

Human Existence, Biotechnology and the Challenges of Transhumanism

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-----ABSTRACT-----

Human existence is a complex phenomenon. Through the course of the development of human thought, there has been diverse ways and attempts at offering insights into the complex phenomenon of human existence. Humanism is a discourse on human existence. In the contemporary age of scientific and technological advancement, the *Homo technologicus* model is becoming more and more the dominant paradigm, and the challenges set forth by the transhuman agenda is profoundly unsettling. The transhuman agenda challenges the very concept of human nature, the relationship of persons to nature, science, technology, medicine, genetic engineering, and cultural values. In the context of transhumanism, the human person has become the “supreme being” for humanity. But the paradox is that transhumanism maintains that, humanity itself must be transcended, there is neither male nor female, human nature, human biological constraints must be superseded, there is neither scope nor destiny, the merely biological must be transformed. Transhumanism sets forth serious challenges and calls attention to significant issues in relation to the nature and meaning of human existence. It also generates important discussions in relation to induced pluripotent stem cells, genetic enhancement, human cloning, human biotechnological transmutation, in vitro gametogenesis, embryo splitting, embryo editing, cybernetics, pro-longevity, bionics, perpetual youthfulness, unfading beauty, super-intelligence, personality-type-transformation, nanotechnology, and the creation of chimeras just to mention these few. This paper maintains that development in science and technology is existentially important for human persons, but this development needs to be accompanied by a proportionate development in moral responsibility, ethical thinking and the understanding of the dignity of the human person.

Keywords: Human Existence, Humanism, Transhumanism, Posthumanism, Science, Technology, Moral responsibility, Human dignity.

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I. INTRODUCTION

The totality of human existence expresses itself as a complex phenomenon. The ever-quotable Aristotle, in trying to give an insight into the complex nature of human existence described the human person as the *zoon politikon*, political animal (*Politics*, 1253a). And in the *Nicomachean Ethics*, Aristotle indicates that the human person is the *zoon logon echon* that is the animal distinguished by the rational principle (1098a). The insight offered by Aristotle led the Swedish scientist, Carl Linnaeus in his biological classification expressed in the *Systema Naturae*, to designate the human person as *Homo sapiens*. The classification of Carl Linnaeus has been used scientifically and philosophically as a paradigm in the expression of the binomial taxonomy.

Through the course of the development of human thought, there has been diverse ways and attempts at offering insights into the phenomenon of human existence. Protagoras with his peculiar insight understood the human person to be the measure of all things, *homo mensura* (Plato, *Theaetetus*, 170e). In the view of St. Thomas Aquinas the human person is a “civic and social being” – *ens civile et sociale* (*Summa Theologica*, IaIIae q.72 a 4). In his work *On the Eternal Return in Man*, Max Scheler building upon the insights already offered by Cicero in his famous *Epistolae ad Familiares – Letters to Friends* seeks to give an understanding into human existence from the point of view of the phenomenon of the human person as *homo religiosus* (127). In the thinking of Karl Marx the human person is the being defined by work, *Homo faber*. The neo-Kantian philosopher Ernst Cassirer maintains that the human person is preeminently the *Homo symbolicus*, the symbol making being. In the view of Nicolaus Cusanus, the essential defining factor that distinguishes the human person is the creative capacity of the human person, consequently he maintains that the human person is the *Homo creator*. J. G. Herder seeks for an understanding of the human person from the perspective of the distinguishing factor of language, for him the human person is the *Homo loquens*, the being that is capable of language. Education is an important factor in human development, consequently Heinrich Roth for instance maintains that the human person is the *Homo educandus*. The human person dwells in the universe but at the

same time the human person is open to transcendence as a pilgrim of the absolute, with this insight Gabriel Marcel maintains that the human person is the *Homo viator*, a pilgrim in search of the absolute mystery in God.

There are no intellectual pretensions, the list presented above is neither exhaustive nor conclusive. The list is merely representative. The rationale behind its being presented at all, is to draw our attention to the diversities inherent in the perception of the phenomenon of human existence. These diverse insights into the understanding of the complex nature of the phenomenon of human existence also points to the complexities involved in relation to the full expatiation of the concept of “Humanism” as it pertains to the human person and the sphere of human existence.

In this work as part of the intellectual exploration into the question of human existence, we will pay attention to the question of humanism, and in paying attention to the question of humanism, there will be need for special focus on Renaissance Humanism. The need for special focus on Renaissance Humanism arises from the fact that Renaissance Humanism with all its complexities and diversities expressed itself interestingly in a bifocal manner, as a movement both of recovery and discovery. The bifocal orientation of Renaissance Humanism, had profound influence on subsequent developments in the humanities and the sciences. The movement of recovery had a greater orientation towards the humanistic studies, and the recovery of academic resources of classical antiquity generally expressed as, the *Studia Humanitatis*. The influence of this could still be seen in some universities in the world having “the faculty of humanities.”

The other focus of the Renaissance movement, was the movement of discovery and this yielded greater influence in the field of the sciences. The recovery of new knowledge and fresh insight, from the total sphere of natural phenomenon. In this regard the nature of this work also demands that we should devote special attention to the question of Science and Technology, with specific reference to the question of biotechnology and the challenges that emerge from the transhuman agenda.

The conclusion points to the fact that science and technology are human activities, they contribute immensely to human development. It is imperative to pursue this activities bearing in mind the principle of responsibility – to the self, to other human persons, present as well as future human persons. It would also be important to pay attention to the human responsibility vis-à-vis the created universe, the human responsibility before the reality of being and ultimately the human responsibility before the absolute mystery of God, as the *esse ipse subsistens*.

THE QUESTION OF HUMANISM

It is the phenomenon of human existence that gives depth and meaning to the concept of Humanism as it expresses itself in various forms and shades of meaning along the path of human development. The main thrust of this work is not on the question of binomial taxonomy, but on the question of Humanism and Biotechnology, and the challenges involved in the process of the transition of the human person from *Homo sapiens* to *Homo technologicus*, especially as it emerges in the developing phenomenon of biotechnology. There is no gainsaying the fact that, in the contemporary age of scientific and technological advancement, the *Homo technologicus* model is becoming more and more the dominant paradigm, and this presents various dimensions of challenges to Humanism and, the sheer scope of the challenges is profoundly unsettling.

In a fast-moving field like genetic engineering it’s hard to predict what may occur in the next few years...One thing is certain: Genetic engineering will change people’s relationship with nature, medicine, and perhaps, as in the case of genetic testing, their own cultural values...Joseph L. Goldstein, a Nobel Prize winner at the University of Texas Southwestern Medical Center notes that 30 years ago, no one would have predicted monoclonal antibodies, genome mapping or transgenic animals. His prediction? Expect the unexpected! (Thro, 104).

In the fast-moving field of biotechnology, we are called upon to expect the unexpected. In a celebrated statement, the Roman dramatuge and scholar, Terentius once declared: *Homo sum, humani nihil a me alienum puto* – I am a man therefore nothing human is alien to me. (*Heauton Timorumenos*, 1, 1, 25). From the point of view of humanism, this statement is of profound significance, and very often, it is generally taken to be a paradigmatic representative of the humanist attitude. Humanism as a philosophical movement, places great emphasis, on the human understanding of the meaning of the totality of existence, but in this attention to the totality of existence, there is further attention to the reality of the sphere of human existence, which could be called the “homo-sphere.” Humanism as a form of philosophizing calls on human persons to be attentive and responsible to the demands of human personal, social, political, scientific, technological, religious and cultural transformation in the constant aspiration towards the greater good of humanity. Udo Etuk in his *New Humanism* speaks of Humanism as a philosophy and expatiates on this understanding of Humanism from two perspectives:

There are roughly two senses in which we may speak of Humanism as a philosophy. Firstly when we call Humanism a philosophy, we mean that it is a view of life. That is to say it is an understanding of the universe; an attempt to interpret what we see and apply that understanding to our daily lives. Such a view of life has to be very broad; because it of necessity has to take in everything: the human, the physical and superhuman

(if any) and subhuman dimensions of the universe must all be taken into consideration. Secondly we can speak of the philosophy of humanism and mean by that the reasoning, the logic, which guides and informs Humanism (8-7).

The understanding of Humanism is broad from a variety of perspectives. From the historical perspective, it is important to acknowledge the fact that humanism as a progressive philosophical movement has its roots in a long historical tradition. An insight into this long historical tradition could easily be observed right from the age of the Greek intellectual rebirth, especially in the profound anthropological turn in philosophy, initiated by Socrates, with the famous insight which originated within the context of the Delphic oracle, *Gnothi seauton*. “Know thyself.” However, for the purposes ready to hand, in the quest towards further understanding into the question of Humanism, it would be pertinent to turn attention to Renaissance Humanism for greater insight and subsequent development.

RENAISSANCE HUMANISM: DEVELOPMENT AND CURRENTS

With historical insight, Francesco Petrarca is often regarded as one of the earliest Renaissance humanist. In the spirit of the *Studia Humanitatis* of the Italian *Rinascimento*, he initiated a return to classical antiquity and especially to scholars such as Cicero, in a style and manner that was greatly influential in setting forth the currents of Renaissance Humanism, in the bifocal orientation towards *recovery* and *discovery* of knowledge. In the same vein too one cannot ignore the colossal influence of humanist scholars such as Desiderius Erasmus Roterodamus, Thomas More – *the man for all seasons*, and Nicholas von Cusa, just to mention these few, but for the sake of brevity and in order to have a discourse within context, it would be pertinent to pay special attention to the insights offered by Giovanni Pico della Mirandola. The choice of Giovanni Pico della Mirandola is significant from a diversity of perspectives, but more importantly the choice is made from the perspective that the works of Giovanni Pico della Mirandola offers to us in a manner that is unique, what could be seen as an important intellectual synthesis of the major currents of Renaissance Humanism. In *De Hominis Dignitate – Oration on Human Dignity*, Giovanni Pico della Mirandola declares:

Most esteemed Fathers, I have read in the ancient writings of the Arabians that Abdala the Saracen on being asked what, on this stage so to say, of the world seemed to him most evocative of wonder, replied that there was nothing to be seen more marvellous than man. And that celebrated exclamation of Hermes Trismegistus ‘what a great miracle is man,’ Asclepius confirms this opinion (1).

The pre-eminence of the human person, his dignity and grandeur within the order of the visible universe remains unquestionable for Giovanni Pico della Mirandola. The human person is a creature that is distinct from all other creatures. A being that is sublime, yet at the same time indeterminate in his nature.

The nature of all other creatures is defined and restricted within laws which We have laid down; you by contrast impeded by no such restrictions, may by your own free will, to whose custody We have assigned you, trace for yourself the lineaments of your own nature (3).

These are profound words with profound significance that runs deep, man is not merely a creature of God. He is also most profoundly a creator of himself, with the capacity to fashion his own nature. As an essential aspect of his dignity, for Giovanni Pico della Mirandola, man is also his own maker. Taken in profound proportions and significance, human nature as well as human dignity rather than being essentially given, remain an open task to be accomplished by man by virtue of his own free will and power. The emphasis here is on the dynamically creative character in relation to the nature of human existence.

In the view of Giovanni Pico della Mirandola, the human person is the centre. It is not the earth of the ancient Ptolemaic astronomy nor the Sun of the revolutionary astronomy of Copernicus, but the human person, who is the centre of the universe. The human person as the centre of the universe is also pre-eminently the maker of his own nature, the artifice of his dignity. God placed man in the centre of the world, a creature neither of heaven nor of earth, neither mortal nor immortal but a free master of his destiny.

We have made you a creature neither of heaven nor of earth, neither mortal nor immortal in order that you may, as the free and proud shaper of your own being fashion yourself in the form you may prefer (3)

Even the highest spiritual beings in the description of Giovanni Pico della Mirandola had their nature fixed throughout limitless eternity. “But upon man at the moment of creation, God bestowed seeds pregnant with all possibilities, the germs of every form of life.” (4) Man as the maker of himself has the openness towards all possibilities. The affirmation of Giovanni Pico della Mirandola has far reaching implications. The currents could be seen in the consciousness of the subject expressed by the Cartesian “Cogito,” in the *autonomous subject* of Kantian philosophy, in the *Absolut Geist* of Hegelian philosophy, in the atheistic Humanism of Karl Marx, in the unbridled enthusiasm of the Enlightenment Project, in the anthropological principle of Existentialist Humanism and in the ideologies of the transhuman biotechnological agenda.

In *The Will to Power*, Friedrich Nietzsche celebrates the emergence of the *Übermensch* with unbridled enthusiasm and in *Thus Spoke Zarathustra*, he indicates that man is something that must be overcome (12). In

the view of the atheistic Humanism of Karl Marx, man has become the supreme being, and man must devote his energies and attention to man. Religion is nothing other than alienated man's self-reflection, the sigh of the oppressed and the opium of the populace. "Die Religion ist der Seufzer der bedrängten Kreatur, das Gemüt einer herzlosen Welt, wie sie der Geist geistloser Zustände ist. Sie ist das *Opium* des Volks" (Marx, I -378) God must be abolished permanently. "The criticism of religion ends with the doctrine that *man is the supreme being for man.*" Die Kritik der Religion endet mit der Lehre daß der *Mensch has höchste Wesen für den Menschen sei*" (Marx, I – 385).

In the context of the atheistic existentialism of Jean Paul Sartre, man is the being whose existence precedes his essence, this indicates that man does not have a nature that determines his mode of being and acting, but rather these modes of being are possibilities from which he may choose and on the basis of which he can "project" himself. "We mean that man first of all exists, encounters himself, surges up in the world- and defines himself afterwards. If man as the existentialist sees him is not definable, it is because to begin with he is nothing. He will not be anything until later, and then he will be what he makes of himself" (Sartre, 290).

Man is the supreme being for man, man is what he makes of himself, this then sets the stage for *transhumanism*, H⁺, human beings must transform themselves in to the post-human stage - *posthumanism*. "God," Nietzsche had already declared with passionate intensity "is dead." There is no creator of human essence and in the view of Sartre there is no such thing as the human essence, what could be called human essence, is what must be created constantly on the basis of the reality of human freedom. The Cartesian *cogito* reigns supreme, *I think therefore I am*.

On the basis of the subjective viewpoints of these anthropocentric philosophies, humanity itself must be transcended, there is neither male nor female, there is no human nature. Human biological constraints must be superseded there must be a transcendence of human biology. There must be, neither scope nor purpose, the merely biological must be transformed, *existence precedes essence* and human essence is what the human person makes of it, through the instrumentality of choice, in its perennial inescapability, *to choose not to choose is itself a choice*.

In his interesting *Brief Über Den Humanismus – Letter on Humanism*, Martin Heidegger indicated that Jean Paul Sartre had expressed the basic tenet of existentialism by stating that *existence precedes essence*, this in a way is in contrast to what has been said from Plato on, that *essence precedes existence* (Heidegger, 208). The view of Jean Paul Sartre in *Existentialism is a Humanism*, is that philosophy has come to the realm in which there are only humans. In contradistinction to Jean Paul Sartre, Martin Heidegger in the *Brief Über Den Humanismus* maintains that philosophy has come to the realm in which there is only Being. For Martin Heidegger: "Der Mensch ist der Hirte des Seins" Man is the Shepherd of Being (Heidegger, 210). The perennial challenge remains: will the human person have the joyful courage to remain the shepherd of being, or along the lines of transcendental subjectivism, will the human person superimposed himself as the lord of being? In whatever direction, the human person decides to take, the consequences are profound, for the human person and the totality of the material universe.

SCIENCE AND TECHNOLOGY: THE CHALLENGESS OF THE TRANSHUMAN AGENDA

The concept of "science" is derived from the Latin expression *scientia* which basically means knowledge. Science fundamentally indicates a systematically organized body of knowledge. Scientific knowledge involves the quest for truth and the tools essential for this quest include *rationality*, *objectivity*, *experimentation* and *verifiability*. Science involves the systematic study of anything that could be examined, tested, and verified. Over and above the Medieval understanding of scientific knowledge, the Renaissance brought with it a renewed insight, with regard to the understanding of scientific knowledge. This understanding of scientific knowledge could be seen within the context of the Renaissance in Italian city states, exploration and discovery of new territories by Spanish and Portuguese explorers, the advent of modern printing in Germany, revolutionary new knowledge in astronomy initiated especially by Copernicus, and the transformation of emphasis from *philosophy of nature* to *science of nature*. As already indicated, the renaissance was marked by both the *recovery* and the *discovery* of knowledge. The inspiration from this was the recovery of classical antiquity, and the discovery of new knowledge. In this task of *recovery* and *discovery* humanist scholars edited and published many texts in various areas of human learning and knowledge. The task of recovery and discovery of scientific knowledge, could be seen especially in the works of people like Leonardo Da Vinci, Nicolas Copernicus, and Johannes Kepler just to mention these few.

In the contemporary world different branches of science investigate almost everything that can be observed or measured and scientific knowledge has continued to shape powerfully the way human persons understand the universe and the place of human beings in the universe. The classification of scientific knowledge at times employs complex and arbitrary schemes. However, for the sake of practicality, scientific knowledge could generally be classified into the major branches of the Formal Sciences expressed mainly in

Logic and the Mathematical Sciences, the Physical sciences, the Earth Sciences, the Life Sciences, and the Social Sciences.

Technology on the other hand, derived from the Greek root of the words “Τεχνη” *Techne* and “λογος” *Logos*. Technology involves the practical appropriation as well as application of intelligence and reason in the achievement of practical goals. The relationship between technology and science, involves the practical application of scientific knowledge in the achievement of specific goals. Technology draws on discoveries from various areas of scientific knowledge systematically applies this knowledge towards the achievement of practical aims and purposes in the transformation of the material universe. The core aim is the application of scientific knowledge towards the realization of practical goals. Various fields of science and technology can intersect in the realization of further areas of scientific exploration, appropriation and technological application. It is within the context of the intersection between science and technology that the question of biotechnology emerges. Many subdivisions of science and technology consolidate overlapping disciplines, creating yet more areas of complex scientific research, it is within this context that we situate biotechnology.

In the development of the intersection between the life sciences and technology, the complex field of scientific knowledge and technological application has emerged with its challenges, achievements, and controversies. There are various aspects of biotechnology involving plants and animals. And there is no denying the fact that biotechnological activities at this realm have real influence, both positively and negatively on the integrity of the biosphere as well as the entire ecosystem. All these are significant issues, scientifically, technologically, ethically, environmentally, politically, religiously, culturally, socially and economically. However, for the current purposes of this work the main focus is, on the application of scientific knowledge and technology to the bio-realm with specific attention to the realm of human existence.

In the field of medicine, the diagnosis of disease has been revolutionized by the use of new imaging techniques, including magnetic resonance imaging and computed tomography. There is also progress in the direction of genetic medicine, which aims at curing diseases through the use of gene therapy, in which the insertion of normal or genetically altered genes into a patient’s cells replaces non-functional, defective or missing genes. It is important not to underestimate the successes of gene replacement therapy. Nowadays genetic engineering is being used in the understanding, treatment and prevention of diseases (Thro, 70). There are also revolutionary application of biotechnology in the areas of assisted human reproduction, in vitro gametogenesis, induced pluripotent stem cells, cloning, and the biotechnological chimera, just to mention these few.

In the area of the biotechnological advancement of reproduction, assisted human reproduction is developing towards the age of technologically induced “super babies.” New assisted reproductive technologies are making use of state of the art, cutting-edge procedures, including the new technique called CRISPR. CRISPR is the acronym for “Clustered Regularly Interspaced Short Palindromic Repeats.” CRISPR could be used in genetic engineering as an editing tool, especially in germ-line editing, towards the reproduction of new brave off-springs with enhanced characteristics and capabilities. In close collaboration towards the realization of these technological projects, in vitro gametogenesis (IVG) multiplies the existential possibilities open to genetic engineering.

In relation to chimera biotechnology there has been significant developments. Already, many years ago, research groups at Newcastle University and King’s College London were granted licences to work on human-animal embryo hybrids. The Human Fertilization and Embryology Authority, HFEA, that gave the permission for the research to go ahead (http://www.theregister.co.uk/2008/01/17/hfea_hybrid_embryo_projects/), permits the creation of chimeras or interspecies cytoplasmic hybrid embryos (http://www.hfea.gov.uk/docs/Hybrids_Report.pdf). Chimera biotechnology is as significant as it is controversial.

...Scientists can create chimeras by introducing embryonic cells from one species to the cells of another species through various techniques at various stages of development. As the entity develops the cells connect and grow together...scientists can also create chimeras by surgically grafting tissues from one animal into another. For example many current experiments involve the placing of human brain cells in mice or other primates. (Shannon and Kockler. 254)

In the face of these advancements in the biological application of technology to the realm of human existence, the challenges of transhumanism have emerged. The evolutionary biologist Julian Huxley, was a Transhumanist. But Transhumanism came powerfully into the limelight in the 1970s and 1980s especially with the writings of the futurist FM-2030, originally known by the name Fereidoun M. Esfandiary. The phenomenon of Transhumanism became an abbreviated expression of “transitional human.” Transitional humans are considered to be fundamentally evolutionary beings in the process towards becoming posthumans. This vision appears to be inspired by revolutionary developments in biotechnology, engineering and cybernetics. Many groups have embraced the transhumanist worldview including groups such as the *Extropians*, the *Transtopians*, the *Proactionaries*, and the *Singularitarians*, who work aggressively towards the goal of achieving

“technological singularity” and the transformation of human beings into superior beings. With biotechnology, cyber technology, nanotechnology and social engineering, human beings of higher technological evolution should engineer the next phase of human development leading to enhanced humanity, and the emergence of the “UpWingers.” The desired outcome is the emergence of superior human beings via technology. This demands the coordinated utilization of several technologies, including nanotechnology, biotechnologies, information technologies, cognitive technologies, cybernetics and neurotechnologies in the project of the realization of enhanced posthumans with superior endowments and capabilities (Hook, 2518).

Off with biological constraints! Transcend humanness by technology! The posthumanist embraces the eventual goal of decelerated and even arrested aging, but only as a small part of a larger vision to re-engineer human nature, and thereby to create biologically and technologically superior human beings that we humans today will design for tomorrow. As such, posthumans would no longer be humans. Genetics, nanotechnology, cloning, cybernetics, and computer technologies are all part of the posthuman vision, which even includes the idea of downloading of synaptic connections in the brain to form a computerized human mind freed of mortal flesh, and thereby immortalized. (Post, xii)

In the light of the transhuman agenda, it could be stated unequivocally that the archaic philosophers were wasting time over the “mind-body” problem. The aim of transhumanism in the new *Copernican revolution*, is the immortalization of the bodiless mind via the computerization of the synaptic connections of the human brain. Transhumanism is “woke” and in its emergence from the scientific and technological slumber, the goal is the engineering of post-human-beings capable of “mind uploading.” In the *Weltanschauung* expressed by transhumanism, science and technology are the unquestionable purveyors and guarantors of immortality. The time has come to overthrow the ancient shackles of biological limitations. “Transhumanism and posthumanism are worldviews...that look forward to the day when homo sapiens have been replaced by biologically and technologically superior beings.” (Hook 2516) Transhumanism sets forth serious challenges and calls attention to significant issues in relation to the nature and meaning of human existence.

It also generates important discussions in relation to induced pluripotent stem cells, genetic enhancement, human cloning, human biotechnological engineering, in vitro gametogenesis, embryo splitting, embryo editing, cybernetics, pro-longevity, bionics, perpetual youthfulness, unfading beauty, super-intelligence, personality-type-transformation, nanotechnology, and the creation of chimeras just to mention these few. The issue is the development from transhumanism to the posthuman stage by way of technological application of scientific knowledge especially scientific knowledge in the area of the life sciences, cybernetics, informatics and the integration of all these with the state of the art supercomputer technology.

The tools transhumanists would use to achieve their ends include genetic manipulation, nanotechnology, cybernetics, pharmacological enhancement, and computer simulation. The most ambitious—and controversial—transhumanist vision involves the concept of mind uploading. According to proponents, advances in computing and neurotechnologies will, within several decades, enable individuals to completely read the synaptic connections of the human brain, enabling an exact replica of the brain to exist and function inside a computer. (Hook, 2516)

When the brain can be technologized to function as a micro-chip inside a computer, is there still any need for the body? These momentous advancements are significant, they also generate important questions in relation to the nature and meaning of human existence.

II. CONCLUSION

In an interesting book curiously entitled: *The Abolition of Man*, the author, the indefatigable C. S. Lewis once stated:

In order to understand fully what Man’s power over Nature, and therefore the power of some men over other men, really means, we must picture the race extended in time from the date of its emergence to that of its extinction. Each generation exercises power over its successors: and each, in so far as it modifies the environment bequeathed to it and rebels against tradition, resists and limits the power of its predecessors. This modifies the picture which is sometimes painted of a progressive emancipation from tradition and a progressive control of natural processes resulting in a continual increase of human power. In reality, of course, if any one age really attains, by eugenics and scientific education the power to make its descendants what it pleases, all men who live after it are the patients of that power (56-57)

Leon Kass re-echoes the concerns expressed by C. S. Lewis by restating the ethical challenges inherent in the question of human cloning.

With cloning, not only is the process in hand, but the total genetic blueprint of the cloned individual is selected and determined by the human artisans...a major step into making man himself simply another one of the man-made things. Human nature becomes merely the last part of nature to succumb to the technological project, which turns all of nature into raw material at human disposal, to be homogenized by our rational technique according to the subjective prejudices of the day (Kass, 579).

There is need for responsibility in the biological application to the realm of human existence. Emmanuel Levinas reminds us that responsibility is the essential, primary, and fundamental mode of subjectivity. (Levinas, *Ethics and infinity*, 95). Being human means to have personal identity before anything else in the sublime imperative of being called to respond to the other. To remove oneself from the obligation of responding to the humanity of the other, is an infringement upon the humanity of the self. The self as an embodiment of logos, of meaning is addressed to the other (Levinas, *Humanism*, 13). In the use of technology the human person is called to responsibility.

Technology is not inherently evil, and has in fact been the source of much good (as well as harm). It is but a tool, and as a tool must be carefully examined and carefully used. Transforming ourselves into our tools in the hopes of achieving immortality is an illusion. Decay cannot be forestalled indefinitely. If one must change the underlying substrate of the body to “live,” then it is really something else that exists, not the original being, and death will still need to be confronted. Extended life may be achieved, but at what social cost? How will people deal with greatly enhanced life spans? What will be the impact on economic structures, the workforce, and reproduction? These questions are all, as yet, unanswered by the transhumanists and the Converging Technologies project of the NSF. While it is doubtful that consensus could ever be reached on enhancing or augmenting technologies, humankind must engage prospectively in a full and open dialogue concerning the coming technologies and their implications (Hook, 2520).

Development in science and technology needs to be accompanied by a proportionate development in ethical thinking and the understanding of the dignity of the human person. There is need that every aspect of human scientific as well as technological advancement should go with a corresponding sense of human dignity and responsibility, in searching for the truth and the good of the human person. Science and technology are aspects of human activity, authentic humanism cannot be antagonistic to science and technology, just as true science and technology cannot be antagonistic to humanism. In the view of Jacques Maritain there is need for a transition towards a new humanism that could also be expressed as *integral humanism*.

This new humanism, which has in it nothing common with bourgeois humanism, and is all the more human since it does not worship man, but has a real and effective respect for human dignity and for the rights of human personality. I see as directed towards a socio-temporal realization of the evangelical concern for humanity which ought not to exist only in the spiritual order, but to become incarnate; and towards the ideal of true brotherhood among men (Maritain, xvi-xvii)

The human person in his quest for the infinite is called to transcendence, a humanism that is closed in on immanence remains fundamentally problematic. The human person sees himself at home in the universe, together with other human beings, and part of the project of his existence involves the transformation of the material universe through the power of his activity, in openness to the transcendent designs of God. True humanism demands that the human person must relate his scientific and technological activity to the good of the human community, his activities should strive to be in harmony with the authentic interests of the human race, in accordance with God’s will and design, and in a way that will enable human persons as individuals and as members of the human community to pursue authentic development and happiness and the fulfilment of the total vocation of human existence.

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