

FAITH AND SCIENCE: RECONCILIATION - SYNTHESIS A REVIEW OF THE PAPAL CHALLENGE

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Introduction

The relation between faith and reason is also very linked and akin to that between science and religious faith (theology). The basic conflict between scientific and the religious world-views is primarily, fundamentally and consequently that between their respective organizing principles - reason and faith. This is especially so in the most part of the second half of the twentieth century when there was not only the continuing increase in the findings of and prestige of natural science, but also the rise of scientific speculation which claims, in effect, that in certain areas scientific findings can and have supplanted traditional metaphysical reasoning. Hence, in the debate between faith and reason, the role of reason is taken by science and faith. These debates between faith and scientific reason, often of an extremely speculative turn, can be said to have brought the debate between faith and reason full circle. Many in the scientific community concede and conclude that while science belongs to the domain of reason, faith attacks reason and is thus essentially at odds with it. For these, no working relationship between science and faith can thus be established (whether in the hearts of individuals, or between institutions such as the Church and the scientific community). According to them, science and faith are thus fundamentally opposed to each other. Some reject the findings of science for religious reasons, while others reject the tenets of faith for scientific reasons. Such scientists often reject faith because they frequently are confronted with religious claims which plainly contradict the observable data concerning the natural world.

Conversely, many individuals of sincere religious conviction (whether Christians, Muslims or Jews), often reject science - in whole or in part - because they so frequently encounter scientists attacking the deepest tenets of their faith: they encounter scientists who claim that material reality is all that exists, that it was not “created” because there is no God, and that there is no immortal soul, because consciousness is only a product of physical/chemical processes. Moreover, these same scientists will often logically conclude that there is no such thing as sin. The only values or disvalues that exist, exist on the level of functionality, and lead to the question: Is it useful or is it pleasurable?

Our purpose in this article is to examine this seeming endless opposition and review the Papal, precisely John Paul II's, critical venture at a synthetic reconciliation between faith and science or even still the claims of both.

Extreme Positions: Creationism and Scientism

These are two extremes at which public discourse between science and religion often, if not exclusively, occurs. One extreme represents what is commonly called *creationism*; a view which absolutizes biblical revelation, claiming that it is the source of all truth, even scientific truth. The other extreme is that of *scientism*, which absolutizes science's quantitative method of investigation and makes the very unscientific claim that only the quantifiable (i.e. the material or measurable) exists.¹ In this attempt to absolutize its role, the adherents of both extreme claim either science or faith to be the sole source of truth. Hence the identity and legitimate independence of the one is subsumed into the other, to the great misfortune of both.

Against these two extremes, Pope John Paul II had worked to restore a dialogical and relational unity between science and religion for the benefit of both. The core of his teaching on science can best be understood as an attempt to restore - throughout the Church and throughout the world - the harmony between science and faith which existed in the scientific enterprise itself and its adherents practitioners since its origin; the harmony found in the heart of such men as Nicholas Copernicus; a harmony which also existed in the heart of Copernicus' great disciple, Galileo Galilee.² John Paul II sought to promote the Catholic insight that there is no need for any divorce or opposition between science and faith in their common quest to understand the human condition. The God of creation is the God of revelation and redemption. This is the project he followed and developed since the beginning of his intellectual career and especially all along in his Pontificate. Indeed the Pontifical Academy of Sciences was established with precisely that goal in mind. Scientists, theologians and philosophers can and should profit from each other's

investigations. He wanted to analyze the rupture, work towards a new unity, and together promote true culture. He believed that the way the relationship should be lived is not in opposition but relational unity, that is, each recognizes and needs the other. In order to promote the well-being and proper functioning of both science and faith, the legitimate autonomy of each within its own domain must be recognized and respected. Only then can a healthy relational unity be established between them.

Need for Constructive Harmony/Dialogue

Quoting from the Second Vatican Council, the Pope, in 1979 addressing the Pontifical Academy of Sciences, said: “We cannot but deplore certain attitudes which have existed among Christians themselves, insufficiently attentive to the legitimate autonomy of science. Sources of tensions and conflicts, they have lead many minds to conclude that faith and science are mutually opposed.”³ The Pope explained that the Council Fathers are alluding to the Galileo case (as the footnote attached to the council text makes clear) and he continued:

In order to go a step beyond this position taken by the council, I wish that theologians, scholars and historians, animated by a spirit of sincere collaboration, might examine more deeply the Galileo case and, in an honest recognition of wrongs on whatever side they occur, might make disappear the obstacles that this affair still sets up in many minds, to a fruitful concord between science and faith, between the Church and world. I give my entire support to this task which will be able to honor the truth of faith and of science and open the door to future collaborations.⁴

The practical follow-up to this was a constitution, in July of 1981, of a study commission for the expressed hope of studying the Galileo case. The commission, composed of scientists, historians, and theologians, worked for over ten years and then in 1992 it brought its work to a close. In all of this, John Paul II's expressed aim was to provide the Church and the scientific community with a deeper understanding of the case. This knowledge, it was hoped, would help both communities learn some important lessons about the proper relationship between science and faith. The commission's basic conclusion was that the rift occurred because, first, no one (neither scientists nor theologians), during those early days of the scientific method, had a sufficiently clear understanding of the relationship between data and theory, and between data and theory's relationship to their larger philosophical and

theological frameworks. Responsibility for the trouble this caused rests more or less equally upon all the parties involved.⁵

In addition, the theologians involved in the Galileo case, failed to grasp the profound, non-literal meaning of the Scriptures when they described the physical structure of the created universe. For the aim of the Scriptures was not to provide scientific or historical data but to answer, through the inspiration of the Holy Spirit, fundamental questions about existence; to reveal, not truths of science, but truths about God and the Creator's design for human beings[...]. The writers of the Scriptures obviously were unlettered in their times and shared with their contemporaries their inadequate knowledge of the world of nature. And so, since revelation was made necessarily to humans with a particular level of culture, it needs study to purify it from historically culture-bound aspects to discover its essential ever-valid message. In the Scriptures, the medium is *not* the message. This led them unduly to transpose a question of factual observation into the realm of faith.⁶ What Augustine and Aquinas had understood well, the theologians of the Catholic Reformation has lost sight of. They failed to recognize that, in the Scriptures, the Holy Spirit does not teach us "how the heavens go, but how to go to heaven."

On the basis that faith and science are mutually enlightening, new cosmologies and a more dynamic understanding of science (with evolution as a prime example) will enrich the theologian's (faith) presentation of God's creative activity. Encouraging such dialogue, the Pope said:

In this process of mutual learning, those members of the Church who are themselves either active scientists or, in some special cases, both scientists and theologians could serve as a key resource. They can provide a much-needed ministry to others struggling to integrate the worlds of science and religion in their own intellectual and spiritual lives, as well as to those who face difficult moral decisions in matters of technological research and application. Such bridging ministries must be nurtured and encouraged.⁷

Scientists and theologians thus need to realize and embrace the challenge that the future of civilization will depend on their honest and courageous dialogue. If theologians recognize that their discipline is deeply challenged by the development of contemporary science, and scientists too discover that their findings tend to raise inescapable problems about ultimate values such as truth and the meaning of human life. Thus Pope John Paul II was convinced that a new harmony

must be established between science and religious faith (theology). Explaining such needed healthy relational unity, the Pope said:

Yet the unity that we seek, [...] is not identity. [But the kind of unity which resists homogenization and relishes diversity.] The Church does not propose that science should become religion or religion, science. On the contrary, unity always presupposes the diversity and the integrity of its elements. Each of these members should become not less itself but more itself in a dynamic interchange, for a unity in which one of the elements is reduced to the other is destructive, false in its promises of harmony and ruinous of the integrity of its components. We are asked to become. We are not asked to become each other.⁸

Later the Pope explained what he meant by unity in diversity:

To be more specific, both religion and science must preserve their own autonomy and their distinctiveness. Religion is not founded on science nor is science an extension of religion. Each should possess its own principles, its pattern of procedures, its diversities of interpretation and its own conclusions. [...] While each can and should support the other as distinct dimensions of a common human culture, neither ought to assume that it forms a necessary premise for the other.⁹

Autonomous, but Related Realms of Knowledge: Limits of Science

Here, we have a model of two autonomous realms of knowledge. There is what reason can attain through the use of the scientific method; and there is that knowledge which has its source in revelation. Science and theology operate on very different levels of meaning and methods, yet they do converge in their complementary contributions to human progress. Both however, have points of contact as they illumine an aspect of reality; that there is an objective reality to be known and understood.

Nevertheless, they differ in the particular aspects of reality with which they are concerned and the means they use to investigate these aspects. Science considers the world and the human person on the horizontal level, the level of physical/chemical processes and of quantifiable matter. Its object, physical reality, ranges from the subatomic entities to the stellar galaxies. It makes observations and

does experiments to check on the objective validity of its theories on the interrelationships of physical phenomena, attempting to express these relationships in the language of mathematics. Obviously, tremendous progress has been made in scientific understanding with no end in sight. Religious faith, on the other hand, considers the vertical level: the level of the human person's transcendent origin, dignity and destiny: the level of the human person in his or her relationship with God.

According to Pope John Paul II, if science is faithful to its method (if it dedicates itself to the pursuit of knowledge), then science poses no threat to belief, nor does it endanger the integral welfare of human society. However, following the Second Vatican Council, he was careful to distinguish between the application of the scientific method for the continuous discovery of truth and the philosophical presuppositions and conclusions which accompany scientific investigation and which properly pertain to the domain of philosophy. He was quite aware that scientists do more than just research. "For science develops best when its concepts and conclusions are integrated into the broader human culture and its concerns for ultimate meaning and value."¹⁰ They also seek to integrate their findings into a larger coherent view of the world. As human beings, they desire to understand the meaning that the truths they discover have for their own lives and for the life of the larger community. Not only theology but science also is potentially concerned with broader human culture which encompasses ultimate meanings and absolute values. Scientists who are open to the full implications of their search for total reality will acknowledge the common interests they share with theologians and philosophers. For science by itself is powerless to provide solutions to the problem of the ultimate meaning of the universe, man included. It alone can neither give an explanation for the fundamental intelligibility of the physical world nor satisfy the deepest yearning of the human spirit for a truly satisfying ultimate goal for its strivings. Obviously, science cannot say anything about something that cannot be experimented empirically, and if it does say something, it can only do so incompetently, because it has gone beyond its own limits. Science has been extremely successful and of great consequence for industrial and economic development, and for human health. Scientific knowledge and technical advances pervade our daily life from space exploration, through genetic engineering to whatever. The explosive acceleration of this dramatic expansion in human knowledge is undeniable. As Francisco J. Ayala puts it:

[...] The high-rise buildings of our cities, thruways and long span-bridges, rockets that bring men to the moon, telephones that provide instant

communication across continents, computers that perform complex calculations in millionths of a second, vaccines and drugs that keep bacterial parasites at bay, gene therapies that replace DNA in defective cells. All these remarkable achievements bear witness to the validity of the scientific knowledge from which they originated.¹¹

Science is a wondrously successful way of knowing, but is not the only way. Knowledge also has other sources, such as common sense, artistic and religious experience, and philosophical reflection. A scientific view of the world is hopelessly incomplete. And the total limitation or exclusive identification of scientific methodology with sound intellectual discipline and rational methodology has progressively impoverished man's insight into himself and the world. Even though nothing in the world of nature is outside science's cope, it does not have either the competence, calling or the right to probe beyond the creaturely realm (notwithstanding the unscientific claim of scientism). Neither do the humanities.¹² Mystery, such as that which lurks at the heart of reality, does not lend itself to scientific analysis. Such issues as the significance of life and the world, questions of value and meaning, esthetic and moral perceptions are beyond science's scope. Science may boast of its verifiable truth-claims, but it is unable to deal with the ultimate concerns in a way that soothes the heart of man. Ironically, it was the great scientist Pascal who observed that "the heart has its reasons which reason cannot know." Science is fundamentally - *by its nature* - inadequate to the hungers of the heart. Hence the need for an all-encompassing account and theistic worldview that does indeed draw from *all* that we know about God, creation and revelation. In this way science becomes enriched and fulfilled as an increasingly fruitful enterprise.¹³ The ultimate worth of factual truths cannot be established in isolation from questions about value and purpose.

In these efforts, they have recourse to what the Pope calls "metascientific concepts."¹⁴ In this way, he asserted, moving to the level of philosophical reflection, they need to be in dialogue with religious faith. Why is this so? Because often "undue extrapolations" are made which link their "strictly scientific discoveries" to ideologies or worldviews that are in way implied by the data, and which do violence to the dignity and vocation of the human person.¹⁵ In such instances the Church reserves the right to counter these misguided conclusions with the truths of faith and the tools of philosophy.

Thus, it can be said that scientists are autonomous in their search for knowledge. Yet, when they move to the level of philosophical

reflection - the level which makes absolute claims about the human person's transcendent origin and destiny - on that level they are not autonomous. On that level, John Paul II argued, scientists have a twofold obligation:

- a) they must develop their philosophical reflections concerning their research in dialogue with the larger community, which includes the Church (and indeed, all religions); and
- b) they must recognize that they, and all people, have a transcendent vocation: they have a vocation to know and love a truth that transcends this world.

Precisely, in John Paul II's view, if scientists are going to step outside of the domain of scientific investigation and engage in philosophical reflection (a task as inevitable as the scientific enterprise itself as it necessarily seeks to integrate its findings into a larger coherent view of the world), they must take care to embed the fruits of their research within philosophical frameworks that recognize the human person's transcendent vocation. In such a way, the Pope asserts, religion's critical role does not hinder scientific investigation, but actually perfects and preserves it.

Science is not only service for other purposes. Knowledge of truth has its meaning in itself. It is an accomplishment of human and personal character, an outstanding human good. Certainly, science has a meaning of its own and a justification when it is recognized as being capable of knowing truth, and when truth is recognized as a human good. Then also the demand for the freedom of science is justified. In what way, in fact, could a human good be realized if not through freedom? Science must be free also in the sense that its implementation must not be determined by direct purposes of social utility or economic interest. That does not mean, however, that on principle it must be separated from "praxis." But to be able to influence praxis, it must first be determined by truth; and therefore be free for truth. A free science, bound only to truth, does not let itself be reduced to the model of functionalism or any other, which limits understanding of scientific rationality. Science must be open, in fact it must also be multiform, and we need not fear the loss of a unified approach. This is given by the trinomial of personal reason, freedom and truth, in which the multiplicity of concrete realizations is founded and confirmed.¹⁶

Central Criteria and Pre-eminence - the Human Person

From this it becomes obvious that the human person, in his transcendent dignity, is the central point of reference underlying the dialogical and relational unity between science and faith: the reality of the truth and the possibility of knowing it. **The human person is the bridge (point of convergence and relevance) within which both**

science and religious faith can meet. It is also the means by which they can exchange and enrich one another. At the same time, by itself, the human person is irrevocably the means, mode, criteria and the yardstick of such interaction, communion and relationship of faith and science. Modern society expects these two human realities to work together to improve civilization. The ethical dimension of human progress must always be kept in mind if society is to be worthy of the human person.

Scientific progress, particularly in the field of genetics, keeps conscience on the alert and stimulates ethical reflection. This progress cannot be limited to technical aspects which one could consider morally neutral, because it directly concerns the human person in regard to his most valuable possession: his very structure as a person. [...] Promoting the ethical dimension of scientific and technical progress means helping it to become genuinely human, in order to build a society which is on a human scale [...]. In the absence of this kind of ethical reflection, all humanity and even the earth itself would be in danger.¹⁷

When the scientific community becomes enmeshed in a false view of the human person, it becomes enslaved. When the human person is viewed merely on the material level as a thing to be manipulated and when utility becomes the only good, then science as the unhindered pursuit of knowledge will begin to disappear. It will be replaced by a science enslaved to the idols and ideologies of the age. Science uninformed by modesty in the face of its own limitations will end by dehumanizing the humanity it intends to serve. Under this corrupting influence, dedication to the pursuit of knowledge and the welfare of the human community will inevitably give way to the pursuit of profit and power. In the process, the dignity of scientists themselves becomes degraded: to their horror they begin to discover that they are increasingly little more than instruments for the production of products and the manufacture of munitions. No wonder Pope Benedict XVI declared:

The Church welcomes with joy the authentic breakthroughs of human knowledge and recognizes that evangelization also demands a proper grasp of the horizons and the challenges that modern knowledge is unfolding. In fact, the great progress of scientific knowledge that we saw during the last centuries has helped us understand the

mystery of creation better and has profoundly marked the awareness of all peoples.

However, scientific advances have sometimes been so rapid as to make it very difficult to discern whether they are compatible with the truths about man and the world that God has revealed. At times, certain assertions of scientific knowledge have even been opposed to these truths. This may have given rise to a certain confusion among the faithful and may also have made the proclamation and acceptance of the Gospel difficult.

Consequently, every study that aims to deepen the knowledge of the truths discovered by reason is vitally important, in the certainty that there is no “competition of any kind between reason and faith” (*Fides et Ratio*, n. 17).¹⁸

Reciprocal Exchange and Benefit

The Pope, therefore, appealed to the scientific community to recognize that dialogical and relational unity between science and religion is for the benefit of both. His explanation of this in his ground-breaking letter to the director of the Vatican Observatory deserves to be quoted at length.

Science can purify religion from error and superstition; religion can purify science from idolatry and false absolutes. Each can draw the other into a wider world, a world in which both can flourish.

For the truth of the matter is that the Church and the scientific community will inevitably interact; their options do not include isolation. Christians will inevitably assimilate the prevailing ideas about the world, and today these are deeply shaped by science. The only question is whether they will do this critically or unreflectively, with depth and nuance or with a shallowness that debases the Gospel and leaves us ashamed before history. Scientists, like all human beings, will make decisions upon what ultimately gives meaning and value to their lives and to their work. This they will do well or poorly, with the reflective depth that theological wisdom can help them attain or with an unconsidered absolutizing of their results beyond their reasonable and proper limits.

Both the Church and the scientific community are faced with such inescapable alternatives. We shall make our choices much better if we live in a collaborative interaction in which we are called continually to be more. Only a dynamic relationship between theology and science can reveal those limits which support the integrity of either discipline, so that theology does not profess a pseudo-science and science does not become an unconscious theology. Our knowledge of each other can lead us to be more authentically ourselves. No one can read the history of the past century and not realize that crisis is upon us both. The uses of science have on more than one occasion proven massively destructive, and the reflections on religion have too often been sterile. We need each other to be what we must be, what we are called to be.¹⁹

Thus, in essence, Pope John Paul II was saying that by establishing and living this relational unity, both science and faith benefit. Negatively, they help each other avoid absolutizing themselves as the sole source of truth. Positively, they help each other understand more deeply the truths that pertain to them. Moreover, they help each other preserve their legitimate freedom and independence. He took very seriously the notion that theology needs science. He asserted that the data and methods of science will help theology probe the mysteries of faith more deeply. He specifically stated that reality \square the truth of faith \square is much richer than any theology can adequately explain. Thus, just as Aquinas found in the science flooding the culture of his day elements that could illumine his faith, the same is true for us today. What we need, he says, is a new St. Thomas to do with the science of our day, what Thomas did with Aristotle.²⁰

This shows that there is an urgent need to promote an interdisciplinary dialogue, an interreligious and intercultural exchange, in order to bring about a new ethical consciousness capable of grasping the gravity of our common problems that have become a dramatic challenge to all the human family. This requires both great competence and wisdom.

This is at the core of all of John Paul II's thought: there is no freedom without the recognition of truth. Unless one recognizes that there is something which transcends this world and the structures of this world, one ceases to be free. Unless there is something that can be used as a measure for judging the structures of this world, those structures

will begin to enslave us. Without truth, we become subject to the powers of this world and have no defence against them.

Consequence of This Unity: Promotion of True Culture

Culture, in the full sense of the term, is a concept which embraces everything of which man is at once the centre, the subject and the object. It includes all his capabilities, both as an individual and as one who lives in society. It humanizes persons, manners and institutions [...]. In the most diverse fields, scientific and technical progress aims to guarantee the human person a better life so that he can completely and more readily fulfil his specific vocation.²¹

Scientific knowledge has led to a radical transformation of human technology. Consequently, the conditions of human life on this earth have changed enormously and have also considerably improved. The progress of scientific knowledge has become the driving power of general cultural progress. The transformation of the world at the technical level seemed to many people to be the meaning and purpose of science.

Yet it has been seen that the progress of civilization does not always improve living conditions. There are involuntary and unexpected consequences, which may become dangerous and harmful as in the case of the ecological problem, which arose as a result of the progress of technico-scientific industrialization. In fact serious doubts arise as to whether progress, on the whole, serves man. These doubts have repercussions on science, understood in the technical, largely functionalistic sense. Its meaning, its aim, its human significance are questioned especially as it applies to the area of values and norms, of spiritual orientation in general. Precisely here science comes up against its own limits. Here emerges a crisis of legitimation of science, nay more, of a crisis of orientation of our whole scientific culture. For, as we have explicated above, science alone is not able to give a complete answer to the question of meanings, which is raised in the crisis. There is no reason to consider technico-scientific culture as opposed to the world of God's creation. Technical science, aimed at the transformation of the world, is justified on the basis of the service it renders man and humanity. It cannot be said that progress has gone too far as long as many people, in fact whole peoples, still live in distressing conditions, unworthy of man, which could be improved with the help of technico-scientific knowledge. Faith teaches us that man's fundamental prerogative consists in being the image of God. Christian

tradition adds that man is of value for his own sake, and is not a means for any other end. Thus man's personal dignity represents the criterion by which all cultural application of technico-scientific knowledge must be judged.

Furthermore it is not only faith that offers the perception of man's personal dignity and of its decisive importance. Natural reason, too, can have access to it, since it is able to distinguish truth from falsehood, good from evil, and recognizes freedom as the fundamental condition of human existence. This shows its need for a dialogical and relational unity with faith. From this unity, it becomes obligatory for scientists and theologians to work together for the formation and promotion of true culture, that is, fully human culture. Faith and reason also promote the culture of life. In the words of Pope John Paul II: "The commitment to the dialogue between faith and reason can only strengthen the culture of life, combining the dignity and sacredness, freedom and responsibility of every person as indispensable components of his very existence."²²

Contrary to the relational unity needed, at times, science has become enslaved to ideologies which have directed it toward alien goals: toward destroying the environment, instead of tending it; toward taking life, instead of preserving it; toward having more, instead of being more. In other words, at times science has been an instrument toward the fragmentation of culture. Yet, it can be something very different. In the heart of society, science can become an engine for promoting the unified and holistic growth of true human culture. Thus, John Paul II called upon scientists to take back their research and to ensure that it is not used to destroy or degrade human life. We are made of matter, but also of spirit. Scientists must be concerned about the values of the larger culture, because the very existence of science - indeed, the very existence of scientists and humans in general - depends upon this. As discoverers of truth, scientists have a responsibility to ensure that the truths they discover are used in ways that do not destroy human dignity. In fact, offering a thought on the faith of the scientist, John Paul II declared:

The scientist's condition as a sentinel in the modern world, as one who is the first to glimpse the enormous complexity together with the marvellous harmony of reality, makes him a privileged witness of the plausibility of religion, a man capable of showing how the admission of transcendence, far from harming the autonomy and the ends of research, rather stimulates it to continually surpass itself in an experience of self-transcendence which reveals the human mystery.²³

Thus, John Paul II invited scientists to join with the Church to promote and ensure the **two great freedoms at the heart of true culture: religious freedom (the freedom to pursue religious truth), and scientific freedom (the freedom to search for true knowledge about the physical world)**. Admittedly, the Church in her leaders has not always recognized the full value of these two freedoms. The crucible of modern history, however, has taught her the importance of recognizing and defending them. Conscious of this, John Paul II invited scientists and theologians to learn from the past so that we can work together for a better future. Ultimately, these two freedoms are only possible if the existence of truth is affirmed. Science will not survive unless it is embedded in a culture that presents its young with a coherent view of the purpose of human life. Unless we succeed in sharing with our children the existence of a truth that invites us to discover it, our own existence will become imperiled.

John Paul II, however, is filled with confidence. As a person of faith nurtured in the Christian tradition, he recognized that the truth we pursue has a hidden power all its own. Science and faith can work together for the promotion of true culture, because ultimately the truth they both pursue is a “who” and not a “what.” The relationship between science and faith can be dynamic and healthy, because truth itself is a dynamic relationship. Indeed, for the Christian, the ground of truth is itself a triune community of love.

An adequate solution of the pressing questions about the meaning of human existence, norms of action, and the prospects of a more far-reaching hope, is possible only in the renewed connection between scientific thought and the power of faith in man in search of truth. There is need particularly for the virtues of courage, which defends science in a world marked by doubt, alienated from truth, and in need of meaning; and humility, through which we recognize the finiteness of reason before Truth which transcends it.

Conclusion

Science and Faith are two orders of knowledge and neither one of the two must seek exclusivity. The dialogical and relational unity between science and faith is always fruitful but not always easy. Dialogue does not mean “absorption,” but reciprocal respect in diversity. There are many points of meeting and questions of limit. Neither one can pretend to explain everything. However, this dialogue is not only a theoretical question, but is really possible and there have been, and still are, many men and women who have no problem in living their scientific vocation and their life of faith in full harmony and without breaks of any kind. Science is not incompatible with faith. There can be a harmonious relationship between the man of science

and the man of faith. In fact, there have always been, and still are today, men who have had no difficulty at all in combining both dimensions, without falling into a sort of mental schizophrenia. "Fifty years ago a survey was made of 398 of the most illustrious scientists in the world in which only 16 declared themselves unbelievers, 15 agnostics and 367 believers."²⁴ The life of a scientist such as Galileo, who revolutionized physics in his time and who lived with the spontaneity and clear sightedness of his faith, reflects the concrete possibility of being able to reconcile these two orders of knowledge to avoid an epistemological dichotomy which is not good either for the believer or for the scientist. Thus, the reconciliation or synthesis of science and faith is possible and must be fostered. This is the crux of the Papal challenge for our time. In the words of Pope Benedict XVI:

The dialogue between faith and reason, religion and science, does not only make it possible to show people of our time the reasonableness of faith in God as effectively and convincingly as possible, but also to demonstrate that the definitive fulfilment of every authentic human aspiration rests in Jesus Christ. In this regard, a serious evangelizing effort cannot ignore the questions that arise also from today's scientific and philosophical discoveries.²⁵

Just as the Church is not afraid of science and its developments, so science should not be afraid of the Church. Each one of the two has something specific to say about the world, about man and about God as they work together to serve the truth and advance real human dignity. The Church is the friend of any sincere and ethical human research. This merely echoes what the Second Vatican Council taught so articulately in its *Pastoral Constitution on the Church in the Modern World (Gaudium et Spes)*:

[...]Methodical research in all branches of knowledge, provided it is carried out in a truly scientific manner and does not override moral laws, can never conflict with the faith, because the things of the world and the things of faith derive from the same God. The humble and persevering investigator of the secrets of nature is being led, as it were, by the hand of God in spite of himself, for it is God, the conserver of all things, who made them what they are.²⁶

ENDNOTES

¹ An example is seen in the work of secular humanists such as T. H. Huxley who wished to see science as an alternative faith. As Mary Midgley comments, many nineteenth century scientists saw science as: [. . .] a whole myth, a philosophical conception of the world and the forces within it, directly related to the meaning of human life. They saw this penumbra as part of science because it was needed if scientific propositions were to have their full bearing on the rest of thought. [...] People like T. H. Huxley meant by science a vast interpretative scheme which could shape the spiritual life, a faith by which people might live. This faith was a competitor with existing religious faiths, not a way of having no faith at all. Cf. Mary Midgley, *Science as Salvation* (Routledge, 1992), p. 52. The gains of technological progress are mostly seen as confirming the validity of the world-view which has brought modern technology into being. This attitude reflects an arrogance and narrowness which, far from being objective, ends up as a superstition. It offers a technical virtuosity in place of a more traditional wisdom which deals with the whole of life.

² Although their discoveries would cause revolutions in science and culture, it does not seem to have caused any revolutionary upheaval in their faith. In early June of 1999, Pope John Paul II, in his address to a meeting of Polish academics at the new University of Copernicus, Torun, Poland, noted that “although Copernicus saw his new astronomical system as giving rise to even greater amazement at the Creator of the world and the power of human reason, many people took it as a means of setting reason against faith.” Cf. “People of culture must strive for truth, defend it and live in accordance with it,” Address to the Rectors of academic institutions in Poland, 7 June, 1999, Torun in *L'Osservatore Romano*, English edition (16 June, 1999), p. 8. As evidence of the harmony of science and faith in the life of Nicholas Copernicus, are his words: “[...] when a person is occupied with things that he sees established in the finest order and directed by divine management, will not the unremitting contemplation of them and a certain familiarity with them stimulate him to the best and to admiration for the Maker of everything, in whom are all happiness and every good? For would not the pious psalmist (92:4) in vain declare that he was made glad through the work of the Lord and rejoiced in the work of His hands, if we were not drawn to the contemplation of the highest good by this means?” Cf. Nicholas Copernicus, *On The Revolutions*, edited by Jerzy Dobrzycki, translation and commentary by Edward Rosen (Baltimore: John Hopkins University Press, 1978), p. 7.

³ Cf. Pastoral Constitution on the Church in the Modern World, *Gaudium et Spes*, no. 36.

⁴ John Paul II, "Address to the Pontifical Academy of Sciences," (November 10, 1979). Cf. *Origins*, Vol. 9, No. 24 (November 29, 1979), p. 391.

⁵ See Report of the Galileo Commission in *L'Osservatore Romano* (English edition), November 4, 1992.

⁶ Cardinal Poupard, "Galileo: Report on Papal Commission Findings," in *Origins*, Vol. 22, No. 22 (November 12, 1992), p. 375. There is some confusion concerning whether Cardinal Poupard reported the findings of the Commission itself, or expressed his own reflections concerning the work of the Commission.

⁷ John Paul II, "Our Knowledge of God and nature: physics, philosophy and theology," Message to Rev. George V. Coyne, S.J., Director of the Vatican Observatory, June 1, 1988, printed in R. J. Russell, W. R. Stoeger, S.J., G. V. Coyne, S.J. (eds.), *Physics, Philosophy and Theology: A Common Quest for Understanding* (Vatican City State: Vatican Observatory, 1988), p. M12. Cf. *Origins* Vol. 18, No. 23 (November 17, 1988). Cf. also John Paul II, Letter: "Our Knowledge of God and nature: physics, philosophy and theology," in *L'Osservatore Romano*, (November 14, 1988).

⁸ John Paul II, "Our Knowledge of God and nature: physics, philosophy and theology," *art. cit.*, in R. J. Russell, W. R. Stoeger, S.J., G. V. Coyne, S.J. (eds.), *Physics, Philosophy and Theology: A Common Quest for Understanding*, *op. cit.*, p. M8. Cf. also p. M3.

⁹ *Ibid.*, pp. M7, M8-M9. In such synthesis, both must maintain their identities as distinct avenues to reality with different immediate objects and methodologies. Yet faith and science can and should complement each other to provide a unified completely satisfying picture of all reality.

¹⁰ *Ibid.*, p. M13.

¹¹ Francisco J. Ayala, "Evolution and Rationality: Natural Selection, Teleology, and Novelty," in *Scienza e Conoscenza - Verso un Nuovo Umanesimo*, a cura di F. Facchini, Il volume risposta i contributi presenti nel Convegno Internazionale su Scienza e Conoscenza - Verso Quale Razionalità?, Il Convegno si é svolto a Bologna dal 5 all'8 settembre 2000 in occasione del Giubileo Mondiale delle Università (Bologna: Editrice Compositori, 2000), pp. 147-148.

¹² For as Robert John Henle writes: "But, in truth, the humanities cannot really fill up the gaps in our intellectual knowledge or supply the sort of intellectual elaboration demanded by many aspects of reality. The mode of the humanities (poetry, drama, novels, music, art) retains something of the confusion of actual experience; it is not wholly reducible to intellectual factors or to rational control. The humanistic manner cannot elaborate the immediate arid concrete insights into an intellectual discipline, though literature and art may well be the matrix

of such an elaboration.” Cf. Robert John Henle, “Philosophical Method and The Cultural Crisis of Our Times,” *art. cit.*, p. 30.

¹³ Relevant to this point is the biologist Jacques Monod’s feeling that the universe had no significance other than which man arbitrarily gave it and thus had no really ultimate meaning. The physicist Steven Weinberg expressed the similar sentiments when he thought that the more man understands the universe the more devoid of ultimate meaning it appears to him. Cf. Jacques Monod, *Chance and Necessity: An Essay on the Natural Philosophy of Modern Biology*, tr. Austryn Wainhouse (New York, NY: Alfred A. Knopf, Inc., 1971). Steven Weinberg, *The First Three Minutes* (New York, NY: Basic Books, 1977). In *Christian Belief in a Postmodern World*, a lucid and helpful work on the constructive relationship of Christian faith and a careful reasoning, philosopher Diogenes Allen reminds us of the limits of the competence of scientific investigation: “[. . .] our natural sciences seek to describe and explain the relations *between* the members of the universe, not their origin. The existence of the universe and its basic constituents are taken for granted by our sciences [. . .] When we consider the whole of nature, the relations we find within nature cannot tell us why the universe exists nor why it is the kind of universe that it is. The continuing increase of scientific knowledge, which discovers the relations that exist within our universe, does not get us closer to an answer to either question.” Diogenes Allen, *Christian Belief in a Postmodern World* (Louisville: Westminster/John Knox Press, 1989), p. 53. “Thus philosophy, while needing the support of the empirical sciences is nevertheless in itself a science that is distinct from the others, autonomous, and of the highest importance for man, who is interested not only in recording, describing, and ordering various phenomena, but above all in understanding their true value and ultimate meaning.” Cf. Sacred Congregation for Catholic Education, *The Study of Philosophy in Seminaries*, II, 3, *op. cit.*, p. 8.

¹⁴ John Paul II, “Lessons of the Galileo Case,” Address to the Pontifical Academy of Sciences, October 31, 1992, in *Origins*, Vol. 22, No. 22 (November 12, 1992), p. 371.

¹⁵ *Ibid.* For example, when a scientist embeds his research within a reductionist and materialist view of the world.

¹⁶ If science is understood essentially as “a technical fact,” then it can be conceived as the pursuit of those processes that lead to technical success. What leads to success, therefore, is considered “knowledge.” The world, at the level of a scientific datum, becomes a mere complex of phenomena that can be manipulated, and the object of science a functional connection, which is examined only with reference to its functionality. Such a science may conceive itself as a mere function. The concept of truth, therefore, becomes superfluous, and sometimes,

in fact, it is explicitly renounced. Reason itself seems, when all is said and done, a mere function or an instrument of a being who finds the meaning of his existence in life outside knowledge and science.

¹⁷ John Paul II, Address to the participants in a Symposium sponsored by the Pontifical Academy of Sciences and the Pontifical Council for Culture, October 4, 1991. n. 5, in *L'Osservatore Romano*, English edition (14 October 1991), p. 3.

¹⁸ Benedict XVI, Address to the participants of the Plenary Assembly of the Congregation for the Doctrine of the Faith, February 10, 2006, in *L'Osservatore Romano*, English edition (22 February 2006), p. 3.

¹⁹ John Paul II, "Our Knowledge of God and nature: physics, philosophy and theology," *art. cit.*, in R. J. Russell, W. R. Stoeger, S.J., G. V. Coyne, S.J. (eds.), *Physics, Philosophy and Theology: A Common Quest for Understanding*, op. cit., pp. M13-M14.

²⁰ *Ibid.*, p. M12.

²¹ John Paul II, Address to the participants in a Symposium sponsored by the Pontifical Academy of Sciences and the Pontifical Council for Culture, October 4, 1991. n. 4, in *L'Osservatore Romano*, English edition (14 October 1991), p. 3.

²² Pope John Paul II, "How to Build the Culture of Life", Address to the Pontifical Academy for Life, March 3, 2001, in *Origins*, Vol. 30, No. 40 (March 22, 2001), p. 652.

²³ Pope John Paul II, September 17th 1985. Context misplaced.

²⁴ John Paul II, General Audience, Wednesday, 17 July, 1985. This catechesis was based on Sirach 43:30-33. Translation and subtitles from *L'Osservatore Romano*, July 22 1985. Cf. A. Eymieu, *La part des croyants dans les progres de la science*, sixth ed., Perrin 1935, p. 274.

²⁵ Benedict XVI, Address to the participants of the Plenary Assembly of the Congregation for the Doctrine of the Faith, February 10, 2006, in *L'Osservatore Romano*, English edition (22 February 2006), p. 3.

²⁶ Second Vatican Council, Pastoral Constitution on the Church in the Modern World (*Gaudium et Spes*), no.36.