



BIOETHICS IN THE CONTEMPORARY CONTEXT: CHALLENGES OF THE INTERDISCIPLINARY METHODOLOGY

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Abstract:

The contemporary world is becoming more and more complex in the intermingling of many diverse factors. A number of these factors emerged from the perspective of social, economic, political, religious, cultural, scientific, and technological transformations around the world. There is need for a better understanding of bioethics in the contemporary world and the significance of the interdisciplinary methodology in dealing with issues in bioethics, in the light of contemporary realities. At its emergence as a new discipline, bioethics was faced with a diversity of scientific, epistemological, metaphysical, anthropological and meta-ethical challenges, its original outlook was along the lines of principles, as clearly expressed in the definition given to bioethics in the first edition of the authoritative *Encyclopedia of Bioethics*. The second edition of the *Encyclopedia of Bioethics* offered to establish a corrective to the preponderance of the principles' model and approach, indicating the significance of bioethics as: "...the systematic study of the moral dimensions – including moral vision, decisions, conduct, and policies – of the life sciences and health care, employing a variety of methodologies in an interdisciplinary setting." This opens up the horizon enabling bioethics to collaborate effectively with the wisdom, knowledge and expertise that flowed from other disciplines, such as the formal sciences, the natural sciences, the medical sciences, health care, engineering, social sciences, philosophy, theology, law, environmental sciences, information, communications and technology. The list is not exhaustive, but the aim is, to empower creative collaboration. These indicate that creative advancement and innovative insight could be found at the intercessions of disciplines. Interdisciplinary methodology broadens the horizons and favours the cross-pollination of ideas that leads to creativity and development. In the face of the multiplicity of specializations, the interdisciplinary methodology is not without its challenges, but even in the face of these challenges there are opportunities, there is no gainsaying the fact that the interdisciplinary methodology has yielded positive results in the field of bioethics, it is also hoped that this could serve a paradigmatic purpose for innovation in philosophy and the humanities in the contemporary context. These also offer the opportunity for critical context analysis and collaboration. The age of closed

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monadism is over and permanently, combined expertise in an interdisciplinary setting opens up the opportunity for collaboration, greater creativity and innovative development.

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1. Introduction

The bio-realm is at the centre of the ethical concerns of bioethics. The superabundance of life is greater than the inflexible regularity of logic. The challenges in the contemporary world have given greater impetus towards the orientation of bioethics, more and more in the direction of the methodology that is interdisciplinary. This approach towards the interdisciplinary methodology could already be seen in what came to be referred to, obliquely as: "The God Committee." God has little or nothing to do with the said committee. However, in November 1962, Shana Alexander, published an interesting article in *Life* magazine entitled: "They Decide Who Lives and Who Dies" (102). This interesting article with a curious title was an attempt to describe the deliberations of the Seattle, Washington, committee whose members were charged with the task of selecting which patients would gain entry into the city's new haemodialysis program. A year earlier, Dr Belding Scribner in the course of pioneering work in haemodialysis had invented the arteriovenous shunt and cannula that made dialysis possible and with it the potential of continued life for patients with progressive, irreversible kidney disease. By providing an artificial means of purifying the blood in persons whose organs could not perform such functions, Scribner's technology offered hope to millions of patients with the debilitating effect of kidney disintegration. However, the demand far outweighed the supply, many patients needed dialysis than could be accommodated at the expensive and inadequate dialysis centres.

It has to be noted that most hospitals created internal committees of physicians to screen applicants for their programs, but Seattle however took the extraordinary step of constituting a citizen's committee to define who would receive dialysis and *live* and conversely who would be denied the new treatment and *die*. The committee was made up of a lawyer, a minister, a banker, a housewife, a state government official, a labour leader, and a surgeon, the group was later euphemistically called "The God Committee." There are many interesting things about this committee, but what is of particular relevance for our discourse is what could be referred to as the *interdisciplinary* nature of this committee with a diversity of competences, and even lack of it, that could enable the members to examine the challenges facing them from a variety of perspectives, backgrounds and insights.

At its emergence as a new discipline, bioethics was faced with a diversity of scientific, epistemological, metaphysical, anthropological and meta-ethical challenges, its original outlook was along the lines of principles, as clearly expressed in the definition given to bioethics in the first edition of the authoritative *Encyclopedia of Bioethics*. The second edition of the *Encyclopedia of Bioethics* offered to establish a corrective to the preponderance of the principles' model and approach, indicating the significance of bioethics as *a systematic study which employs a variety of methodologies in an interdisciplinary setting*. This opens up the horizon enabling bioethics to collaborate effectively with the wisdom, knowledge and expertise that flowed from other disciplines, such as the natural sciences, the medical sciences, health care, engineering, social sciences, philosophy, theology, law, environmental sciences, information, communications and technology. The list is not exhaustive, the complex array of issues in bioethics demands for a methodology that is interdisciplinary.

“Since bioethics examines the ethical issues at both the heart and the cutting edge of technology in health care and the life sciences, the area covered is necessarily broad. This is what makes bioethics as a field of study complex but also exciting. There is a need for many specialties and disciplines because no one field can claim the territory of life. In addition to the potential benefits and harms we have learned that medical technologies have economic consequences, which raise questions of allocation. Reality which is itself interdisciplinary has taught us to be interdisciplinary in our thinking.” (Shannon and Kockler, 4)

The affirmation of this work is that creative advancement and innovative insight could be found at the intersections of disciplines. Interdisciplinary methodology broadens the horizons and favours the cross-pollination of ideas that leads to creativity and development. In the face of the multiplicity of specializations, the interdisciplinary methodology is not without its challenges, but even in the face of these challenges there are opportunities, there is no gainsaying the fact that the interdisciplinary methodology has yielded positive results in the field of bioethics, it is also hoped that this could serve a paradigmatic purpose for innovative studies, creative thinking, and critical context analysis with regard to human learning, in the sciences and in the humanities in the 21st century and beyond. The important thing is the promotion of learning and growth in wisdom. In the light of this insight, it is important to emphasize the need of superseding the age of closed-in *monadism*, along the lines of Leibniz, combined expertise in an interdisciplinary setting could open up the opportunity for collaboration, greater creativity and positive development. In this work, there is the ardent intention to pay attention to key issues which include: pioneering achievements and insights with regard to the emergence of bioethics, the meaning of bioethics, the diverse areas of bioethics, the question of human bioethics and within the context of the question of human bioethics, special attention to the bioethics at the early stages of human life and the development of human life, especially with regard to the issue of human reproduction and assisted

human reproduction, research and experimentation involving human embryos. The objective is to bring into greater relief, the multifarious complex issues in bioethics in the contemporary context and the need to aim at worthwhile solutions working through the challenges, the prospects the potentials and the opportunities that could be garnered by making use of an interdisciplinary methodology.

2. Bioethics: Pioneering Achievements and Insights

The emergence of the terminology “Bioethics” is not totally free of controversies. These controversies revolve around what has often been described as the “bi-located birth” of the terminology: “Bioethics” (Jonsen, 27). Another aspect of the controversy has to do with the seminal work in the field that has come to be known as *bioethics*, by Fritz Jahr, with the publication of the article: “Bio-Ethik: Eine Umschau Über die Ethischen Beziehungen des Menschen zu Tier und Pflanze,” in 1927 (Jahr, 2). The influence of this important work, written in the *Deutsche Sprache*, in the English-speaking world still remains an open question, but already in the wordings of the title of the work, there is an opening towards the multidimensional nature of bioethics, with the indication of the *panorama of the ethical relations of human beings with animals and plants*, which in turn demands an interdisciplinary methodology, for a more comprehensive elaboration.

Prescinding from the contested historical question of origins, it is generally agreed that in the English-speaking world, the first person to publish a work with the terminology *bioethics* as part of its title, was Van Rensselaer Potter, a research oncologist at the University of Wisconsin. In 1970, Van Rensselaer Potter published an article entitled: “Bioethics: The Science of Survival,” in the Journal, *Perspectives in Biology and Medicine* (Potter, 127). The following year Van Rensselaer Potter, published a book with the title: *Bioethics: Bridge to the Future*. It was the intension of Van Rensselaer Potter, that this new terminology would envisage “a new discipline that combines biological knowledge with a knowledge of human value systems” (Potter, 2). The “Bio” in the neologism bioethics was chosen to represent the totality of scientific knowledge, especially in relation to the life sciences, while the word “Ethics” was chosen to represent knowledge of the system of human values. The discipline that was envisaged by Van Rensselaer Potter, was basically interdisciplinary in nature.

In the light of the challenges in the contemporary context, Van Rensselaer Potter was well aware of the dangers threatening the survival of the entire ecosystem due to a split in knowledge: separating scientific knowledge from ethical values. New scientific knowledge was emerging which in its aggressive technological application, threatened the very survival of humanity and indeed the entire ecosystem, that is why Van Rensselaer Potter referred to this emerging discipline “*Bioethics*” as *the Science of Survival*. Van Rensselaer Potter was looking for a way in which ethical values could be applied to scientific and technological knowledge in order to guarantee the very survival of the human species, to sustain and improve the civilized world without destroying it, and to

secure a better quality of life for future generations. The vision of Van Rensselaer Potter was that of an interdisciplinary global bioethics.

“While Potter saw bioethics as a new discipline combining science and philosophy, the Georgetown philosophers and theologians regarded it as a branch of applied ethics. But events overtook them: media revelations of experiments on uniformed patients, civil rights and women’s movements among other political, social, and economic events of the 1960s and 1970s, facilitated the empowerment of “bioethicists” to advise on the ethical limits of medicine and biotechnology.” (Roger Cooter, [https://doi.org/10.1061/S0140-6736\(04\)17381-9](https://doi.org/10.1061/S0140-6736(04)17381-9))

The assertion of Roger Cooter is not altogether unassailable, due to the fact that, great pioneering work and achievements in the field of bioethics could also be attributed to André E. Hellegers. Hellegers was born in 1926 in Venlo, the Netherlands. He had his early education at Stonyhurst College, a Jesuit academic institution located at Lancashire, England. In 1951, he graduated from the Medical School of the University of Edinburgh. His area of specialization was obstetrics and gynaecology. He joined the Johns Hopkins School of Medicine, dedicating attention to research in the area of foetal physiology. In 1967, he transferred his services to Georgetown University, as a professor of obstetrics and gynaecology. André E. Hellegers, saw bioethics as the discipline that will be capable of developing a greater appreciation of human values by means of the dialogue between ethics, science, medicine and healthcare and public policy. This broad perspective demands an interdisciplinary methodological approach. André E. Hellegers went on to become the founder of Kennedy Institute of Ethics and the first person to introduce Bioethics into the sphere of University education, giving profound restructuring to Bioethics as a new academic discipline. André E. Hellegers envisioned the development of Bioethics within an interdisciplinary context, this was the reason why he also inserted Bioethics into the field of the biomedical sciences and the social sciences, a discipline that is capable of synthesising ethical knowledge with scientific knowledge especially in the area of Bio-medicine. It is to the credit of André Hellegers that the Kennedy Institute of Ethics he founded, published the first ever *Encyclopedia of Bioethics*. As founder and first director of the Kennedy Institute of Ethics, André Hellegers helped in opening up the field of medicine, and the biomedical sciences to the challenges of the emerging new discipline, bioethics in the contemporary world. In an article entitled “The ‘Wider view’ André Hellegers’ Passionate, Integrating Intellect and the Creation of Bioethics,” Warren T. Reich with profound intellectual brilliance, articulated the contributions of Hellegers towards the emergence of bioethics as an interdisciplinary field of studies.

“Hellegers was committed to and worked toward bioethics as a self-consciously interdisciplinary field in which the contributing disciplines adapt to each other...to create a dynamic and complex intellectual, clinical and social activity.” (25)

The interdisciplinary framework opens up studies and research in the field of bioethics into a greater collaboration and dialogue that transcend disciplinary boundaries, bringing into focus, issues affecting the integrity life, in the formal sciences, the physical sciences, the life sciences, the environmental sciences, the earth sciences, the social sciences, medicine, and the humanities, just to mention these few. The issue of life and the flourishing of life is too important and too complicated, that the way forward demands an interdisciplinary approach and the advocating of courses on bioethics at major academic centres for the promotion of the good and the integrity of life. Life is of great value in all dimensions of existence. And if life does not have value, then beyond all rhetorical spinning, it is important to ask, what then has value? This is an important question that transcends all rhetorical and verbal gymnastics, a question in which the life of the enquirer is also at stake. At the very least, the enquirer must be alive to engage with the question of life effectively, a dead body can be an evidence, but a dead body cannot engage in logical arguments about the nature of life.

3. The Challenges of the Definitions of Bioethics

In the "Introduction" to the First Edition, of the *Encyclopedia of Bioethics*, Warren T. Reich defined Bioethics as:

"...the systematic study of human conduct in the area of life sciences and health care, in so far as this conduct is examined in the light of moral values and principles." (xix)

In this definition of Bioethics, it is important to note that there is a marked emphasis on moral values and principles. This was clearly influenced by the pervading culture of *principlism* which was in vogue, especially the principles of autonomy, respect for the dignity of the human person, beneficence, non-maleficence, and justice, just to mention these few. In the "Introduction" to the second edition of the same *Encyclopedia of Bioethics*, there are some changes with regard to the definition given to Bioethics, importantly attention should be paid to the marked departure from the principles paradigm with regard to the definition given to Bioethics. In this new definition of Bioethics, Warren T. Reich, gives further elaboration and characterization with regard to what the essential nature of Bioethics should be.

"Bioethics is a composite term derived from the Greek words bios (life) and ēthikē (ethics). It can be defined as the systematic study of the moral dimensions – including moral vision, decisions, conduct, and policies – of the life sciences and health care, employing a variety of methodologies in an interdisciplinary setting." (xxi)

In the definition of Bioethics given in the second edition of the *Encyclopedia of Bioethics*, a broader understanding is given to the field of bioethics which takes into consideration the broad terrain of the moral problems of the life sciences, which is meant

to include medicine, biology, biotechnology, law, environmental science, political science, anthropology, economics and sociology, just to mention these few. Within the context of human education in general and university education in particular, it is important to pay attention to the question of the *interdisciplinary context* in which bioethical studies should be carried out. It is important to note that there are areas of environmental bioethics, animal bioethics and human bioethics, in the contemporary context and the challenges of the interdisciplinary methodology. But in this work, with regard to the examination of the question of the interdisciplinary methodology in bioethics, greater attention would be given to human bioethics.

4. Human Bioethics and the Challenges of the Interdisciplinary Methodology

The interdisciplinary methodology is important for all areas of bioethics. Bioethics in its essential nature must be interdisciplinary in order to achieve worthwhile goals towards the authentic good and the flourishing of life. But in order to achieve greater precision in this work, the core area for our concentration in the current context would be the area of human bioethics. In the area of human bioethics, there are multiplicity of issues at the beginning of life, health care issues affecting human life as it develops and matures, and issues at the end of life. In the current examination special attention would be devoted to the challenges at the beginning of human life.

The choice is representative, rather than being exhaustive. The reason for this choice is especially significant, in order to proffer reflective insight into the developmental trajectory of the human person, the genetic constitution that is established at fertilization and the development towards more complex multicellular forms, and the challenges and potentials emerging from the interdisciplinary methodology.

“The human person develops progressively from single-cell fertilized egg to a highly complex multicellular organism. The genetic constitution of the individual is established at the time of fertilization. During development of the embryo and foetus, genetic information is unfolded which controls morphologic development.” (Blackburn, 75).

The beauty as well as the grandeur of human development from the earliest stages presents us with multiple bioethical and existential challenges. Human existential reproduction and the many challenges inherent in reproduction and assisted reproduction can offer us a privileged existential starting point into the nature of the current situation and challenges in the contemporary world.

The question of assisted human reproduction is a significant issue and with it the question of human infertility, together with the male as well as the female factors of infertility. There are also challenges with regard to the techniques of assisted reproduction. There are techniques of assisted human reproduction in which reproduction takes place *in vivo*, within the reproductive system of the maternal body. There are also techniques of assisted human reproduction in which reproduction takes

place *in vitro*, and the challenges emerging from the processes of in vitro fertilization and embryo transfer.

Assisted human reproduction *in vitro*, also opens up to the question of the techniques of the micro manipulation of human gametes and embryos, in order to arrive at viability in the reproductive process. The issue of surrogacy and donation of gametes that are not genetically related to the commissioning parents, raises a spectra of questions with far reaching consequences in various dimensions of human life. The problem of abortion together with the attendant legal, economic, political, medical, personal, social, political, religious, cultural issues, and the importance of the sanctity and dignity of human life raises significant questions that demand an interdisciplinary methodology. There are further thorny issues emerging from pre-implantation and prenatal genetic diagnoses, together with the challenges of genetic determinism and eugenics.

Significantly, the genes in the human genome have now been identified, and their appropriate DNA properly sequenced. In the contemporary context, molecular analysis of genes is becoming simpler and more efficient. When an embryo reaches the third day of development, it normally has about eight cells. In Pre-implantation Genetic Diagnosis, PGD, one or two embryonic cells, called "blastomeres," can be removed from the embryo with the assistance of micromanipulation techniques. These embryonic cells can then be subjected to genetic analysis, in order to know the chromosomal composition of the embryos, and whether or not they carry specific disease-producing genetic mutations.

The technique of Pre-implantation Genetic Diagnosis PGD, has greatly developed with the advancement of contemporary biotechnology, however, the procedure is also associated with profound ethical and medical concerns, and raises issues of *sex selection* and *genetic engineering*. Pre-implantation Genetic Diagnosis, PGD raises serious bioethical concerns. The technique can be used to determine the gender of the embryo, and thus can be used to select embryos of one gender in preference of the other in the context of what is now referred to euphemistically as "family balancing." Pre-implantation Genetic Diagnosis, PGD contains within itself the potential to be used in screening for non-medical genetic issues and raises the question of the "designer baby." These are grave issues touching on the integrity of human life and wellbeing, and the attempt to deal effectively with these issues demands an interdisciplinary methodology.

At a deeper level of analysis and in the light of the challenges emerging from assisted human reproduction, it would be an experiment in intellectual dishonesty to ignore the question of cryopreservation of gametes, the cryopreservation of human embryos, and the fate of human embryos abandoned for many years in cryostorage. The challenges in the contemporary world and the industrialization of assisted human reproduction and the commercialization of human reproduction, raises significant questions with regard to the power of economic incentives, the selling of gametes, spermatozoa and oocytes, the prospects of artificial womb and the form of gestational surrogacy, euphemistically referred to as "womb rental." In the face of these multiple challenges, it is also important to note that the viability of embryonic stem cells, raises pertinent questions with regard to experimentation involving embryos.

It is pertinent to note that the Human Fertilization and Embryology Authority, of the United Kingdom, which authorizes research on embryos, seeks to promote advances in the treatment of fertility; to increase knowledge about congenital diseases; to increase knowledge about the roots and causes of miscarriages; to develop more effective techniques of contraception; to develop more effective methods of detecting the presence of genetic or chromosomal abnormalities in embryos (Smith, 277). In the process of human development, fertilization results in species variation, fertilization restores the diploid number of chromosomes and determines the sex of the zygote (Toot and Lu, 41-42). The combination of 23 chromosomes present in each *pronucleus* results in 46 chromosomes in the zygote, consequently, the diploid number is restored and the embryonic genome is formed. The embryo now exists as a genetic unity. RNA synthesis occurs at the initial stages during the process of pronuclear formation and is followed by DNA synthesis after fertilization (O'Rahilly and Müller, 31-33). The research and experimentation which points to the future already indicates that stem cell therapy, would soon supersede, genetic therapy. Research advances in the area of in vitro gametogenesis already point towards this direction.

In the face of the challenges in the contemporary context, the stakes are high and what is at stake is the dignity of human life and human well-being, therefore there is the need for an interdisciplinary approach in dealing with these significant issues. Together with the insights that emerge from scientific analysis, it would also be important to pay attention to the anthropological questions with regard to the issue of the anthropological status of the human embryo, the metaphysical questions with regard to the issue of the ontological status of the human embryo and the ethical questions, with regard to the issue of the moral status of the human embryo. In this analysis also the insight from the social sciences cannot be left out with regard to the questions of social policy and issues in legislative practice and jurisprudence especially with regard to the question of the legal status of the human embryo. The significant operational framework would involve the examination of these complex issues from a variety of perspectives and methodologies in an interdisciplinary context.

The examination of the question of the interdisciplinary methodology within the context of bioethics cannot prescind from the importance of the question of experimentation and research and in the light of the dignity of the human person, it is also extremely difficult to prescind from the demands of moral responsibility in all dimensions of human existence. The challenges emerging from the quest for knowledge, the demands of research and experimentation, the exigencies of moral integrity and the imperative of responsibility, demand that respect must be shown to human subjects involved in experimentation. In the course of experimentation involving human subjects there are certain values that must be taken into consideration, which include: the right to life of every human person, the respect for the primacy of the person in ethical evaluation and judgement, the importance of the therapeutic principle and the principle of totality oriented towards the integral good of the person at all levels of development and growth, and the good of scientific and human progress.

When the experimentation involves human embryos, it is important that the human embryos in experimentation be given the same respect that are accorded to other human subjects involved in experimentation. In this regard one has to acknowledge the importance of sound ethical codes and principles. In the light of this understanding, it would be important to draw attention to international declarations, like the *Declaration of Helsinki*, albeit with the firm acknowledgement that the focal interest was not the human embryo. That being said, it is also important to acknowledge, that these ethical principles were not established on the bases of exclusivist agenda, but on the bases of a broad interdisciplinary framework that provide the ethical guidelines with regard to dealing with human subjects involved in research and experimentation. In the contemporary context, with the scientific, medical, micro-manipulation techniques and ethical challenges emerging from assisted human reproduction, the human embryo has somehow also become a “patient.”

“In the field of biomedical research a fundamental distinction must be recognized between medical research in which the aim is essentially diagnostic or therapeutic for a patient, and medical research, the essential object of which is purely scientific....The physician can combine medical research with professional care, the objective being the acquisition of new medical knowledge, only to the extent that medical research is justified by its potential diagnostic or therapeutic value to the patient.” (World Medical Association, www.wma.net/declarationofhelsinki)

It is important to distinguish the quest for knowledge from the quest for the good, knowledge is good, but knowledge without the will for the good can be put into destructive purposes. It is also important to distinguish scientific interests from therapeutic interests, epistemological interests from anthropological interests, in making these distinctions, it is of primordial importance to always uphold the dignity of the human person. The fundamental scope of interest here is that there is a genuine ethical value which links scientific knowledge to the primacy of the interest of the subject and it can serve as a basic guideline, with regard to research involving human subjects at various stages of development. The reflective insight arising from these principles brings into focus the demands of knowledge, respect, prudence and responsibility with regard to the treatment of human subjects involved in experimentation. Intellectual honesty, logical consistency, scientific integrity and the insight arising from the virtue of phronesis, indicates that it is prudential to treat the human embryo as a human subject until it is proven beyond all reasonable doubt that that the human embryo has no share in the common humanity of all human beings, and as such is not worthy of respect in research or experimentation. The fundamental challenge remains: if the human embryo in experimentation is not treated as human, when and how will it become human? Temporality alone cannot bring about the emergence of the human essence, if it was not already there, but human beings can develop along the path of temporal and historical existence.

In the context of the contemporary world, there is no gainsaying the fact that there is a wide range of specialized disciplines, in the areas of the formal sciences, the life sciences, the physical sciences, the earth sciences, the social sciences, the environmental sciences, law and the humanities, just to mention these few, the list is not exhaustive. There is also the significant area of the appropriation and practical application of scientific knowledge in various areas of technological endeavour. The interdisciplinary methodology seeks to draw on the insight and knowledge from different disciplines. Knowledge of the philosophical disciplines helps in the analysis, synthesis and co-ordination of the knowledge from these different fields in order to have a coherent view that will help in dealing with the ethical challenges that emerge especially in the area of the life sciences and health care in order to seek solutions to complex problems, to provide insight from a diversity of perspectives, to establish a collaborative framework, build up consensus towards the resolution of complex problems.

The interdisciplinary methodology presents us with significant challenges and there is need for further elucidation. The expression “method” and the cognate expression “methodology,” require further explication. The English expression method, is derived from the Greek μέθοδος, which is a combination of two words μέθρα and όδός which indicates a systematic way of doing things in order to arrive at the requisite goals. Methodology μέθοδος and λογος involves a body of rules and postulates, a set of procedures employed by a particular discipline in its field of enquiry. Bioethics in the context of the contemporary world has manifested a marked proclivity for the interdisciplinary methodology. By virtue of the preferential option of bioethics for the *interdisciplinary* methodology, it is important to ask: is bioethics a discipline or a melange of disciplines? In dealing with this question, it is important to note that the indispensable condition necessary for the existence of a systematic discipline is the specificity of its epistemological status; that constitutes at the same time the *principle of identity* and the *principle of diversity* of that particular systematic discipline. Before a branch of knowledge could be included in the list of systematic disciplines it is necessary that it should possess a logical structure that is totally or partially its own and at the same time totally or partially different from that of other systematic discipline. In the current state of bioethics as a systematic discipline it is important to note that bioethics is not totally free from the challenges of *epistemological fluidity*. The question of epistemological fluidity within the context of interdisciplinary methodology, remains an important challenge, based on the fact that disciplines are delineated on the basis of the principle of identity and the principle of diversity. The challenge that is presented before us is that when bioethics employs the interdisciplinary methodology, it actually crosses disciplinary boundaries that is employed by a diversity of disciplines, and these may raise further challenges of intellectual rigour and academic legitimacy. This problem could clearly be seen by the fact that people may have bioethics’ studies in disparate faculties in various universities around the world. There is need for a proper understanding of the methodological rigour of the disciplines with which bioethics seeks to interrelate with, on the basis of the framework of the interdisciplinary methodology, in order to have a balanced perspective

and incorporate the relevant information and insight. Personal differences, socio-cultural diversity, economic disparity, globalized challenges, differences in status and health care, just to mention these few, expresses very poignantly the demand for the interdisciplinary approach in relation to bioethical issues.

5. Challenges in the Light of Critical Context Analysis

It was lucidly noted at the beginning of this work that, the contemporary world has become profoundly complex through the intermingling of multifarious factors, for a better understanding of bioethics in the contemporary world, the analysis of the contexts is important. There is need for a *critical analysis of context* so that the interdisciplinary methodology may not be deformed into a disorderly mélange of disciplines, it is of critical importance to analyse the contexts, bearing in mind that, the context of assisted reproductive technologies is not the same as the context of experimentation involving animals, or the context of ethical issues in occupational therapy or medicine of sports, or the care of the environment, just to mention these few. It is important to accentuate the fact that the disciplines that should be involved in the interdisciplinary context should be critically evaluated and carefully delineated, towards proper epistemological integration. The insights from these areas of human learning and knowledge, should be properly assimilated, in order to address the challenges that emerge in relation to the care of the environment, advancement in medical practice, health care and technology in the context of the contemporary world. For instance, in the area of the social sciences, it is important to discern how knowledge in the field of anthropology, economics, political science, sociology and psychology can help in addressing the ethical issues in the life sciences and health care. It is important to understand the intermingling of factors in the social context, in the economic context, in the political context, in the cultural context, in the religious context, in the scientific context, and the technological context, just to mention these few. In a further analysis, these contexts have to be situated in the light of both the local context and the global context. All these different contexts point towards a greater need for an interdisciplinary approach in contemporary bioethics.

6. Conclusion

In an insightful remark, Kant once affirmed that the whole scope of the intellect whether as practical or speculative boils down to three fundamental questions: What do I know? What can I know? What do I hope to achieve? Was kennen ich? Was kann ich kennen? Was hoffe ich? Metaphysics, for Kant, could be divided into the speculative as well as the practical use of pure reason, either as a *metaphysics of nature* or a *metaphysics of ethics* (A840, B868). The realm of “bios” is broad and ethical decision making in this realm can have implications in many spheres of life, consequently the interdisciplinary methodology could help in examining the relevant knowledge and implications with the insight drawn from a diversity of disciplines, in order to create maximal awareness of the diverse facets

in a given context of ethical decision making in the bio-realm. The interdisciplinary framework could help in overcoming the limitations of knowledge and augment the possibility for maximal knowledge of the relevant facts and values involved. There is need for knowledge of science and technology with regard to the examination of the relevant facts and there is need for knowledge of philosophical systems with regard to the examination of values.

The examination of the question of human bioethics indicates for us that, there are significant scientific questions within the context of human health, human reproduction, human assisted reproduction, experimentation on human subjects, just to mention these few. The challenges in Bioethics point to the fact that there are also important questions within the context of evidence based medical education and practice, there are also significant social and economic questions within the context of health care, there are significant political and legal questions within the context of the environment and ecosystem, and the ever expanding challenges of technological development, all these questions cannot be dealt with adequately, without the courage to explore a wide range of disciplinary perspectives in meeting these challenges. In dealing with the ethical challenges that emerge in various dimensions of the bio-realm, bioethics needs the interdisciplinary approach in order to make effort towards the analysis, assimilation and integration of facts, methods, and theories that involve other disciplines, in an attempt to achieve what John Rawls brilliantly referred to as *wide reflective equilibrium* (65).

A significant aspect of the underlying challenges would involve the selection of the disciplines, adequate resources, in terms of personnel with the requisite competence, as well as resources oriented towards the achievement of specific goals, guidelines and framework for interdisciplinary evaluation. It is important also to develop progressively on how each discipline with its specific epistemological framework fits into the interdisciplinary methodology. In the ever expanding universe of knowledge, it is important to have a holistic view of diverse knowledge systems and subsystems and how these can help in identifying and resolving ethical problems in the life sciences and health care. This demands ever greater cooperation even within philosophy between the metaphysics of knowledge, and the metaphysics of the good. There is no straightforward prescription for success, but there is room for developing a collaborative framework, for the development of novel ideas, integrative models, innovative paradigms, intellectual reformulation, originality and fresh insight. It is the affirmation of this paper, that the interdisciplinary methodology presents significant challenges, but within the appropriate setting, it also expresses huge potentials with regard to equipping bioethical research with the appropriate intellectual and methodological tools in dealing with a wide range of issues in the contemporary context. The interdisciplinary paradigm could also be relevant in other areas of innovation and development in the humanities and the sciences in the contemporary world, for instance, it would be innovative and stimulating for philosophy to collaborate with psychology, computer science and technology in exploring questions of intelligence in relation to artificial intelligence, communication technologies, robotic technologies, thinking and the whole gamut of conscious processes

as well as the issue of human development. A dimension of the quintessential contribution of this paper is the affirmation that significant questions and enigmas are not obstacles but challenges that open new vistas for advancement, and in the contemporary world, the full potentials of the interdisciplinary methodology should be explored, and this exploration would open up broad areas for further research, intellectual analysis, scientific growth and authentic development and flourishing in all areas of life.

Conflict of Interest Statement

The author hereby declares that there is no conflict of interest with regard to the present research work.

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The author obtained his first PhD, in Moral Theology from the Accademia Alfonsiana, Lateran University, Rome. He went on to obtain a second PhD, in Bioethics from the Catholic University of Sacred Heart, Faculty of Medicine and Surgery, Agostino Gemelli, Rome. Currently, he is a lecturer in the Department of Philosophy, University of Uyo, Akwa Ibom State, Nigeria. He has several publications in the areas of Moral Theology, Moral Philosophy, Bioethics and Value Theories.

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