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FAITH AND SCIENCE : FROM CONFLICT TO CONVERSATION

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ABSTRACT

Science has the remote key of how this universe functions or the access of the operation of this universe in general, but there are some aspects of truth and human experiences of the world which are very peculiar to faith. Faith is a partner in dialogue with science in search for truth and knowledge of the universe as a whole.

INTRODUCTION

The research is an attempt to reconcile the modern scientific enterprise, which understood itself principally to be anti-religious, with the Christian faith. In the minds of many people faith and science are in direct conflict; others view them as completely separate poles, having nothing to do with each other. In the face of such broadly differing opinions, one may reasonably expect to discover that the real contact between the two departments of reality is a subtle and complex one. Science is a reliable method of learning many relevant things about the physical universe. It has to deal with facts and figures. The claims of science are guaranteed through verifiable data and measurements. Faith is an interior assurance about what we do not see, and which needs no human probing. It is a fundamental element of religious existence, which shapes the life of a religious being. The claims of faith are principally concerned with the objects of the divine revelation in the universe. Science and faith, each has its special peculiarities in the manner of exhibiting itself in the world. Obviously, the particularities of each partner in this venture have a deep and profound meaning for the other. Each partner has a special perception that is active in the present that possesses endless past behind it and dilates to an open future before it. The positive elements of each partner in continuity of retensions can help to enrich the gift of human life for all of us. It is pertinent, therefore that these varieties be recognized and fostered by human beings in the societies in order to help faith and science make their great contributions toward building a better future for the humanity of the New Age.

1 Statement of Problem, Methology and Purpose of Study

The New Age has a general belief in the validity of science. The domain of the activities of science is unlimited: the whole space-time continuum constituted the object of scientific research and knowledge. There is no domain in the cosmos where science cannot penetrate and ask questions and make inquiries.

The New Age, is an Age of inquiry and search for knowledge. It treasures accurate, demonstrable and observable facts and figures of knowledge. It values the joy of knowing, of grasping the mysteries embedded in the physical universe, of making discoveries and intelligent inquiries. This is the venture of science and technology, which in its own manner, is a venture of knowledge.

Our modern world is an arena of inquiries and *locus* of knowledge, but. we meet the world not only in knowledge and observable facts, but also in wonders of nature, in trust and in faith. Our world values the sense of the sacred, sense of community, dedication to service, commitment to duties, relationship of person to persons. This is the venture of faith, which in its own way is a quest for ultimate destiny and human values.

To take another excellent example on the issues in faith and science, on the one hand, science has contributed enormously to human development in varieties of ways transportation, calculations, communication, computerization, education, recording, writing and printing, but on the other hand, science cannot tell what a just society is through mathematical demonstrations of data, nor can it produce such society in isolation from human insight and commitment.

In 1919, Professor Max Weber delivered a moving and immortal lecture at the university of Munich amid the ruins of the German Empire and of a curious socialist revolution. He took up as the topic of his discussion, from the dilemma of science posed by Tolstoy that science, for all its miracles and triumphs, for all the fundamental

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changes it had made in our life and society, and with its overwhelming destructive powers which had been so brutally demonstrated in the First World War, was incapable of answering the fundamental questions of human existence: How should we live? What should we do? According Weber, science offered the freedom to make these choices independently from objective scientific laws, and then he warned his countrymen against faiths masquerading as scientific truths.

Science has the remote key of how this universe functions or the access of the operation of this universe in general, but there are some aspects of truth and human experiences of the world which are very peculiar to faith. Faith is a partner in dialogue with science in search for truth and knowledge of the universe as a whole. Authentic faith tries to unite the sacred and the profane, the secular and the holy in everyday life, and not to separate them rigidly apart from each other.

According to Alfred North Whitehead, most people engage in both ventures - the venture of faith and the venture of science. Science and faith - both are the two greatest poles of movements of the modern age. Science and faith are "the two strongest general forces which influence men" (Whitehead, 1967, p.260.), in our modern world. Many people experience different problems and great difficulties in relating the two ventures with each other.

The intellectual difficulty which is embedded here in the relationship between faith and science is, moreover, the concern of theology itself. The task of theology is correlated with faith and science. What kind of expectation, what kind of crisis of meaning, and what kind of development of human experience are implied in the relationship between faith and science? The task we are speaking about here is difficult, as it relates to fundamental questions of human existence.

In dealing with these pertinent questions, we shall follow three distinct methods – the contact method, the congruence approach and conflict procedure – in order to seek how science and faith can come into conversation or be related to each other in their search for truth and knowledge of the universe. The conversation demonstrated that there can be no conflict, as faith and science are responding to the same question (for example the issue of creation) from the same source of the mystery of the universe.

The contact method looks, on the one hand for possible avenues of interactions between faith and science, and on the other hand emphasizes the ways in which science and faith are enriched through *theological understanding.* The congruence approach shows how faith supports science and nourishes the whole scientific enterprise. The conflict method emphasizes the dichotomy between faith and science. Lastly, the conflict is healed through conversation by means of dialogue and cultural symbol of word as the instrument of reconciliation.

This final approach is not an act of futuristic speculation of what might be. Rather it is an act of initiation of the modern science into a fresh dialogue with faith. Science and faith interact as siblings whose rivalry has to give way now and again to dialogue. The refractive light of interpretation which each shares with the other provides the firm basis upon which to build a dialogue. A true dialogue between faith and science is achieved not by rigid uniformity, but by openness to *plurality.* The conclusion points to the essential need for such a dialogue. Dialogue should strive for the recognition of the *plurality* of truths which neither faith nor science has the right to relinquish.

In pursuit of the first procedure of the first method, we examine the possible avenues of contacts between faith and science. This idea will turn our point of conversation to the second part of the first method by emphasizing the ways in which science and faith are enriched in the context of theological understanding. A number of factors, ensuing from both cultural context as a whole and theological context in particular, have been the cause of the concentration on our conversations. We shall first, give the analysis of factors emanating from the theological context, and at the end threat those relating to the cultural context within the scope of our conversation.

The purpose of the research is to incorporate the growing and new interests in natural sciences and technology in our age into a Christian understanding and to reconcile the modern world-view of science with its strong emphasis on reason and this-worldly interest with the Christian faith (with its emphasis on revelation and supernatural destiny of humanity of men and women). I have concentrated on the relationship between faith and science in our Age, and anticipated what I think the relationship is to be at least from the theological horizon of dialogue and conversation. A mid-way solution to the conflict of faith and science eschews the extremism of both *fideism* and *rationalism* and seeks a connecting link by demonstrating that science and faith are not two opposing and conflicting "realms of thought"(Peacocke, 1979,p10).

We are concerned here with the Christian faith – there are other forms of faith – the faith of the Hebrew religion, the faith of the Islamic religion, the faith of Hinduism, the religion of the Buddhists, Taoism, Zoroastrianism, Confucianism and African traditional religions. Religions are poems, and 'God is the poetry caught in any religion.' So remarked the Australian poet, Les Murray. In contrast to a poet such as Matthew Arnold and a theologian like Rudolph Bultmann, Murray did not try to reduce religion to neither morality touched by emotion as Arnold did, nor did he describe religion as a myth requiring translation as Bultmann had done. Rather Murray pointed out that both religion and poetry employ symbols, and so they express more than what a literal utterance can communicate or transmit.

Mystery religions of the ancient people were as well characterized by an inherent faith. The Christian religion in line with other religions of the books shared the reality of revelation. The themes of faith and revelation are not peculiar to Christian religion alone. They are present to one degree or another in all the other forms of religions of the world (Viladesau, 1994, p.17). Revelation and faith are the marks of every religion.

Theology is done in the context of faith, and it is revelation which equips theology with its matrices and paradigms for elaboration. Revelation is the basis of reasoning of theology. Theology and science, both utilizes the capacity of reasoning in approaching their subject matters, but the basis of reasoning of science (hypothesis) is empirical knowledge and observable facts that is what the eyes see, the ears hear, the mouth tastes, the hand touches, and the mind perceives, while the basis of reasoning of theology is revelation. It is under this capacity that theology can serve as a contact point between faith and science. A discussion about faith and science inseparably involves theology.

2 Contact: Theology within the Context of Faith and Science

Faith and science are the two poles of experience or two horns of dilemmas which people living in this generation inevitably encounter. As we start to mature in our faith, we can begin to look critically at what is the most troubling reality of our Age: the rapidity of change. The rapidity of change is the underlying cause of uneasiness and tension in our society today. These changes, stem largely from technology. Science has spread throughout the world in the past century, and from science the technology was developed which has changed the world drastically. The world-changing science and technology has developed a momentum which will not be stopped. The pace of change at the dawn of the present age is accelerating and will continue to do so.

In the present age, the experience of individuals and communities can no longer maintain the pace with the movements of science and technology. The pace of change or rapidity of change generated by science and technology is accelerating and will continue to increase its force of velocity. Change is indispensable, but continuity is also very necessary. The guiding principle of a healthy organism is the law of renewal. Not the elimination of the living values of the past, but of assimilation of new helpful and essential developments.

As creatures of God, we have a special duty to view change in the perspective of our faith in God, who is the Author of the universe. As Christians or non-Christians, we have the obligation to look at change in the light of faith in God who is in the custodian of the universe. Faith, because it is faith, and not scientific knowledge, always bears within it an element of incomprehensibility (Ratzinger, 1971,p.20). In this context, faith is not to scorn scientific evidences, otherwise it will be widely discredited in the minds of so many scientifically enlightened people of this generation. The content of faith is to be made relevant and appetizing to the young generation through theologizing techniques which are not alien to human culture or foreign to humanity of the scientific age.

Various approaches have been made in Christian theology to interpret faith in its relation to the world and human history – Anselm of Canterbury, Augustine of Hippo, Thomas Aquinas, Karl Barth, Karl Rahner, Johann Baptist Metz, and so many others. The earliest approach in Christian theology tried to express faith with the aid of Greek philosophical systems of thought. Theology, later on come to talk about faith in a concrete manner, in a way related to praxis and human history. An implicit approach interpreted faith commonly as *fides qua creditur*- as act of faith, as far as possible without any binding force on the content, as it reflects one's free non-objective decision. Explicitly, if the Christian faith is understood as an attitude according to which one remembers promises that have been made and hopes which have been experienced on account of those promises, and if one commits oneself to those memories, then this makes it clear that Christian

faith is a dogmatic faith, which is tied to a certain content, a *fides quae creditur* (Metz, 1980, p.201).

Karl Rahner can help us in understanding the distinction between *fides qua* and *fides quae* – the act of faith and the content of faith. *Fides qua* according to Rahner is the same for everybody and everywhere, but *fides quae* varies from one person to the other, and from one religion to another, and can even differ within the context of the same religion. Rahner generally observed that "there is a *fides qua* which exists as something that is a possibility for every human being (albeit something that is offered to a person's freedom) and which makes its significance for salvation and justification understandable through itself, and yet at the same time this *fides qua* possesses a reality of content in its own right, the free acceptance of which can be acknowledged as the acceptance of revelation in faith" (Rahner, 1988,p.153). In view of content of faith, Rahner maintained that "the *fides quae* may be quite minimal in content; in certain circumstances (as mediation of the free acceptance of grace) it can consist of that fidelity to one's own conscience in which according to Vatican II, even persons who in a reflexive way consider themselves to be atheists can still be in union with the salvific mystery" (Rahner, 1988,p.158).

The emphasis in the Conciliar documents and in Karl Rahners essay on anonymous Christians is on the relation of the individual to God and to His Son, Jesus Christ. The Second Vatican Council teaches explicitly that God "provides men with constant evidence of Himself in created realities" (Vatican II, Constitution on the Divine Revelation, *Dei Verbum*, no.3). The expression *evidence* "is particularly significant because it indicates the elements of revelation in creation itself, which is, as it were, the first and fundamental expression of God, by which He speaks to us and calls for the response of faith" (John Paul II, 1980, p.46). I will consider the second point from the perspective of a Christian who accepts the main tenets of Christianity as articulated in the biblical tradition. In the first place, I urge you all that "petitions, prayers, intercessions, and thanksgiving be offered for all men...Prayer of this kind is good, and God our Saviour is pleased with it, for He wants all men to be saved and come to the truth. And the truth is this: "God is one. One is also the mediator between God and men, the man Jesus Christ, who gave Himself as a ransom for all" (1 Tim 2:1,3-6).

A contemporary Christian thinker in our Age faces a great dilemma with the soteriological import of this passage. God willed the salvation of all men and women, but this salvation comes only through the mediation of Jesus Christ. The Christians held that although salvation in Christ is initiated by God, nevertheless it must be confirmed in a free act of faith, which is authenticated through the sacrament of baptism as a symbol of free entry into the community of believers (Matt 28:19).

At the same time, many people with a scientific mind are faced with the clear empirical fact that the majority of men and women in our generation have no concrete occasion to hear the Good News of salvation and to embrace the Christian principles of the Gospel. And even among those who have such favorable moments to embrace this message, there are still some evidences of militating factors which impede them from accepting the substance of the Gospel message completely in their life. Karl Rahner's popular essay concerning the *Anonymous Christians* is a positive step toward the solution of this problem. Actually more significant than Rahner's solution to the dilemma, is the straightforward way or the methodological and scientific exposition of this problem: the Christian who believe in the God of love as revealed in the life and ministry of Jesus Christ has to come to terms with the apparent exclusivity of the Christian tradition and the strong empirical reality of the pluralistic world in which we live and move (Rahner, 1969,p.390).

The relationship between faith and theology explicates in a great measure and to a considerable degree the relationship between faith and science. Science attends to the objective world that is the world as it is factually apprehended from the vicinity of empirical knowledge or mathematical knowledge, while faith is concerned with the existential world. Faith reveals mystery. It is a theological substance designating the disclosure of mystery to a religious person. In Christian religion, for example there are two ways of speaking about the nature of faith – the content of faith (*object of faith*) and the act of faith. Faith by its nature is one of the characteristic features of a revealed religion. Its reduction is what is known in theology as *fideism.*

Scientific reasoning on the other hand, implies the human ability to certify a particular knowledge as reasonable or to demonstrate the truth of a certain data by means of measurement, or verification. Scientific reasoning has to do with the knowledge of figures and objects. Its goal is to advance human knowledge. Direct evidence of how a truth of a particular knowledge is obtained is demonstrated

n a laboratory through an instrument of observation. The overemphasis of a scientific knowledge is called *rationalism or scientism. Fideism* as opposing reaction against *scientism* is not a better approach to the conflicts between faith and science, and mysticism will not even perform a silent magic to curb scientism and rationalism.

The dichotomy between faith and science hinges mostly on the sources of knowledge of the universe. The Christian debate on the sources of knowledge revolves around the relative advantage of the Bible and the natural theology as sources of knowledge of God and of the natural universe. The Protestant Christianity emphasized the former source, while Catholicism tended to tow the latter course. However, one source cannot exist without the other. In contrast, to the Christian sources of knowledge the scientific enterprise absorbs its knowledge from different sources of methods, complementary models, observations, verifications, measurements and demonstrability of data.

The difference between the sources of knowledge in the theological enterprise as well as in scientific quest for knowledge (a radical distinction that is not without its problems) constituted the currents of contrasts and conflicts between science and faith. The intrinsic difficulties implicitly raised few questions in the study of the origin of the universe – cosmology.

At the level of Christian theology, cosmology is a philosophical or natural-scientific study of the universe and its history. In the Western cultural milieu, ancient Greek cosmology was of great significance, its impetus lying in many-sided inquiry, beyond the level of mythology, about the ultimate ground of things (*arche*). The philosophers also attempted to identify the primary material of the cosmos: water (Thales), air (Anaximenes), fire (Heraclitus), the four elements (Empedocles), or infinite matter (Anaxagoras). Leucippus of Miletus and Democritus had earlier reduced the universe to atoms – that is, the smallest, indivisible unities – and their eternal, autonomous motion in infinite space (Ganoczy, 1995, p.127).

Cosmology imposes some important questions about the universe. Does science rule out existence of God? Was the universe created? Does the universe have a purpose? Why is there complexity in nature? Is life reducible to chemistry, physics or mathematics? Is faith opposed to science? Do we continue to linger in the old rivalries between faith and science? How do we trace the connecting link between science and faith in order to enrich their services for the human family? These are some questions which are very relevant for those who are engaged in the field of natural sciences and scientific researches, especially those preoccupied with pure and applied sciences.

In Christian religion, strong theological basis had been constructed in view of the existence of God and origin of the created universe. Christian theology traditionally teaches that God created *ex nihilo* – out of nothing (Clifford, 1991,p.210). Popular arguments for the existence of God and origin of the universe had been postulated by theologians like Thomas Aquinas and many other theists, before and after him. In the argument of Aquinas and the subsequent theists, faith and reason can be harmonized without any trace of conflict in pursuit of knowledge of the universe. Under the influence of the exact natural sciences, the knowledge of the intricate or mechanistic design of the universe tends to win the favorable explanation of the natural scientists.

The study of natural sciences include the study of exact sciences as mathematics, physics, chemistry, astrology, geology an so on. Natural sciences include also individual empirical sciences in their various areas of disciplines, such as physical chemistry, astrophysics, geophysics, meteorology etc., and the biological sciences. Natural sciences employ systematic and exact classifications, methods, observations, and verifications to substantiate their claims. Natural sciences occupy themselves with the systematic investigation of nature and the knowledge which is related to nature.

As they develop, natural sciences disassociate themselves from all revelation, and speculation about God. Natural scientists sometimes speak in a manner which assumes that they can freely be engaged in the investigation of nature, if they threw off the mantle of Christian faith. In the judgement of many people of our Age, faith and science are in direct conflict with each other. Some other people think that both faith and science are completely separated from one another, having no contact point or any ground of congruity. For instance, the theists believe that the world is a creation of a personal God, while the non-theists or scientist believe that the same universe is the product of blind evolutionary forces. Ironically, humanity of men and women "are the accidental result of an unplanned process" (John Paul II, 1990, p.88).

Carl Sagen, one of the torch-bearers of the modern cosmology exhibited a mean disposition

for religious tradition regarding the origins of the universe (1971,p.19). In the face of such broadly differing assessments, and world-views one can promptly assume that there is no genuine relationship between these two poles of realities (faith and science). This way of relating science to faith leaves the universe divided into two realms determined by contrast positions.

The contact method, therefore, is concerned that theology constantly remain positively "consonant" with cosmology (Ted, 1989,p.23).

Theology is talking about God. The questions to ask, at the first instance are: what are we saying when we talk about God? Do we believe in God? These are questions which theology helps us to find their meaning and answers. As a handmaid of faith theology should be assisting faith to articulate the certainty of God. Theologizing techniques must be able to formulate the contents of faith in the terms that take the best from science into consideration, otherwise it serves no intellectual utility for the New Age.

Alfred Whitehead maintained that it was specifically the theology of the Middle Ages that made the scientific consciousness of the Western mind rationally comprehensible. According to Whitehead, "faith in reason is the trust that the ultimate natures of things lie together in a harmony which excludes mere arbitrariness ..the faith in the order of nature which made the possible of growth of science is a particular example of a deeper faith" (Whitehead, 1967, p.18).

In harmony with Whitehead's position, Stanley Jaki maintained that the Christian faith had contributed immensely to the development of the modern science. Concretely, the development of the modern science arose in the orbit of Christian civilization, which held the general assumption that the world was knowable, since it was based on the foundation that the world was a creation of an intelligent, provident and good God (Jaki, 1978, p.25). One finds such congruity of thoughts in scientific traditions or among the ancestors of science, for instance in Albert Einstein (although not a Christian), in Louis Pasteur, to mention just but a few.

3 Consonance: Science and Faith in Congruence

Science never lived in isolation from faith. The rise of modern sciences took place in cultures incubated by Christian faith, and therefore, the relationship between science and faith is not an accidental one. The concept of faith had been central in the thinking of many scientists. Some earlier scientists appreciated the reality of faith in the pursuit of science.

The relationship of scientists' experience of life of faith and practice of science helps us to shows how faith supports science and nourishes the whole scientific movement in the past. Blaise Paschal the most brilliant mathematician, inventor, and philosopher of the seventeenth century recalled his mystical experience in the following words:

Fire! God of Abraham, God of Isaac, God of Jacob,
not the God of philosophers and scholars.

Certainly, joy, peace! God of Jesus Christ!
He is only found along the ways taught in the gospel.

Tears of joy! I had parted from him.
Let me never be separated from him!
Surrender to Jesus Christ!" (Paschal,1966,p.205).

Louis Pasteur, who was an intellectual mentor in the fields of chemistry and biology desired to have had "the faith of a Breton peasant or, better still, the faith of a Breton peasant woman" (Pasteur, 1950, p.385). One cannot but admire the humble faith of this great scientist.

In our contemporary period, scientist like Albert Einstein (although he was not a theist) demanded that every scientist must be motivated at least by a type of religious thought. He stated positively that "science without religion is lame; religion without science is blind"(Einstein, 1950, p.11). Einstein could not believe that the atomic world existed by chance. In his frequently used expression, he used to say that *God does not play dice.*

Paradoxically, John Kepler confessed that in exploring the geometry of nature, one is obeying God's command propelling him/her to action. Thus, Kepler in carrying out this command studied those heavens that declare the glory of God, and the earth that shows forth the works of His hands (Ps 8:19,50). He exclaimed that he was thinking God's thought after him. This, of course, is a powerful impulse for scientific investigation and interpretation of nature. In the same direction, Bacon and his adherents understood the text of the Genesis 1:26, as a clearer command for shaping the natural world for human welfare and economic utility. We are becoming more amazing as modern science extends the size and dimension of the universe.

Robert Boyle saw scientific investigation as a type of worship and adoration. According Boyle, who was a precocious and chemistry guru,

nature is God's temple, and a scientist is a priest entrusted with the organization of the order at its sanctuary. The prospect of universal agreement between faith and science may be somewhat slim, nevertheless they are bold outlines of some agreed synthesis which are very visible and transparent in human life.

There is a faith in science, which many scientists have not yet discovered. Science is not devoid of faith. Science is characterized by an inherent faith. There is a faith imprinted on the Senses by the Author of nature, which is not denied to scientists. At the core of our reasoning scientific methodologies, there is an attitude of trust that springs from the mysterious riches of our human existence, which manifests itself in human rational faculties. Before our investigation of the truth of the universe, we have already made an act of faith in the abilities of our mental faculties to understand the truth hidden in the realities of the physical universe, sometimes without realizing it.

On this platform, we can see that science is a fruitful assumption of faith, but this truth may be hidden to scientists. They may be conscious or unconscious of it. They may be aware or unaware of its presence. Our mental faculties are not simply empty and lifeless calculating machines functioning separately and independently from the human person. There is a deep touch of personal element of trust or faith embedded in every manner of human knowledge and discipline, whether in pursuit of scientific investigation or matters of religious faith.

In this sense, faith is intimately connected with our thirst for human knowledge, ideas, theories, and scientific enterprises. As a part of this seeking, Albert Einstein broke away from the age-old pattern of thought that science has nothing to do with faith. Einstein himself admitted that science has to extend itself, in order to gather strong energy and attracting force to seek for truth consistently. Science is inseparable, he said to the reality of faith, since "science can only be created by those who are thoroughly imbued with the aspiration toward truth and understanding. The source of feeling, however, springs from the sphere of religion. To this there also belongs the faith in the possibility that the regulations valid for the world of existence are rational, that is comprehensible to reason. I cannot conceive of a genuine scientist without that profound faith (Einstein, 1954,p.11).

The scientific vision of Einstein is to be the frame-of-mind which every student of science and technology and those living in scientific culture of the New Age has to adopt, and this calls for their ingenuity of reason as well as commitment to faith. There is a great need for spiritual re-habilitation of the ideas of science, this implies that science needs to return to a point-of-contact where spirituality and rationality are to be considered together, "rather than in isolation" from each other (Deane-Drummond, 1997, p.7).

4 Conflicts: Faith and Science at Cross-roads

At the beginning of the nineteenth century many of the pioneer scientists were Christians and actually that would have been the time when faith and science would have jointly trailed a spirituality and materially rich stable civilization. But the immediate confrontation of ecclesiastical and secular powers led to the rupture of a unified vision, in which the spiritual and the temporal in human affairs parted company. This came to a head, when the Inquisition burnt the pioneer scientist Giordano Bruno in 1600, and in 1633 Galileo Galilei faced the same fate when he was forced under the threat of torture never to teach further *that the earth rotates and that the earth is not the centre of the universe.* Similar situation was operative in the case of Darwinian conflict with the Church.

The conflict between faith and science began with the so-called Age of Reason or Enlightenment. With the explosion of rationalism of the Enlightenment, and materialism of the nineteenth century, science dispensed itself from faith. Between the close of the seventeenth and eighteenth centuries, the intellectual history of Europe and North-America went under intellectual metamorphosis and development. The basic principle of the Enlightenment is summarized under the catch-word *sapere aude* – dare to make use of your reason. One desired no longer to remain as a child, but to come of age. One wished no longer to submit simply to authority and tradition, but to use one's own reason independently of authority and tradition. At the Age of Reason, it seemed to many scientists that faith is irrelevant in the pursuit of science, and that the two realities are virtually "separate and exclusive" avenues of knowledge ((Peacocke, 1979,p.10).

The rise of the modern science bore some consequences in the society. For instance, the Newtonian science attempted to depict the universe as a closed mechanical system. This theory precipitated some inferences such as Laplace's that God was no longer a necessary hypothesis. Newton himself retained the God,

but not in the sense of orthodox Christian faith, but his conception was deistic, consigning God to a thin role in the origins of a universe now quite self-sufficient.

The religious reactions to the rise of the modern science varied with different cultures and systems of thoughts. They were generally two camps: the liberalists accepted the advances of the modern science, while the conservatives rejected the developments and saw it as godless. The actual conflicts of faith and science during much of the Enlightenment period are best characterized as disputations. Even when they were not engaging in literal face-to-face polemics, faith and science are talking to one another in essentially disagreed tone.

In a rejectionist art of disputation, faith and science regarded each other as an opponent which is to be delegitimized, castigated or even annihilated. Disputational thinking can be observed from the scientific word-views of Galileo, Darwin, Descartes and their followers. For the protagonists of the Christian faith, as it is well known, this means that scientists are in fact intruding into the domain of the truths of the revelation. The bold steps of the scientists were regarded as a fundamental effrontery to the Christian faith. Their effrontery consists in the fact that the scientists are illegitimately extending themselves into the future without first of all affirming the Christian view of the past and the present, and therefore their scientific discoveries are to be delegitimized, by an authority higher than theirs. This attitude was very common in history all along. Here our attention must inevitably shift from the authority of the profession of faith that is dogma to the authority in the Church, "here we are thinking particularly of Galileo Galilei, who was forced to recant scientific knowledge by being shown the rack and instrument of torture" (Soelle, 1993, p.28). The case of Galileo created an image of faith, which Christianity cannot possibly and positively accept of herself.

In reaction to these disastrous conflicts of the past, several attempts had been made by the Church in the modern era to resolve the conflicts between faith and science. Faith and science are gradually coming to terms today, but this get-together is not without tension. While appreciating many positive response and insights of the subsequent centuries concerning the relationship between faith and science, Stephen Hawking remarked:

> *Throughout the 1970s I had been mainly studying black holes, but in 1981 my interest in questions about the origin and fate of the universe was reawakened when I attended a conference on cosmology organized by the Jesuits in the Vatican. At the end of the conference the participants were granted an audience with the Pope. He told us that it was alright to study the evolution of the universe after the big bang, but we should not inquire into the big bang itself because that was the moment of Creation and therefore the work of God. I was glad then that he did not know the subject of the talk I had just given at the conference, for I had no desire to share the fate of Galileo (Hawking, 1995, p.122).*

This insight proves that the conflict between faith and science had not been completely resolved. The dilemma is that the modern culture had given birth to science and technology, which turned the new generation into secularists rather than to religious people.

5 Contrasts: Rays of Divergence Between Faith and Science

It is the constant cry of the modern culture to follow the light of empirical knowledge rather than the awakening of faith. Connected with this strand, we observe three interests behind the conflict between faith and science. In the flourishing of trade and industry as the contribution of science and technology to the modern culture, we see an interest based on commercialism. The second basis of rejection of faith in scientific world is located in philosophical orientation of our age. Philosophical assumptions sometimes consider the propositions of faith as absurdity (Acts 17:16-4). Thirdly, is the fact that the truths of faith are based on revelation and not on reason, while the certitudes of science are based on reason and sense experience.

First, we enter the scene of our observation through modern technology. Today, the greatness of the modern science is increasing and technology is developing in all leaps and bounds in different cultures of the world and have changed the world immensely. This is coupled with unlimited promises and unavoidable threats:

> *The promises of science and technology is overwhelmingly evident to modern societies. Science and technology are achievements of human creativity. Humanity develops them to achieve human purposes. Christians regard them as an expression of God's gift of creativity and responsibility which humanity exercises before God and in relation to the created world. Science through its contribution to*

understanding liberates people from many forms of ignorance and superstition. Technology liberates them from many physical constraints and insecurities. Medical technology has removed the terror of many diseases and epidemics (Birch, 1979,p.22).

With their promises, science and technology have provided for humanity some great commercial enterprise, material improvements, economic advancements, medical and educational facilities that made the world modern in its different costumes. It is mostly said that we are living now in the age of Enlightenment, an era when all our clouded questions had received most of its answers from the ability of science.

Secondly, the conflicts of philosophical ideologies empowered science to render the Christian interpretation of the world meaningless. Authority of reason was no longer seen in agreement with the authority of faith, but in great opposition and utter conflict. As a consequence the authorities of the bible and the teachings of the Church were opposed to the authorities of modern science and technology.

The doctrine of creation of the world explicates this relationship between faith and science. Does science reduce the credibility of the doctrine of creation? How can the idea that the universe has a beginning form the basis of conversation between science and faith?

The Christian doctrine of creation had been deplenished in the age of scientific cosmology through the theories of measurements of time and space. The language of science had attempted to narrow down the theological interpretation and meaning of the creation of the world. This is a common phenomenon witnessed in the evolution theory, the big bang theory, the polygenism and so on.

In the arguments of many scientists, the evolution theory implies that the universe is basically impersonal and without any Creator behind its origin. The three features of evolution theory: chance, struggle and natural selection account for the origin of the universe. They are three things which are theologically disturbing about evolution theory (1) the theory places in question the very existence of God (2) the theory presumed that the origin of life and whatever that exists in the universe had no intelligent and divine designer responsible for the nature's ordered arrangements (3) the theory contradicts religious faith and makes it hard for scientifically educated people to believe in God and theistic religion.

Conflict arises from the attempt of scientists to impose scientific experiments upon a sacred text whose aim "is in no sense one of satisfying scientific culture and curiosity of science. They (the scientists) completely miss the religious point of Genesis by placing it alongside *On the Origin of Species* as though the biblical text could provide a superior scientific account of the origin of life" (Haught, 1995, p.53). They failed also to recognize the mystery of the universe, which evolution theory cannot account for. Scientists cannot avoid conflict, if they cannot "resonate, like Einstein, with some notion of mystery" (Haught, 1990, p.165).

Thirdly, many scientists have not been able to reconcile themselves to the mystery of the universe. Mystery in the contemporary understanding of the scientists is nothing more than a set of problems that will eventually be solved by scientific investigation or simply a *gap* in our knowledge which will eventually be bridged by the process of scientific growth and advancement in knowledge of the universe. As an example, Heinz Pagels in his current publication on the origin of the universe tend to believe that:

People once worshiped the sun, awed by its power and beauty. Now that astrophysicists understand the physics of the sun and the stars and the source of their powers, they are no longer the mysteries they once were. In our culture we no longer worship the sun and see it as a divine presence as our ancestors did. But many people still involve their deepest feelings with the universe as a whole and regard its origin as mysterious. The size, splendor and glory of the universe still provide the sense of transcendent eternal being (Pagels, 1986, p.367).

The conflation and conflicts that arose from their experiences are due to the attempts of the scientists to replace the gaps of mysteries of faith which are not accessible to human knowledge, and to find its substitutes in human learning. Many scientists insisted that physicists will one day unveil the fundamental laws of the quantum creation of the universe. When this discovery takes place, the existence of the universe will hold no more mystery for those who choose to understand it than the existence of the sun. This implies that "as knowledge of our universe matures, that ancient awestruck feeling of wonder at its size and duration seems inappropriate, a sensibility left over from an earlier age"(Pagels, 1986,p.14).

In the culture of the modern science, there is generally the tendency to resist discussions with faith and lack of interest in Christian doctrines of faith, by regarding them as obsolete reality. Mystery in the minds of scientists means an immediate problem to be solved, or an existing

gap in knowledge to be covered. In order to fill this gap, science becomes a form of worship for the modern culture. "But mystery denotes a region of reality that, instead of growing smaller as we grow wiser and more powerful, appears to grow deeper and more incomprehensible"(Haught, 1990,p.165). It is the essence of mystery to be incomprehensible, and consequently one can only do justice to the nature of the world as a mystery by clarifying the relative positions of faith and reason in understanding it.

6 Conversation: Faith and Science at Convergence

In terms of focus and scope, faith presents mystery as reality to be lived, and not a problem to be mastered and overcome through reasoning process. Mystery is from the outset a revelation. Mystery consists in witnessing to God of Creation through our life and creativity in all parts of the universe. The whole universe is the mission field of science. First, it denotes directly a scientific response to the revelation of faith, and secondly it extends it to the whole cosmos. The mission of science is, therefore, a participation and sharing in the mystery of the whole universe.

Both faith and science participate in the same mission. They both are related by the same aim. Hence, participation in bearing witness to the mystery of the universe as it is carried out in relation to faith, constitutes the fullness of the mission of scientists. In this sense, a study of the universe as a mystery from the perspective of science must be seen as complementary to that done from the perspective of faith.

This position makes it possible to speak adequately of complementary function and mutual co-operation between faith and science. The entire creation and human history are themselves calling faith and science to greater interdependence on each other. The entire creation is full of tension and frustration. In such a context, it is necessary that humanity should try to draw on the strengths and inner resources which faith provides for the world. The world is today an attracting and repulsing place to live – we see the negative effect of pollution, side-effects of radial energy, and imminent danger of nuclear weapon. Complementary colours in creation enable us to make another important point.

The model of complementarity originated from Francis Bacon in the seventeenth century. Bacon spoke about two books, implying the book of nature and the book of Scriptures. Each of the books is to be read and understood properly and be applied fittingly. The complementarity between faith and science brings us to the concept of dependability, as a paradigm of solving the conflicts between science and faith. As Piet Schoonenberg rightly expressed his paradigm:

Creation does not add anything to the relation between God and the world – the world merely expresses the activity of this relation, it says that in this relation God is always the one who realizes (that is gives reality to, real-izes) the world in all its components and aspects and that on the other hand the world is completely and wholly realized by God, from God and in God (Schoonenberg, 1971, p.22).

By the explication of Piet's thought, the concept of creation as it was often understood does not imply principally to origins that is to a relationship which simultaneously and suddenly existed, just at the moment or start. The concept of creation principally expresses, rather the dependability of all the universe on God, and consequently the inseparable relationship between the Creator and the creature as originated from the Creator, and expressed in the creature. A proper understanding of creation helps us to grasp this relationship and dependability – self-reliance of the physical universe on God. This implies that it is really dependence that we ourselves actually confirm when we substantiate that something exists.

Karl Rahner puts it in his own way paradoxically as follows, "the relationship between God and the creature is characterized, precisely in contrast to any casual dependence, which otherwise met with within the world, by the fact that self-possession and dependence increase in direct, and not in inverse proportion" (Rahner, 1968, p. 591). Rahner actually wants to indicate that our complete and unconditional dependence on God does not deprive us in any form or any manner our independence, freedom, individuality, and personality as beings in the world.

Paradoxically, it is insofar that we are radically dependent on God that we are independent and free beings in the universe. In this instance, we have a quite different relationship which is opposite to human and other relationships which we encounter in the world, which implies that to the extent which we are dependent on others is the extent which we are less independent on ourselves, and this can lead to slavery. However, in our relationship with God, the contrary is the case: *we are independent and free precisely in so far we are*

dependent on God.

This brings us to the third level of the conversation: on the platform of interdependency. Science and faith stand in necessary togetherness, for each is needed for the other to be what it is. It is dependence and independence realized as relationship. Both relate to each other in such a way that these relationships constituted a self-subsistent or independent of each other. In this sense, a study of the universe as a mystery from the perspective of science must be seen as interdependent with that done from the perspective of faith.

The whole cosmos and human history are calling science and faith to a greater interdependence today. After many years of bitter struggling with various conflicts and ideologies, conversation method recommends a declaration of interdependence. The conversation method extends to the public sphere, and dispels the ideologies of those who believe that science or faith alone has the monopoly of truth.

Science ought not to turn the attention of humanity away from God, and from the inner sources of human life which faith in the Creator of the universe provides. Faith and science are to join hands together to carry out God's will of reconciliation of the entire creation into unity. The quest for the unity of the entire universe is the fourth dimension of our conversation. The conversation between faith and science is born out of a very anthropological craving for unity in understanding the universe as a whole. If faith and science are to engage fruitfully in the understanding of the universe adequately in the future, they are to change their relationship to one another, becoming allies instead of adversaries. This alliance ushers in a new way of understanding creation that takes creation's unity as a starting point of conversation and dialogue. In this context, theology opens a point of contact or dialogue between science and faith. The supposed similarities between science and faith, yield points of contacts through which they can be used in enriching each other. In the process of contact as opposed to contamination, each side in the dialogue will make significant contributions to the other.

The fundamental problem between faith and science can be traced into the core of Western dualism, which sees faith and science in an indissoluble tension. How is it to be understood in African world-view? All the same, we should not separate the two schemes apart – faith and science – which are vital realities to human existence. In African world-view reality is seen as a whole. There is no sharp distinction between body and soul, spiritual and material, secular and ethereal. This world-view excludes all sense of unitary existence, and eschews unism. It is a world-view which fosters harmony and unity between the divine, the human and the cosmic world.

There is an African adage which says that *it takes a village to raise a child.* The African world-view endeavors to synthesize into a single whole the totality of man's aim and purpose in life: wealth, success, judiciousness, achievements of sciences and technology, and man's religiosity. This holistic world-view can contribute so much to the traditional Western understanding which is strongly identified with dualism.

It can enhance the idea of creation of the Western thoughts, and the manner in which the Western scientists can understand the universe, and its deepest and most profound mystery. Such a holistic knowledge of the world could even help to explain the unity of action between faith and science in the perfection of the world, and the union which faith and science will reach at the eschatology between God and humanity.

SUMMARY AND CONCLUSIONS

Science and faith have all too often been seen as rivals, and alternative versions of the meaning-giving activity in the universe. Signs of these conflicts which have long characterized the history of faith and science are still very much alive in our present age. It is this nature of faith-science-conflict which this research sets out to examine. Of course, the dichotomy between faith and science is considerably more complex than I have allowed, but I am not writing a general survey. This is not a place of analysis, still less for apportioning blame. Far from representing a single clash between faith and science, I have tried to seek avenues of intimate conversations that may connect them.

The research strongly suggested a connection between faith and science. Scientific undertakings needed necessarily to be provided with a religious language that will evoke in its creative dimension of research the presence of the divine and the sacredness contained in God's creatures and creation. According to this perception, religious faith is expected to find its full expressions in the life of individuals searching for ultimate meaning in the universe. Faith is not to be separated from the political, social, and scientific spheres of individuals and communities. The thrust of this research does not arise from the urge to spread the ideas of

Christian cultures on every spheres of human existence, especially on the avenues of scientific learning or scholarship, but simply from the need of facing the reality that we are all sharers of this globe. As world citizens, we need to develop a human economics, a human politics, a human religion, a human ethics, and a human science.

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