection raises problems that threaten the existence and dignity of the female species. Again, using PGD to select for a donor, whose tissue type matches that of a living child who is critically ill and at the jaw of death pending a tissue transfer; is a problem, as it reduces the human person to a mere means for the actualization of other ends. This use of PGD is anti-human. Even though untimely death is seen as a natural injustice, yet, creating a life for the sole purpose of saving the life of an existing sick child is a greater injustice to the new born child. According to Kant, human beings should not be treated as a means to further ends, but as ends in themselves. In the same way, the value attached to the life of a child should not be an instrumental value, but an intrinsic value. Death is a natural phenomenon, and not an evil, and as such, human beings should learn to embrace the phenomenon of death as much as they embrace the phenomenon of life. This is because; remedying an evil with a greater evil deeply questions our humanity.

From the foregoing therefore, it is readily observed that PGD embraces many areas of the lives of human beings. It tackles such problems that before now seemed to be an impossible venture. Now, one can choose to have a healthy child, a child of a particular gender, and a child with a perfect pitch for families involved in music business. In all these forms of expression, PGD has gained positive and negative fanfares. The aim of this research is not to condemn the

act of PGD; for that will appear to be an anti-progressive stance. Rather, this work aims to reconcile the eugenic effect of the 19th century with the nature of PGD in contemporary time, in the bid to prevent such consequences, like the ones generated by the eugenic laws. To this end, this work commends the progress of scientists in this field and anticipates, that such progress, be checked by both moral and legal laws to ensure that the technology is not given to arbitrary use by the custodians which will lead to a slippery-slope. The use of PGD for the screening for rare Mendelian diseases is praiseworthy, but, since it leads to the creation and destruction of life for the sole purpose of selecting a healthy child, such use of PGD should be abhorred. A human life is an intrinsic value, and anyone who can't give life, should not deliberately take one. In the same vein, PGD for sex selection should be frowned upon, because it places much value to a particular sex than the other. Human beings should submit to the natural lottery in issues related to the sex of children, and not play God in matters of such nature. In the ethical evaluation of PGD, we observed that Kantianism stood in direct opposition to utilitarianism in the sense that what Bentham proposes can only satisfy the mounting ego of man, which usually finds expression in man's desire to become co-creator with God or better still, push God to the realm of the absurd. The utilitarian perspective on PGD operates on the basest level of man's intelligent act, in the sense that it focuses more on the result of the action and the number of people whom the action guarantees their happiness, than on the means to attain such results. This was exactly what prompted Mill's qualitative pleasure as against Bentham's quantitative pleasure. John Stuart Mill argued that in the maximization of pleasure over pain, one must take into consideration the rules guiding the processes and not just the end results.

To this end, it is important that clear boundaries be set, to constitute the limit of the ever growing progress in scientific know-how. Inasmuch as the entire construct of PGD does not endanger the whole human species; because to a reasonable extent it saves man a lot of health and social related troubles; yet it should be regulated by the government to avoid misuse. The government should set up bodies to regulate the use of PGD. And such bodies, charged with this responsibility, should exhaustively work out modalities for the use of this technology. These modalities should specify the conditions or circumstances in which PGD should be made available to the consumers.

We can then conclude our discourse on the nature of PGD by reiterating the dignified nature of man who is the sole target and sole consumer of this technology. Man is a marvelous spectacle and is dignified by the virtue of possessing the primary value that creates the right to have dignity, which is life. Even though that other life forms share life in common with man; yet, it doesn't mean they share the same level of dignity, since the degree of dignity accorded to a particular life form depends on its place in the evolutionary scale. Human beings, as it were, possess the highest form of life in the evolutionary scale and as such, possess the highest form of dignity. Therefore, by the virtue of this esteemed position of man; every human being (embryo, infants, immature children, mentally deranged), deserve the right to be treated accordingly and be well protected within the framework of human society, without suffering any risk of dehumanization.

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