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Catholic Christianity and Human Genetic Engineering

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Abstract

The 21st century has seen tremendous strides in science and technology. This is felt all the more in the areas of information and communication technology which has made the world, today, a global village. It is also seen, among others, in the areas of transportation, education, agriculture, health-care delivery as well as in the area of biomedical technologies, especially, genetic engineering. The paper looks at the reality of human genetic engineering. It considers what it is and the implications it holds for Christianity as it relates the image and worship of the Christian God. It is found out that it would lead, in most cases, to a distortion and diminishment in the image of the Christian God as the omnipotent Creator with the possibility even that this Christian God could, today, be created. It equally leads to a loss of faith in the worship of the same God while seeing to an increase in the faith and worship of the god of science and technology. But human genetic engineering not only occasions a distortion in the way God is perceived, it also sees to a distortion n the image of man, a consequent 'thingification' and 'commodification' of human life, as well as a distortion of the institution of marriage, and then, of the family, which ought to be the domestic Church. The paper also considers the role that Catholic Christianity has to play in the face of such implications. It is found out as well that while it does not need to condemn per se all aspects of biomedical sciences especially those that could lead to the cure of many diseases, it has the responsibility, however, to continue to draw the attention of all those involved in human genetic engineering to the fact that human life is sacred and ought to be respected and that reality is so big that it cannot only be looked at from the scientific perspective. There is also the spiritual-cum-metaphysical perspective to the same reality. It is hoped that the

paper would be a valuable addition to the growing literature exploring today the interchange of religion with techno-science.

Keywords: Catholic Christianity, Human Genetic Engineering, Science, Technology, Church.

1. Introduction

This paper considers the impact of some aspects of human genetic engineering on Christianity, especially, on the image of the Christian God as the Omnipotent Creator to whom man's worship is due, a worship one ought to have begun to learn for the first time in a family of a man and woman united in marriage. Equally considered by the paper is the continuing role of Catholic Christianity, that is, that branch of Christianity which is in communion with the Church of Rome, in the face of such an impact. But before moving any further, it is expedient to have a better understanding of what human genetic engineering is all about.

2. What is Human Genetic Engineering?

Generally, genetic engineering, otherwise knowns as recombinant DNA technology, is the manipulation, change, transformation, modification and even, transmogrification, of the genes in the cell of a living organism. When that organism is a plant, one can talk of plant genetic engineering; when an animal, animal genetic engineering, and when a human being, there is a 'human genetic engineering', the preoccupation of the paper. As a matter of fact, human genetic engineering aims at introducing new traits, characteristics and attitudes into an organism or enhancing the existing ones thereof.

2.1 Types of Human Genetic Engineering

Basically, there are two types of human genetic engineering. These are: a) **Human Somatic Genetic Engineering:** This is the change, transformation or modification of genes within the body or somatic cell, the latter being all the cells of the human body excluding those of the eggs and sperms. That is to say then that human somatic genetic engineering does not bring about any change in the egg or sperm cells. Thus, it only affects the individual in question and is never inherited by his or her offspring. Hence, it is sometimes called the

non-inheritable genetic modification. b) **Human Germline Genetic Engineering**: This is just the opposite of the human somatic genetic engineering. Here, the change or modification of genes rather than taking place within the somatic or body cells of an individual, takes place within the egg or sperm cells. Egg and sperm cells are called germline cells since they are useful for reproduction. Hence, it affects not only the individual in question, but also his/her offspring, descendants and, indeed, future generations. No wonder, it is often called the inheritable genetic modification.

3. Techniques of Human Genetic Engineering

3.1 Human Cloning: When one has an important document, one often makes photocopies or duplicates of it in order to have more than one copy of the original. Something similar happens in human cloning. Indeed, human cloning is the genetic duplication or photocopying of a human being. Here, an almost identical copy of a human being is made - though the newly-made-human, that is, the clone, will not be of the same age as the original human being from whom it was cloned. Reason being that it will begin its life from the embryonic stage and gradually develop into an adult rather than just being born "wam" as an adult.

Be that as it may, it is good to point out that human cloning in question here is artificial in contradiction to the natural one as seen in identical or monozygotic twins which are formed when an egg that has already been fertilized divides into two in the womb. Each of the twins which are actually a clone of the other is different from the clone in artificial or scientific human cloning. This is because it is the product of the normal sexual reproduction – the union of sperm and egg - as against the clone in artificial human cloning which is the product of asexual reproduction (with asexual reproductive being the type of reproduction in which there is either an egg or a sperm and there is no union of both as in sexual reproduction).In fact, in human cloning, only eggs and no sperms are needed. Hence, David Prentice defines what has been referred to here as artificial human cloning as "human asexual reproduction"(2004, 51).

As a matter of fact, the impetus for human cloning by scientists could be located in the success recorded at the Roselin Institute, University of Edinburgh, Scotland, in 1996. There, Ian Wilmut, a British embryologist, Keith Campbell, his compatriot, but a cell biologist and their colleagues cloned for the first time, after 277 attempts, a mammal from an adult cell. The clone, a sheep named Dolly, was born on July 5, 1996, after the normal five-month gestational period, meaning that it was cloned around January, 1996. The cloning was by somatic cell nuclear transfer. The nucleus of the mammary cell of a six-year old female sheep (ewe) was transplanted into the egg cell of a second sheep whose nucleus had been removed (that is, an enucleated egg) and then inserted into the womb or uterus of a third sheep, the surrogate mother, that brought it to term. Dolly's birth was officially announced in February 22, 1997. As an aside, Dolly died on February 14, 2003, just five months to her 7th birthday. She had arthritis and then, pulmonary adenomatosis that led to lung cancer.

But then, it was on November 28, 2001, roughly five years after the birth of Dolly, that scientists working at the Advanced Cell Technology in Massachusetts (since 2014 called now Ocata Therapeutics), announced their success at cloning human embryos. Two approaches or techniques were used to actualize this: Somatic Cell Nuclear Transfer (SCNT) and then Parthenogenesis. In the Somatic Cell Nuclear Transfer technique, eggs were said to have been obtained from 7 women, aged 24-32. 19 eggs had their nucleus removed and replaced with a nucleus from another adult cell. For 11 of the 19 eggs, the nucleus for replacing them came from a skin cell and for the other 8, from cells which cling to the egg and are called cumulus cells. None of the 11 eggs whose nucleus was replaced by those of skin cell divided, but the eight that received the nucleus of the cumulus cell divided. First, 2 embryos divided into 4 cells each and one embryo divided in 6 cells before the division stopped (Johnson, 2004, 21). In the case of Parthenogenesis, where, as it is the norm, an egg cell is treated with chemicals causing it to divide without being fertilized by a sperm, 22 human eggs were exposed to chemicals. 5 days after, 6 eggs matured into a larger mass of cells before division stopped. Although it is good to point out right away that the scientists at ACT never intended producing a cloned human baby – a procedure that would have

required the help of a surrogate mother - but only to produce human embryonic stem cells (Johnson, 22). Seven years after the feat of ACT scientists, in 2008, scientists Samuel Wood and Andrew French, announced their success at creating the first five mature human embryos. This they did by using DNA from adult skin cells. Because Wood had used his own skin cells and then had them inserted into a woman's egg, he became the first man to clone himself.

3.1.1 Types of Human Cloning

There are at least three types of cloning:

a). Embryo Cloning: The model to be followed here is the natural cloning of identical (monozygotic) twins or triplets,hence, the name, artificial embryo twinning. It involves the division of a fertilized egg into two or three that eventually become twins or triplets, having however, identical DNA.

b). Adult DNA Cloning: The model to be followed here is that used in the cloning of Dolly the sheep. It sees to the production of a genetic copy or itsduplicate of an existing human being, hence, the name, reproductive cloning. It generally involves the use of Somatic Cell Nuclear Transfer (SCNT). Here, an ovum has its DNA removed and then replaced with the DNA from a cell removed from an adult human being. Thereafter, the now fertilized ovum or the embryo is implanted in the uterus or womb of a surrogate mother who carries it to when it is due for delivery.

c). Therapeutic Cloning: The model to be followed here is that of the Advanced Cell Technology (now Ocata Therapeutics) cited above. However, this is not especially in the method they used (they had made use of SCNT which is also used here, and then the technique of Parthenogenesis), but in their goal or purpose: the production not of cloned human being but instead of embryonic stem cells that are useful in regenerative medicine, especially in the production of tissues and organs that could be used by the person who donated the DNA. Hence, the name, biomedical cloning. According to Justin Ekennia (2003), this type of cloning, "uses the cloning procedure to produce clonal-embryo, but instead of being implanted in a womb and brought to term, it is used to generate stem cells"(119). In this lies the major difference between therapeutic cloning and reproductive cloning. For while both of them are similar in that embryos are produced often by

the same process of SCNT, in therapeutic cloning, however, there is no implantation of it in the uterus or womb, unlike in the reproductive cloning in which the implantation in the womb is a must.

3.2 Harvesting of Human Embryonic Stem Cells:

Something about this technique is already implied in the aforementioned third type of human cloning – that is, therapeutic cloning. The latter, as said above, follows the model of the scientists at the Advanced Cell Technology where human embryo was first cloned, but only for the harvest of the stem cells. That was in 2001, though things started getting serious with the issue of human embryonic stem cells three years earlier in 1998. But to understand what is at stake here better, it will be nice to understand what stem cells are. Basically, stem cells are cells that have the capacity to regenerate, multiply or renew themselves and then differentiate or develop into operational cells. According to Gennady Ermak (2007, 50), stem cells have the following fundamental properties: "1) They can divide and multiply many times. 2) They have no specific function, except for the constant renewal. 3).Under certain conditions, they can be transferred into specialized cells (this process is called differentiations)"

3.2.1. Types of Stem Cells

a). Adult Stem Cells: These are the type of stem cells found in the body (of an adult). Hence, it is often called Somatic Stem cells (SS cells). They are stem cells whose presence give other cells capacity to generate or produce only their types. For instance, their presence in skin cells makes the skin generate only skin cells, and if present in the muscle cells, makes them to produce muscle cells. Put in other words, they are stem cells with the capacity to produce not all cell types but typical or specific cells. Hence, it is often also called Tissue-specific stem cells.

b.) Embryonic Stem Cells: These are the stem cells that are found, as the name shows, in the embryo. They are stem cells that make for the production or growth of any and all types of cells not just in an embryo but also in an adult. Whereas the presence of adult stem cells, for instance, in skin cells, sees to the generation or production of only skin cells, the presence of embryonic stem cells thereof will see not only to the production of skin cells but also to the production of all

other types of cells and tissues in the body of either an adult or an embryo. According to Ekennia, this "ability to generate all cell types in a foetus and the adult and the capability of self-renewal, is termed pluripotency" (124).

Yes embryonic stem cells are pluripotent and because of this, many scientists believe that they hold the key to the treatment of a great number diseases and issues like diabetes, cancer, Alzheimer, stroke, Parkinson, heart and liver problems, spinal cord injuries, etc. But then, these embryonic stem cells, it is good to know, are, however, obtained or gotten by removing the inner cell mass of those human embryos which makes for their death. It is here, therefore, that the problem lies – since such procedure leads to the destruction of life. Again, it is worthy of note that the embryos often used in embryonic stem cell research and harvest are those, as shall be found out shortly, not made use of, or, better, frozen, after then technique of In Vitro fertilization, the next technique to be considered.

3.3 In Vitro Fertilization (IVF): Before anything else, it will be nice to understand what is meant by "fertilization." Fertilization is the meeting or the coming into contact of the egg and the sperm (male and female gemmates) leading to the formation of the zygote. Basically, there are two types of fertilization: a). **In Vivo Fertilization**: This is the type of fertilization or the meeting of the egg and the sperm that occurs inside the body of the woman. This meeting normally takes place unseen and unknown by any one. It is simply natural. .**b) In Vitro Fertilization**: This is the exact preoccupation of the paper, here. It is the type of fertilization that takes place outside the body of the woman. It actually takes place in glass vessels or test tubes in the laboratory, seen and observed by scientists, hence, the name, "In Vitro" Fertilization, with "In Vitro" meaning "in glass". It is also often called test-tube fertilization. Unlike in vivo fertilization, it is artificial and the product of the fertilization, that is, the embryo/zygote, would soon be implanted into the woman's uterus.

3.3.1. Stages/Steps Taken in In Vitro Fertilization

a) **Sperm Collection**: This is collected from the husband or partner and placed in a glass dish. The sperm is often collected from the man by

way of withdrawal (otherwise called Onanism or coitus interruptus), condomisitc intercourse and as mostly the case, by masturbation .b) **Egg Extraction**: The egg is extracted by way of laparoscopy (with the aid of the instrument called laparoscope), it is washed and then placed in the same dish where the sperm is. The stimulation of the ovary may be used to get as many eggs as possible. c) **Fertilization of the Egg:** This comes soon after the egg and the sperm are mixed inside the petri or glass dish. d). **Cell-division in the Incubator**: At this stage, the zygote, that is, the fertilized egg, begins to divide until the eight cell division. e). **Embryo transfer:** It is here then at this eight cell-division that the embryo is transferred to the uterus or womb of the woman, with the consequent implantation and confirmation of pregnancy. f).**Cryopreservation of Embryos**: This is simply the storage of embryos by freezing. The embryos in question here are those that were not made use of during IVF. Such unused embryos are often used, as pointed out before now, in embryonic stem cell research or for future implantation to achieve conception.

3.3.2. Types of In Vitro Fertilization

a). Homologous In Vitro Fertilization: This is the type of In Vitro Fertilization in which the egg and the sperm that are mixed together in a glass dish or test tube come from spouses (husband and wife) joined together in marriage. They come from a man and woman who are legally husband and wife.

b.) **Heterologous In Vitro Fertilization:** This is just the opposite of homologous IVF. Here, either the egg or the sperm comes from someone, a donor, that is not either the wife or the husband, as the case may be of the two joined in marriage. That is to say that there is the presence of a third party here. Be that as it may, it is good to point out that the first person or baby born through IVF is Louise Brown. That was in Britain in 1978, thanks to Robert Edward and gynecologist, Patrick Steptoe, who, for more than a decade had studied the possibility of having such an IVF baby. The impetus for carrying out IVF in human beings was the successful IVF in the 1950s in rabbits and other animals.

3.4 Surrogacy/Surrogate Motherhood

This is the reality of womb leasing. It is the process, practice or technique whereby a woman makes her womb available for another

woman, or better, a couple to help them bear a child. On giving birth to the child, she hands him/her over to the woman or the couple who had asked her to help her\them out. Her help could have been sought in the first place because of any of the following: a) The intended mother, that is, the woman that sought her help, has an abnormal uterus. b) The same intended mother has no uterus at all. c) The intended mother had undergone many miscarriages - and all these to the extent that her being pregnant would become difficult. It could also be because the intended mother does not want to go through the pains of labour or the stress of pregnancy for aesthetic, psychological or career reasons.

3.4. Types of Surrogacy

a) Traditional Surrogacy: In this type of surrogacy, the surrogate mother is also the actual biological/genetic mother of the child. She is the egg donor and is usually artificially inseminated with the sperm of the intended or adopted father. Here, then, the embryo is never biologically/genetically a stranger or foreigner to her.

b) IVF Surrogacy: In this type of surrogacy also known as gestational surrogacy, the surrogate mother, unlike in the traditional surrogacy, is never the actual biological or genetic mother. This is because she is never the egg donor, instead the intended or adopted mother is. Usually, the egg of such an intended mother and the sperm of the intended father (i.e. the husband of the intended woman) or even of any other man are mixed in a glass or petri dish as in the case of in vitro fertilization. The resulting embryo is then transferred to the womb of the surrogate mother for gestation. Hence, the name gestational surrogacy. As already obvious, here, the surrogate mother is genetically unrelated to the embryo in her womb. In fact, she could be likened to an envelope carrying a letter that was not written by her or a letter to which she never made any contribution. Surrogacy services could be either be paid for in which case one talks of commercial surrogacy or it can be free whereby one talks of altruistic surrogacy.

4. Catholic Christianity and the Traditional Image of God

The Christian God, to borrow the caption of one of the books of the German theologian, Walter Kasper (1984), is the “God of Jesus

Christ," the Omnipotent, Omnipresent and Omniscient God. He is the God who, according to the Book of Genesis, created all things and on the sixth day, had declared, "Let us make man in our image, to our likeness. Let them rule over the fish of the sea, over the birds of the air, over the cattle, over the wild animals and over all creeping things that crawl along the ground" (Gen. 1:26) The "us" and the "our", otherwise, the "we formula", in the above passage are often taken to be an allusion to God's Trinitarian nature; that is, that God is a God of union, of community of the three persons of the Father, Son and Holy Spirit. "We worship one God in the Trinity and the Trinity in unity without either confusing the persons or dividing the substance; for the person of the Father is one, the Son's is another, the Holy Spirit's another, but the Godhead of the Father, Son and Holy Spirit is one, their glory equal, their majesty eternal" (Athanasian Creed).

But this man whom He created, as said above, in His own image and likeness and made "a little lower than angels", crowned "with glory and honour", given the works of God's hands and had all things put under his feet (Ps. 8:6-7), would soon offend Him and by so doing cause a kind of enmity to exist between him and God. Hence, out of love (He Himself is love [cf. 1 John 4:8, 16]) and being "rich in mercy" (Eph. 2:4), He sent His only begotten Son, Jesus Christ, into the world, "when the fullness of time came" (Gal. 4:4), to effect a reconciliation between Him and man (cf. Eph. 2:16). Jesus becomes then His image (cf. 2Cor. 4:4). Yes, the image of His invisibility or hiddenness (cf. Col. 1:15). In fact, "Jesus was God himself taking on the clothing of humanity, embracing it fully and eternally, walking in it, speaking through it, and delivering the reality of God to the world in a manner never done before. This is the core of the Christian message, the uniqueness of the Christian God who revealed himself in history" (Uzowulu, 2010, 193)

5. Implications of Human Genetic Engineering for Catholic Christianity

The preoccupation here is to find out the implications that the aforementioned techniques of human genetic engineering hold for Christianity, especially, as it relates the image and worship of the Christian God, the institution of marriage and the reality of the family.

5.1. Negative Implications

a) A Distortion of and Diminishment in the Image of the Christian God: The American writer, Mildred Tengbom (1973), gave one of her books an interrogative title: "Is your God Big Enough?" If that question is made today to an average Christian, his/her answer would surely be in the affirmative. But to some human genetic engineers and some of the diehard exponents of the aforementioned human genetic engineering, the answer would be in the negative. Talking to such an average Christian, and borrowing the caption of one of the books of the British Bible Scholar, J. B. Philips (2004), they often say: "Your God is too small", he is not big enough, neither is he powerful enough. For them, if he were powerful and big enough, he would not have allowed man into his territory. Yes, he would not have allowed man – the scientists and human genetics engineers – to usurp a job reserved exclusively for him – the making of man. Since the scientists now "create" human beings in the laboratory, the Christian God may not ipso facto be what they thought he is. His overblown image, therefore, ought to be cut to size, and from the *Oros Olympus*, Mount Olympus, where average Christians have placed him in praise of his omnipotence, he should be forced down to where he actually belongs: among mere mortals!

b). Possibility that the Christian God Could be Created: This is closely related to what is said above. The book of Genesis, as pointed out before now, is emphatic in its declaration that God created man in His own image and likeness (Gen. 1:26). Man, therefore, bears the imprint of God. But the scientists, through some aspects of genetic engineering, "create" man in their laboratories. If man is created in the image and likeness of God and they "create" man who is in the image and likeness of God, indirectly, they have also the capacity to "create" God. Hence, the Christian God becomes a God who could be created in the image and likeness of man and not the other way. Indeed, God becomes the product of man.

c) Loss of Faith in the Worship of the Christian God: The American philosopher, Eric Hoffer (1996), once observed: "where there is the necessary skill to move mountains, there is no need for the faith that moves mountains"(7) One thinks that this is natural.

Many scientists and genetic engineers because of their being able to do the things enumerated above in the techniques of human genetic engineering, find it difficult to worship a God who they do the same thing as He does, speak the same language as He does. A God that is at par with them, they believe, is not worthy of their worship. Little wonder, then, a good number of these scientists often tend towards atheism. In fact, with the German philosopher, Fredrick Nietzsche(1911, 196), they seem to proclaim: "We reject God as God. Even if one proves this God of Christians, we cannot believe in him [….] A religion like Christianity, which has no contact with reality, which dissolves as soon as reality reclaims its right, cannot but be hostile to the wisdom of the world. Faith as an imperative is a veto against science – in practice, it is a lie." But then, the lack of faith in the worship of the Christian God is not exhibited only by the pro human genetic engineers, bio-technologists and scientists, but also by some who are recipients of their "miracles", for instance, some couples "blessed" with children by way of IVF, among others. A Christian song goes thus: "He (God) has done it for me (2x), what no man cannot do, He has done it for me…." But here, the song is reversed: 'He has done it for me (2x), what God cannot do, he has done it for me'. And 'he' in the reversed song, refers, of course, to the genetic engineer, bio-technologist or the scientist (male or female). Hence, some of these couples put their faith more in them than they do in the Christian God.

d) Faith in and Worship of the god of Technology: Man cannot stay without worship. Either there is something, or, better, someone, to be worshipped, or such be created where there is none. Nature, of course, abhors vacuum. Having discarded the worship of the Christian God, many scientists and extreme propagators of the afore-cited techniques of human genetic engineering, have succeeded in creating another god to replace Him, the god of technology. On this god, they have invested all the powers and attributes that the Christian God should have had, and even more. "An impotent God", says Karen Armstrong (1993), "is useless and cannot be the meaning of human existence"(381). And since they consider the Christian God impotent, this god of technology becomes the be-all-and-end-all of their existence, embodying, as it were, all the triumphs, wonders and successes of science and technology. But then, it was Nkem

Nwankwo, Nigerian novelist and poet, who had entitled one of his books, "My Mercedes is Bigger than yours"(1978). Similarly, some of these scientists know how to fly it in the face of the average Christian: "Our god is bigger than yours." No wonder, W. R. Inge (1933, 15-16) observes that, "the man of science worships a greater god than the average Church-goer." Hence, the god of technology gradually becomes a kind of a rival god to the Christian God.

e) Distortion of the Image of Man who Worships the Christian God: Where there is a distortion of/in the image of God, in fact, in the way God is perceived, there will definitely be a distortion in the image of man who, as said above, is created in the image and likeness of God. In the hands of some of the scientists and genetic engineers, with the size of God reduced, cut down, the size of man has not fared any better, either. The integrity, dignity, sacredness and mystique all inherent in man, right from conception, and even as an embryo, have been taken away from him. A 'thingification', as a consequence, sets in. Man becomes two things: One, a product of another human being. In fact, a product fashioned in the image and likeness of the man-creator. Two, he\she becomes, just like any other specimen that the scientist handles. There is no respect for his/her life. He is just an object and thus could be used and discarded at will. This could have informed the treatment of embryos in the harvesting of stem cells. "To extract stem cells from an embryo is to destroy the life in it, which is the same as destroying human life" (Ekennia, 136). The same treatment of embryos is seen also in the technique of In vitro fertilization. As explained before now, here, many embryos, the product of the fertilization of the woman's egg and the man's sperm in glass dishes in the laboratory, are cultured for some time. Only a few of such embryos are introduced into the woman's womb. The rest are either destroyed or cryo-preserved (frozen for future use).

f) Commodification of Human Life: This is a consequence of the thingification of and distortion in the image of man. For many pro human genetic engineering scientists, embryos are not human persons, they contain no life in them, and they are, as said before, just things. Hence, the ease with which unused and extra embryos in stem cell harvesting and, especially, during In vitro fertilization are disposed of. Sometimes, such embryos, frozen and stored, often lead to the

formation of "banks of embryo". And to such banks go those who wish to do organ or tissue transplants, the testing of drugs or further experiments on embryos. With the payment of "something" such embryos are released. Soon, human life, as contained in such embryos, becomes another item at the "Shoprite" of bio-technological advances. Pantaleon Iroegbu is also of this view, though speaking precisely about human cloning which According to him, "cloners can now massively produce babies, just as other industrial manufacturers produce cars, comestible and computers. And these are made available to whoever want them. Those interested are simply to walk into the labo-shops and made their purchases. Just as you do with other goods […] soon price lists will be out on the costs of different grades, sexes and races of human babies!!"(1994,7). The same commodification is seen in the case of commercial surrogacy. The child here soon becomes a thing, a commodity, that could be sold for financial gains. Hence, it may not be superfluous paying attention to the observation of James Royce (1969), in his book, *Man and Meaning*, thus: "Man may be the object of scientific study, but a person is not a thing. Civilization begins to totter when men begin to use people as things"(212).

g). Distortion of the Institution of Marriage: Naturally, every child ought to "be conceived, carried in the womb, brought into the world and brought up by his own parents" (Congregation for the Doctrine of the Faith, 1987, 3). In other words, he/she ought to be the product of a man and woman united in marriage. In fact, within marriage, he/she is a product of love between spouses "in a human fashion [of] a conjugal act which is suitable in itself for the procreation of offspring to which marriage is ordered by its nature and by which the spouses become one flesh" (Code of Canon Law, c. 1061,§ I). But in some aspects of human genetic engineering, this is not so. Marriage is not considered necessary and what Canon Law called, as hinted above, conjugal act in human fashion may not be deemed suitable or important for the "procreation of offspring." All that one has to do is to have money and many things will become possible. In *Time Magazine* of September 1984, there appeared the following advert: "Surrogate mother wanted. Couples unable to have children willing to pay $ 10,000.00 fee and expense to a woman to carry husband's child

and Conception is by artificial insemination. All replies strictly confidential"(cited in Adeigbo, 1993, 101).

Thirty-five years after that advert, today, there are many websites and blogs where adverts for not only surrogates are placed, but also for embryo donation, egg donors, sperm donors, etc. A man who has money can run a similar advert and surrogate mothers would appear and a woman can also do the same and surrogate fathers would surface to donate their sperms. Things have become a lot easier! Why go through the whole problem of marriage? And if one has more money still, one can take a step further to human cloning. Here, men and their sperms are not even important. Only women and their eggs can do the job. But all of these would be at the expense of the institution of marriage, of the unity thereof and the procreation of the human person, of the child, who, as said above, has the dignity and the right "to be conceived, carried in the womb, brought into the world and brought up by his own parents"

h) Distortion of the Family as the Domestic Church: Marriage and family go together. A united marriage will, most of the times, - if not always - make for a united family. Family depends on marriage. Whatever affects marriage will definitely affect the family. Human genetic engineering affecting marriage, incidentally affects the institution of family. In a way, it makes parenthood anonymous, severs, in most cases, the normal mother-child emotional bond and involvement and then induces a kind of psychological confusion in the child as he\she grows up to discover who his\her real parents are and the fact that he\she is a "made-in-the-laboratory." All these, in a way, puts too much pressure on the unity and stability of the family. This is all the more interesting when cognizance is made of the fact that the same family is the *ecclesia domestica* – the domestic Church. It is where the child, through his\her parents, first learns about the Christian faith, about the Christian God, His true image and the *cultus*, worship, due to Him. And when the family has been affected or become somehow dysfunctional - thanks to some aspects of human genetic engineering - this basic spiritual formation may also be missed. The immediate implication is that the rank of those who lack

faith in the same Christian God would continue to swell. Again, the family is not only the domestic Church. It is also the nucleus of the society. Little wonder that the *Catechism of the Catholic Church* (1995) says that, "Family life is an initiation into life in society"(2207). Whatever affects it, will eventually affect the society.

5.2 Positive Implications

It is naïve to think that science, in general, and the techniques of human genetic engineering, in particular, have nothing positive to tell Christianity. John Paul II(1988) had noted that, "Science can purify religion from error and superstition; religion can purify science from idolatry and false absolutes. Each can draw the other into a wider world, a world in which both can flourish." That is to say that some aspects of human genetic engineering can also open Catholic Christianity to a wider world of possibilities and even impossibilities as she carries out her responsibility of proclaiming the Word of God. They may also lead the same Catholic Christianity to appreciate all the more the beauty and complexity of human life as well as solidify all the more its peculiar position on the same human life. Again, some aspects of human genetic engineering may make for an enlargement in the horizon of the Catholic Christianity's understanding of the concept of healing which it is called to take on in the footsteps of Jesus who "went about doing good and healing all who were oppressed by the devil"(Acts 10:38). But all these ask Catholic Christianity of one thing: That it opens its eyes all the more in order to see more and better. Brian McLaren(2004) understands what is at stake here: "There's mystery and poetry in everything, really, if we have eyes to see, ears to hear: in botany, in biology, in history, in architecture, in medicine, in mathematics, even in astronomy[…]. In fact, as we learn a generous orthodoxy, we become more and more prepared to see the mystery and poetry everywhere, to hear it, to feel it, and to sing it."(174)

6. The Role of Catholic Christianity in View of the Above Implications of Human Genetic Engineering

It is expedient to point out immediately that Catholic Christianity does not and has never gone for a blanket condemnation of all growth in the biomedical sciences. As a matter of fact, she supports and approves of efforts by scientists and genetic engineers aimed at

improving medical situations of people burdened with diseases occasioned by deficiencies in the genes or chromosomes. This is especially as it relates to somatic cell gene therapy which helps in the elimination of defects in a given individual without any effect on his\her descendants. "A strictly therapeutic intervention whose explicit objective is the healing of various maladies such as those stemming from deficiencies of chromosomes will, in principle, be considered desirable, provided it is directed to the true promotion of the personal well-being of man and does not infringe on his integrity or worsen his conditions of life."(John Paul II, 1983). But what she condemns – as could have been obvious in the above citation - are some aspects of biomedical sciences, in this case, human genetic engineering, that impinge on the dignity, integrity, sacredness and mystique of human life. Yes, techniques that tend towards the thingification of man. Pope John Paul II(2004) is actually of this view:

> In our time, great progress has been made in the scientific understanding of life, a fundamental gift of God of which we are the administrators. Life is to be welcomed, respected and defended from its beginning until its natural end; the family, cradle of each newborn life, must be protected with it. Today, 'genetic engineering' is spoken of, referring to the extraordinary possibility that modern science offers to intervene in the very sources of life. Every authentic progress in this field is to be encouraged, provided that it always respects the rights and dignity of the person from his or her conception. Indeed, no one can claim the right to destroy or indiscriminately manipulate the life of the human being (6).

Such impingement on the integrity of human life can come on three levels. 1). When even in a therapeutic intervention, it goes beyond the "desirable" somatic cell gene therapy and involves germline gene

therapy that affects not only the individual in question but his\her progeny. "*Procedures used on somatic cells for strictly therapeutic purposes are in principle morally licit*. Such actions seek to restore the normal genetic configuration of the patient or to counter damage caused by genetic anomalies or those related to other pathologies.[…]The moral evaluation of *germ line cell therapy* is different. Whatever genetic modifications are effected on the germ cells of a person will be transmitted to any potential offspring. Because the risks connected to any genetic manipulation are considerable and as yet not fully controllable, *in the present state of research, it is not morally permissible to act in a way that may cause possible harm to the resulting progeny*"(Congregation for the Doctrine of Faith, 2008, 26).

2) When the intervention is not for therapeutic purposes at all but for the obtaining or selection of improved species of human beings. "In moral evaluation", says the Pontifical Council for Pastoral Assistance to Health Care Workers, "a distinction must be made between strictly 'therapeutic' manipulation, which aims to cure illnesses caused by genetic or chromosome anomalies (genetic therapy), from manipulation 'altering' the human genetic patrimony. A curative intervention, which is also called 'genetic surgery,' 'will be considered desirable in principle provided its purpose is the real promotion of the personal well-being of the individual, without damaging his integrity or worsening his condition of life.' On the other hand, interventions which are not directly curative, the purpose of which is 'the production of human beings selected according to sex or other predetermined qualities,' which change the genotype of the individual and of the human species, 'are contrary to the personal dignity of the human being, to his integrity and to his identity. Therefore they can be in no way justified on the pretext that they will produce some beneficial results for humanity in the future,' 'no social or scientific usefulness and no ideological purpose could ever justify an intervention on the human genome unless it be therapeutic, that is its finality must be the natural development of the human being.'"(12-13)

3). The same impingement is seen not only in human cloning, harvesting of embryonic stem cells, etc., but also in In Vitro

Fertilization (IVF). Yes, in an address to the participants in the Plenary Session of the Congregation for the Doctrine of Faith, Benedict XVI had observed: "The Church appreciates the progress of the biomedical sciences which open up unprecedented therapeutic prospects until now unknown, for example, through the use of somatic stem cells, or treatment that aims to restore fertility or cure genetic diseases."(2008) At the same time, the same Church frowns at fertility treatment like IVF that sees to the "replacement of the conjugal act by a technical procedure" (Congregation for the Doctrine of Faith, 2008, 16). As a matter of fact, the objection of the Church to IVF is based on the following: a) The fact that the sperm used in IVF are mostly collected by masturbation which the Church is against. b.) The fact that another of the stages in IVF, in this case, cryopreservation, which involves the freezing of the embryos that were not used or implanted into the woman's womb, is just what it is: an impingement on the sacredness and inviolability of human life. Sometimes, instead of just subjecting these embryos to cryopreservation, they are just discarded, and it is often these, as pointed out before now, that are used in stem-cell researches. c.). Because many embryos are implanted in the womb so that the possibility of pregnancy would be greater, whenever pregnancy occurs, these embryos are gradually reduced in a process known as embryonic reduction. But for the Church, "embryonic reduction" is only euphemism for what happens: selective abortion of the embryos, hence, her objection. d.) Because either the sperm or the egg, or even the uterus, can come from another person, apart from the husband and the wife, especially in heterologous IVF, the Church believes that some damage is done to the natural order wherein husband and wife function as parents.

But then, apart from condemning some human genetic researches for the fact that they impinge on the dignity and sacredness of human life, the same Catholic Christianity also frowns at the efforts of some scientists in the same area of genetic engineering who ply their trade in a certain kind of scientific dictatorship, arrogance and narrow-mindedness. This makes them see reality only from the scientific point of view, while excluding any other view, like the spiritual-cum-metaphysical, to the same reality. "Today," observes Giovanni Battista

Montini (1960), "it must be confessed that scientific thinking is no longer merely agnostic in its attitude to the fundamental question of Being: it has become dictatorial and intolerant of other methods of approach. It sets up as scientific method its own method; that is, a method which ignores the metaphysical dimensions of reality. It stifles at both the need of God, limiting the domain of research to the material world; which it professes to understand and control. It is content with the knowledge of this world; the single vision of the visible universe, allowing no scope to reasoning other than that of a mathematical and experimental kind. Religion is regarded as useless and unwanted."(639).

Hence, the proper role of Christianity could be located in its readiness to continue to draw the attention of the scientists involved in human genetic engineering to the abovementioned realities – the fact, that is, that human life has both dignity and sacredness that ought to be respected right from the beginning to the end – just as reality is more than logic, more than scientific logic. Similarly, even as there appears to be in contemporary science a certain kind of reluctance to talk about the religious implications of one's scientific work as well as a certain lack of enthusiasm for bringing up one's own particular religious worldview (Sweetman, 2010, 192), it is the role of the same Church as well to continue to urge her members in the field of biomedical sciences to always allow her teachings to have a bearing on their work and ipso facto to work from the perspective of their faith. Ian Ker (cited in Oredipe, 2013, 73) alludes to this:

> Christians are called to be scholars and scientists qua Christians. If in fact it is impossible to be engaged in academic work in a completely detached and neutral way, then it is quite wrong for Christians to presuppose the kind of premises that their non-Christians colleagues take for granted: Instead they should unashamedly work from the Christian theistic perspective, exactly as their peers start, often quite

> unconsciously from naturalistic or anti-realist ways of thinking or a mixture of both.

It should be made clear to them that working from such a perspective does not affect the rigor, intensity and beauty of their work but rather brings a level of enrichment to it. In fact, it should be made clear to them, as Francis Collins, the former director of the Human Genome Project, once observed, that, "there is no conflict in being a rigorous scientist and a person who believes in a God who takes a personal interest in each one of us."(2006, 5) But to make all these happen, the Church, in both the hierarchy and laity, should always try to keep abreast with the development in the sciences as well. This is because it cannot pretend to advise or call the attention of her members as well as non-members in the field of biomedical sciences to the aforementioned questions and matters, if it does not know or understand what the issues at stake thereof are. Hence, the Church should become all the more a learning Church, with both the humility and eagerness to know that which it does not yet know. Like science, it must not always forget that it does not have any monopoly on knowledge. With such openness to learn and indeed to enter into dialogue with the sciences, it would be seen that her interventions in the area of science in general, and especially, in biomedical sciences, are not simply meant to constitute a stumbling block to the progress made therein. This is what some scientists, like evolutionary biologist Richard Dawkins, have often accused it of. Indeed, Dawkins (2006, 284) had confessed: "As a scientist, I am hostile to fundamentalist religion because it actively debauches the scientific enterprise. It teaches us not to change our minds, and not to want to know exciting things that are available to be known. It subverts science and saps the intellect." On the contrary, it should be seen that such interventions are ways of making sure that the scientific progress in question is one that befits the human person in its dignity, destiny and mystique.

7. Conclusion

In the newspaper, *Young India*, of October 22, 1925, the Indian Mohandas Gandhi (cited in Mishra, 2010, 39), published what has come to be known as the seven social sins: "Politics without

principles\Wealth without work\Pleasure without conscience\Knowledge without character\Commerce without morality\Science without humanity\Worship without sacrifice." Aspects of human genetic engineering wherein, as shown above, human embryos are thrown away and in most cases also, mostly destroyed, and wherein as well the dignity of man, as one created in the image and likeness of God, is not respected, may be cited here as specimen of "Science without humanity." Such a science without humanity will definitely not have a divinity. If it distorts the image of man, it will also distort the image of God. No wonder, the image of the Christian God and the consequent worship of Him suffer all the more under the umbrella of such a science. It is the responsibility of Christianity, and here, Catholic Christianity, therefore, to continue to keep this science on its toes as it conducts its research. At the same time, it must endeavour to see to the birth of a new science: a science that respects the dignity of man as created in the image and likeness of God; a science that sees its whole project as an act of worship and adoration to this same God, and a science that endeavours, in all its ramifications, to remain valid, strong and capable. Only such a science is needed the most in the world of today in which, as stated above, some scientists, in their enterprise, take delight not only in "desecrating" the human person but also in trivializing the image of the Christian God in all His omniscience, omnipresence and omnipotence.

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