

Science, Reason and Faith in the Third Millennium

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International Congress “Christian Humanism in the Third Millennium: the Perspective of Saint Thomas Aquinas”
Pontifical Academy of Saint Thomas and Società Internazionale Tommaso d’Aquino
Rome, 21-25 September 2003

Published in: Mariano Artigas. “Science, Reason and Faith in the Third Millennium”, in: Proceedings of the International Congress on Christian Humanism in the Third Millennium: The Perspective of Thomas Aquinas, volume 2 (Vatican City: Pontificia Academia Sancti Thomae Aquinatis, 2005), pp. 893-908.

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Abstract

In the last decades of the 20th century we have witnessed the ruin of scientism, but it has not been substituted by an adequate perspective. In this context, the encyclical *Fides et Ratio* has set up a very interesting program. In my paper I comment on several points of the encyclical that I consider especially important for a new harmony between science, reason and faith. They refer to scientific realism (we will hardly be able to argue in favor of the human capacity to know the truth in the deepest questions if we deny it in natural science); to the relationship between science, reason and faith (analyzing the current scientific world-view rooted on self-organization); to the search for truth (which has a deep anthropological meaning); to the modalities of truth; to the relationship between truth and belief (in order to overcome the false dilemma “authority versus criticism”); to the unity of knowledge (we should resort to philosophy if we want to reach the new unification of knowledge required in our time); to science and wisdom (an organizing principle is needed); to the assumptions of science and the impact of its progress; to some reflections directed to those who have responsibility of formation in the Church, to philosophers, and to scientists.

In the first half of the 20th century, the neo-positivism of the Vienna Circle launched a program that had a strong impact worldwide, and set up the conditions that, in a good extent, were followed by the philosophy of science in the next decades. This program included as basic components an anti-metaphysical and anti-theological attitude, as though the empiricist criterion of meaning would disqualify metaphysics and theology in the name of science. Nevertheless, in the last decades of the 20th century we have witnessed the ruin of scientism. Not that it has been substituted by an adequate perspective. Rather, the “weak thought” so widespread in our days presents as an alternative only local narratives that neither aim at a universal value nor claim for truth. Thus, the potentialities of metaphysics and theology seem destined to remain as one more expression of the human subjectivity: surely respectful, but without any real chance of exercising any influence on the dynamism of history.

In this context, the encyclical *Fides et Ratio* has set up, at the very end of the 20th century (September 14, 1998), a program that reinforces the role that the human reason should play in human affairs, avoiding at the same time the marginalization of philosophy and the thread of scientism as well. I am going to comment on several points of the encyclical that I consider especially important for this new harmony between science, reason and faith at the beginning of the third millenium. The basic scheme is completely coherent with the ideas of Saint Thomas, but at the same time I try to introduce the new issues that emerge from the development of modern empirical science and its philosophy.

1. Scientific realism ↕

In the beginning of the encyclical (n. 5), the Pope says that he is going to focus on philosophy and explains the reason saying that, “at the present time in particular, the search for ultimate truth seems often to be neglected”. How have we arrived at this darkening? The situation is paradoxical. A great progress in many ambits of the human knowledge has occurred; the Pope mentions “anthropology, logic, the natural sciences, history, linguistics and so forth - the whole universe of knowledge has been involved in one way or another”. Nevertheless, the great variety of positive results have had as a consequence that the direction towards a unifying truth has been forgotten, so that pragmatic criteria prevail and the technical effectiveness is used like a pattern of behavior. Thus it has happened that “rather than make use of the human capacity to know the truth, modern philosophy has preferred to accentuate the ways in which this capacity is limited and conditioned”.

This diagnosis is valid for the philosophy of science in our time. On the one hand, everybody is convinced that sciences progress in a spectacular way, but on the other hand no consensus exists about the very existence of scientific truth.

Scientific realism affirms that scientific truth exists and that we can reach it. It must face difficulties that can be reduced to two main points. On the one hand, science consists of our constructions that are not simple photographs of reality. Specially in mathematical physics very abstract models are formulated that, frequently, do not have a clear correspondence with reality. On the other hand, due to purely logical reasons, we cannot verify our hypotheses in a definitive way, therefore they must remain always open to further criticism and eventual change.

I have been maintaining, for years, a kind of scientific realism according to which in empirical science we can reach a true knowledge, with a truth that is always contextual and therefore partial, but, at the same time, is an authentic truth. Scientific truth is always “contextual” because it must be interpreted within the conceptual and experimental context that we use in each theory. Being contextual, it is also “partial”, and it does not exhaust all that can be said about the object we study. But, at the same time, it can be an “authentic” truth in the classical sense of correspondence with reality. of course, as there are many different types of scientific constructs, there will also be different modes of correspondence with reality. Thus, in order to establish such a correspondence we will have to pay attention, of course, to the concepts and data used in every case ¹.

The defense of scientific realism matches very well with the encyclical *Fides et ratio*. We will hardly be able to argue in favor of the human capacity to know the truth in the deepest questions if we deny it in the scientific knowledge of the natural world. It is difficult, to say the least, to undertake a metaphysical study if we do not have a suitable physical base. It can be argued, in addition, that the dialogue between science and faith must take place through a bridge constructed by means of a realist philosophy that is able to connect both participants ².

2. Science, reason and faith 🏠

In n. 9 of the encyclical, the Pope cites the doctrine of Vatican Council I on the distinction between the two orders of knowledge, i.e. reason and faith, and he adds: “Philosophy and the sciences function within the order of natural reason; while faith, enlightened and guided by the Spirit, recognizes in the message of salvation the ‘fullness of grace and truth’ (cf. *Jn* 1:14) which God has willed to reveal in history and definitively through his Son, Jesus Christ (cf. *1 Jn* 5:9; *Jn* 5:31-32)”.

A generalized agreement exists about the distinction between the perspectives of the sciences and the faith. Nevertheless, that distinction can be interpreted in two opposed ways: sometimes science and faith are seen as complementary, while at other times they are seen as mutually opposed and even enemies. Both positions exist at present.

One of the classic subjects in this ambit are the proofs of the existence of God that start from the knowledge of nature. The Pope alludes to them in n. 19 of the encyclical, commenting texts of the book of Wisdom, where we read that “From the greatness and beauty of created things comes a corresponding perception of their Creator” (*Wis* 13:5). The Pope comments: “This is to recognize as a first stage of divine Revelation the marvelous ‘book of nature’, which, when read with the proper tools of human reason, can lead to the knowledge of the Creator. If human beings with their intelligence fail to recognize God as Creator of all, it is not because they lack the means to do so, but because their free will and their sinfulness place an impediment in the way”. In this perspective, reason is valued as an instrument to know the God who reveals himself through nature.

Present-day discussions about the proofs of the existence of God that start from the contemplation of nature are centered specially around the teleological argument. In the English-speaking world this is usually treated as the “argument from design”. It seems

that that argument, and the discussions that accompany it, do not correspond with all property to the fifth way of Saint Thomas who more than “design” emphasizes “purpose”. Surely common elements to both approaches exist: the divine government of the creation is closely related to the concrete plans manifested in the operation of nature. But “design” refers to an intelligent activity that consists in ordering previously existing materials, and “purpose”, instead, corresponds to a behavior of nature that arises from internal principles. “Design” suggests a Great Architect, “purpose” suggests a Creator.

The difference is clear when we consider “self-organization”, which is the central metaphor of the present scientific world view. If nature has surprising capacities to self-organize itself so that successive levels of complexity appear by means of the unfolding of natural potentialities, the corresponding image of God is the one of the author of nature who has placed in it the seeds that are developed progressively.

Although there is no general agreement about these subjects, it is significant that, far from being surpassed, they provoke a great abundance of reflections today. A philosophy of science that used to be centered around physics emphasized the characteristics of inert matter. I like to highlight that the present scientific world view, instead, rather suggests that inert matter does not exist, and places in the center, as it happened in ancient times, the living beings: the progress of physics and chemistry has made possible an explosive progress of biology which, in turn, has given rise to a new interest on the teleological dimensions of nature. The world of biology is the world of purpose, and teleology is a key subject in order to relate the ambits of science and theology ³.

Teleology is only a particular connection between science, reason and faith, but a very important one. No wonder, therefore, that it is permanently subjected to attack. I think that, as realism is important in the ambit of knowledge, finality occupies a central place in the study of nature, and both items play a decisive role if we desire to connect the sciences with philosophy and theology.

3. Reflective capacity, science and truth 📌

John Paul II emphasizes that man has the capacity to know the truth, and not only particular truths, but ultimate truths that give a meaning to our life. In n. 24 of the encyclical he writes: “There is therefore a path which the human being may choose to take, a path which begins with reason’s capacity to rise beyond what is contingent and set out towards the infinite. In different ways and at different times, men and women have shown that they can articulate this intimate desire of theirs. Through literature, music, painting, sculpture, architecture and every other work of their creative intelligence they have declared the urgency of their quest. In a special way philosophy has made this search its own and, with its specific tools and scholarly methods, has articulated this universal human desire”. In n. 25, the Pope quotes the beginning of Aristotle’s *Metaphysics*: “All human beings desire to know”, adds that “truth is the proper object of this desire”, and continues with a consideration whose importance is difficult to exaggerate: “Within visible creation, man is the only creature who not only is capable of knowing but who knows that he knows, and is therefore interested in the real truth of what he perceives... This is what has driven so many inquiries, especially in

the scientific field, which in recent centuries have produced important results, leading to genuine progress for all humanity”.

Afterwards, the Pope mentions Galileo. I would say that the birth of modern empirical science was possible thanks to the enthusiastic search of truth. Galileo would have had no problems with the Holy Office had he limited himself to present heliocentrism merely as a hypothesis or a tool useful for mathematical calculations. But he thought that the theory was something more than a hypothesis. He rightly thought that there could not be opposition between scientific and biblical truth, and he even provided, based on the Catholic tradition, the means to show that such opposition did not exist. Unfortunately, diverse circumstances were united to make fail, at the moment, his project. The important thing here is to notice that the search for truth is most relevant for scientific progress, and that it supposes the existence of peculiar capacities in the human being that make it possible. In fact, it would have no sense without the capacities of self-reflection, argument, evidence, and interpretation. Besides, science would make no sense if we did not admit that searching for truth is a value that deserves to be looked for.

Therefore, the search for truth and the progress in our knowledge of truth have a deep anthropological meaning. Some see in the progress of science an advance of naturalistic positions that leave less and less space for metaphysics and theology. On the contrary, we can see that a rigorous reflection on that progress, that includes its conditions of possibility and their meaning, throws new light on the image of the human being as someone who has capacities that enable to participate in the plans of God in a conscious way. In n. 29 of the encyclical, the Pope writes: “It is unthinkable that a search so deeply rooted in human nature would be completely vain and useless. The capacity to search for truth and to pose questions itself implies the rudiments of a response. Human beings would not even begin to search for something of which they knew nothing or for something which they thought was wholly beyond them. Only the sense that they can arrive at an answer leads them to take the first step. This is what normally happens in scientific research. When scientists, following their intuition, set out in search of the logical and verifiable explanation of a phenomenon, they are confident from the first that they will find an answer, and they do not give up in the face of setbacks. They do not judge their original intuition useless simply because they have not reached their goal; rightly enough they will say that they have not yet found a satisfactory answer”.

The birth of modern empirical science in the 17th century owes much to Christian ideas. Christian faith in a personal creative God who freely creates a contingent world, and the human being to its image and similarity with the capacity to know and to dominate the world, provided the base for scientific research. In that perspective, the world, as a work of God, has an order, but this order is contingent and therefore we have to resort to experimentation if we want to know it; and the human being is able to know the natural order and to use it to obtain a controlled dominion of the world. The great pioneers of modern science were moved by those ideas.

4. Modalities of truth 🏠

In n. 30 of the encyclical the Pope talks about “the different modes of truth” and writes: “Most of them depend upon immediate evidence or are confirmed by experimentation.

This is the mode of truth proper to everyday life and to scientific research. At another level we find philosophical truth, attained by means of the speculative powers of the human intellect. Finally, there are religious truths which are to some degree grounded in philosophy, and which we find in the answers which the different religious traditions offer to the ultimate questions”.

This is a key point in the dialogue between science and faith. We should avoid the different kinds of “imperialism” that try to possess the monopoly of truth, forgetting that diverse accesses to objective truth exist, and that a sincere search for truth demands the mutual respect among them. In the 17th century, there was a danger of theological imperialism. Nowadays we sometimes find the opposite attitude of those who try to solve the deepest metaphysical problems resorting to quantum gravity or natural selection. A fruitful dialogue between science and faith demands that the respective perspectives be respected, and that in each case we adopt the perspective required by the type of problem under consideration.

5. Truth and belief 🏠

In n. 31 of the encyclical, the Pope emphasizes the social dimension of the human being, who receives a great part of knowledge through other people: “there are in the life of a human being many more truths which are simply believed than truths which are acquired by way of personal verification. Who, for instance, could assess critically the countless scientific findings upon which modern life is based? Who could personally examine the flow of information which comes day after day from all parts of the world and which is generally accepted as true? Who in the end could forge anew the paths of experience and thought which have yielded the treasures of human wisdom and religion? This means that the human being - the one who seeks the truth - is also the one who lives by belief”.

Very often science and religion are represented as being against each other: tradition and authority occupy a central place in religion, while science is characterized by its openness to criticism. It is easy to notice, nevertheless, that confidence and authority also occupy a central place in science. It is difficult to find an institution that grants more importance to mutual confidence and to authority than science. For instance, in the training in the sciences a limitless confidence in the authorities of each specialty is demanded from the student.

Of course, a fundamental difference exists, since in science all can be questioned, and nothing is considered as definitively established. In the revealed religion, the argument of authority occupies an irreplaceable place. But it is possible to argue that it is reasonable to admit the religious authority.

“3Authority *versus* criticism” seems to represent a crucial difference between the perspectives of religion and science. It would be desirable to recognize that, in religion and in science as well, the driving force must be the search of the truth, following ways that partly agree but partly are diverse. In addition, the mystery that we find in the religious truths has as a counterpart that, in the light of those truths, we obtain a vision much deeper and reasonable of the meaning of the human life.

6. The unity of knowledge †

One of our strongest aspirations of our time is the search of the unity of knowledge. In n. 34 of the encyclical we read: “The unity of truth is a fundamental premise of human reasoning, as the principle of non-contradiction makes clear. Revelation renders this unity certain, showing that the God of creation is also the God of salvation history. It is the one and the same God who establishes and guarantees the intelligibility and reasonableness of the natural order of things upon which scientists confidently depend, and who reveals himself as the Father of our Lord Jesus Christ”.

It is in this n. 34 where we find footnote 29, in which the Pope mentions Galileo. The Pope quotes a paragraph of his speech to the Pontifical Academy of Sciences on 10 November 1979: “(Galileo) declared explicitly that the two truths, of faith and of science, can never contradict each other. ‘Sacred Scripture and the natural world proceeding equally from the divine Word, the first as dictated by the Holy Spirit, the second as a very faithful executor of the commands of God’, as he wrote in his letter to Father Benedetto Castelli on 21 December 1613. The Second Vatican Council says the same thing, even adopting similar language in its teaching... Galileo sensed in his scientific research the presence of the Creator who, stirring in the depths of his spirit, stimulated him, anticipating and assisting his intuitions”.

Galileo’s letter to Castelli was sent to the Roman Inquisition jointly with a denunciation that started the unfortunate Galileo affair. John Paul II quotes this letter as a historical testimony of the deep unity between science and faith, as it was perceived by one of the greatest pioneers of modern science. The deepest root of the unity of knowledge is found in God, who is the author both of nature and revelation, and has provided us with the means to reach the truth through both ways.

Intellectual modesty plays an important role in the search of the unity of knowledge. In n. 40 of encyclical, John Paul II quotes Saint Augustine, who said that, before his conversion, “I gave my preference to the Catholic faith. I thought it more modest and not in the least misleading to be told by the Church to believe what could not be demonstrated - whether that was because a demonstration existed but could not be understood by all or whether the matter was not one open to rational proof - rather than from the Manichees to have a rash promise of knowledge with mockery of mere belief, and then afterwards to be ordered to believe many fabulous and absurd myths impossible to prove true”. The Christian faith is a guarantee in the search of the unity of knowledge. When the unity of knowledge is considered from an atheistic or materialistic perspective, it is easy to end up admitting, with a kind of irrational faith, theses that neither can be demonstrated nor verified nor are really understood. It is requested, for example, to admit that the universe has been able to arise from nothing without being the work of a Creator; or that the nature we know is the result of pure blind forces; or that the human characteristics are merely an epiphenomenon of the underlying biological reality.

In n. 44, Saint Thomas is presented by the Pope as a source of illumination for the search of the unity of knowledge: “Profoundly convinced that ‘whatever its source, truth is of the Holy Spirit’ (*omne verum a quocumque dicatur a Spiritu Sancto est*) Saint Thomas was impartial in his love of truth. He sought truth wherever it might be found

and gave consummate demonstration of its universality. In him, the Church's Magisterium has seen and recognized the passion for truth; and, precisely because it stays consistently within the horizon of universal, objective and transcendent truth, his thought scales 'heights unthinkable to human intelligence'. Rightly, then, he may be called an 'apostle of the truth'. Looking unreservedly to truth, the realism of Thomas could recognize the objectivity of truth and produce not merely a philosophy of 'what seems to be' but a philosophy of 'what is'". The role of grace is highlighted by the Pope when he writes in the same place: "Another of the great insights of Saint Thomas was his perception of the role of the Holy Spirit in the process by which knowledge matures into wisdom".

On the other hand, in n. 45 the Pope refers to the medieval synthesis between scientific knowledge and theology, and laments the later separation of both in modern times. We arrive here at one of the central issues in the encyclical. In n. 46 he writes: "The more influential of these radical positions are well known and high in profile, especially in the history of the West. It is not too much to claim that the development of a good part of modern philosophy has seen it move further and further away from Christian Revelation, to the point of setting itself quite explicitly in opposition. This process reached its apogee in the last century". And later on: "In the field of scientific research, a positivistic mentality took hold which not only abandoned the Christian vision of the world, but more especially rejected every appeal to a metaphysical or moral vision. It follows that certain scientists, lacking any ethical point of reference, are in danger of putting at the center of their concerns something other than the human person and the entirety of the person's life. Further still, some of these, sensing the opportunities of technological progress, seem to succumb not only to a market-based logic, but also to the temptation of a quasi-divine power over nature and even over the human being".

I would dare say that the main protagonist of that separation is philosophy, and that we should resort to philosophy if we want to reach the new unification of knowledge required in our time. In fact, only philosophy provides a common base to the sciences and to theology. Certainly, in order to obtain a Christian synthesis a realist philosophy that takes into account the light of theology is needed.

7. Science and wisdom 📌

To reach the unity of knowledge an organizing principle is needed, which may provide a hierarchy between the particular kinds of knowledge and fit them in a global perspective. This is what traditionally has been denominated "wisdom".

In n. 81, the Pope claims that philosophy should recover its meaning as wisdom: "To be consonant with the word of God, philosophy needs first of all to recover its *sapiential dimension* as a search for the ultimate and overarching meaning of life. This first requirement is in fact most helpful in stimulating philosophy to conform to its proper nature. In doing so, it will be not only the decisive critical factor which determines the foundations and limits of the different fields of scientific learning, but will also take its place as the ultimate framework of the unity of human knowledge and action, leading them to converge towards a final goal and meaning. This sapiential dimension is all the more necessary today, because the immense expansion of humanity's technical capability demands a renewed and sharpened sense of ultimate values. If this

technology is not ordered to something greater than a merely utilitarian end, then it could soon prove inhuman and even become potential destroyer of the human race”. And he strongly adds: “A philosophy denying the possibility of an ultimate and overarching meaning would be not only ill-adapted to its task, but false”.

8. Scientism 🏠

In n. 88 of the encyclical, the Pope offers a clear and penetrating description of scientism, alluding to some of the forms that it has adopted throughout history. It is interesting to reproduce fully those reflections: “Another threat to be reckoned with is *scientism*. This is the philosophical notion which refuses to admit the validity of forms of knowledge other than those of the positive sciences; and it relegates religious, theological, ethical and aesthetic knowledge to the realm of mere fantasy. In the past, the same idea emerged in positivism and neo-positivism, which considered metaphysical statements to be meaningless. Critical epistemology has discredited such a claim, but now we see it revived in the new guise of scientism, which dismisses values as mere products of the emotions and rejects the notion of being in order to clear the way for pure and simple facticity. Science would thus be poised to dominate all aspects of human life through technological progress. The undeniable triumphs of scientific research and contemporary technology have helped to propagate a scientistic outlook, which now seems boundless, given its inroads into different cultures and the radical changes it has brought. Regrettably, it must be noted, scientism consigns all that has to do with the question of the meaning of life to the realm of the irrational or imaginary. No less disappointing is the way in which it approaches the other great problems of philosophy which, if they are not ignored, are subjected to analyses based on superficial analogies, lacking all rational foundation. This leads to the impoverishment of human thought, which no longer addresses the ultimate problems which the human being, as the *animal rationale*, has pondered constantly from the beginning of time. And since it leaves no space for the critique offered by ethical judgement, the scientistic mentality has succeeded in leading many to think that if something is technically possible it is therefore morally admissible”.

We see that John Paul II affirms that scientism is a “philosophical current”. Nevertheless, scientism usually presents itself as a necessary consequence of the analysis of science or of its progress, as a reflection on science itself, therefore as though it were a part of science. There resides its force: it is a philosophical current that appears as guaranteed by the prestige of science. For this reason, it has a circular character. In fact, it denies the value of knowledge to anything which is not science, but its basic thesis does not belong to science: consequently, scientism is a doctrine that involves a contradiction.

Scientism today has generally a rather pessimistic air. Positivist scientism announced that science could eventually solve all problems. From 6 August 1945 onwards it was evident that science could also create new problems much more serious than the previously existing ones, like a nuclear destruction. In addition, philosophy of science has indicated the limits of science, that are not few nor small. If, in spite of all this, one admits scientism today, the limits of science will be usually recognized but, at the same time, it will be said that science is the best thing we have. For example, if one says that the creation of the universe is a problem that exceeds the possibilities of physics and

belongs to metaphysics, the usual answer will be: what possibilities has metaphysics to solve a problem that not even physics, with its powerful conceptual and experimental instruments, can solve? We have turned from the all-powerful scientism that apparently would solve all kind of problem into a pessimistic scientism that highlights the limits of science but adds that that is the best knowledge we have.

John Paul II affirms that, in spite of the criticism to which it has been submitted, scientism is present in our culture, often in form of a pragmatism that denies validity to meta-scientific instances and tries to use the scientific results without ethical barriers of any type. In n. 91 of the encyclical, the Pope affirms that: “it remains true that a certain positivist cast of mind continues to nurture the illusion that, thanks to scientific and technical progress, man and woman may live as a demiurge, single-handedly and completely taking charge of their destiny”.

9. The assumptions of science and the impact of its progress 🏠

Now I am going to briefly present a personal attempt to relate science to religion through a philosophical bridge, overcoming scientism. I have developed it in my book *The mind of the universe* ⁴. There I try to show that empirical science includes some assumptions that are like necessary conditions of their existence and its progress. There are three types of them: *ontological* (a natural order exists, which has its own consistency), *epistemological* (we have the capacity to know the natural order in a partial, but really true way), and *ethical* (the search of a knowledge that allows us to obtain a controlled dominion over nature is a value that deserves to be cultivated). Then I attempt to show that scientific progress exercises a feedback on those assumptions, in that it retro-justifies, enlarges, and refines them. And I add that the analysis of this feedback leads to interesting perspectives on God as the source of being and creativity, and also on the human being as endowed with a creativity that allows him to act as God’s collaborator.

The reflection on the epistemological assumptions of science leads to the recognition of the human singularity. A similar reflection can be made in the other two levels, the ontological and the ethical. In the ontological level it is possible to show that the present scientific worldview is very coherent with the action of a creative personal God that is immanent to the world and has equipped it with a wonderful capacity of self-organization. In the ethical level it is possible to argue that the scientific activity only makes sense if we admit that the search of truth and the service to humankind are values that deserve to be cultivated, and that those values are very coherent with the idea that represents the human being as created by God to its image and likeness in order to collaborate with Him in his creative project.

10. Three conclusive reflections 🏠

In order to conclude, I will gather three considerations that are found in the final part of the encyclical *Fides et ratio*.

In n. 105, the Pope speaks to those who have responsibility of formation in the Church: “I encourage them to pay special attention to the philosophical preparation of those who will proclaim the Gospel to the men and women of today and, even more, of those who will devote themselves to theological research and teaching. They must make every effort to carry out their work in the light of the directives laid down by the Second Vatican Council and subsequent legislation, which speak clearly of the urgent and binding obligation, incumbent on all, to contribute to a genuine and profound communication of the truths of the faith. The grave responsibility to provide for the appropriate training of those charged with teaching philosophy both in seminaries and ecclesiastical faculties must not be neglected. Teaching in this field necessarily entails a suitable scholarly preparation, a systematic presentation of the great heritage of the Christian tradition and due discernment in the light of the current needs of the Church and the world”. A Christian formative work today should pay attention to the knowledge of philosophical questions related to the sciences.

Along this line, in n. 106 the Pope writes: “I appeal also to *philosophers*, and to all *teachers of philosophy*, asking them to have the courage to recover, in the flow of an enduringly valid philosophical tradition, the range of authentic wisdom and truth - metaphysical truth included - which is proper to philosophical inquiry. They should be open to the impelling questions which arise from the word of God and they should be strong enough to shape their thought and discussion in response to that challenge. Let them always strive for truth, alert to the good which truth contains. Then they will be able to formulate the genuine ethics which humanity needs so urgently at this particular time. The Church follows the work of philosophers with interest and appreciation; and they should rest assured of her respect for the rightful autonomy of their discipline. I would want especially to encourage believers working in the philosophical field to illumine the range of human activity by the exercise of a reason which grows more penetrating and assured because of the support it receives from faith”. These words do not need commentary. Since I have placed myself in the optics of the sciences and the philosophy of science, I will limit myself to indicate that the recommendations of the Pope obviously apply to these fields, which occupy an important place in philosophy and in human life today.

In the same n. 106, the Pope also speaks to scientists, “whose research offers an ever greater knowledge of the universe as a whole and of the incredibly rich array of its component parts, animate and inanimate, with their complex atomic and molecular structures. So far has science come, especially in this century, that its achievements never cease to amaze us. In expressing my admiration and in offering encouragement to these brave pioneers of scientific research, to whom humanity owes so much of its current development, I would urge them to continue their efforts without ever abandoning the *sapiential* horizon within which scientific and technological achievements are wedded to the philosophical and ethical values which are the distinctive and indelible mark of the human person. Scientists are well aware that ‘the search for truth, even when it concerns a finite reality of the world or of man, is never-ending, but always points beyond to something higher than the immediate object of study, to the questions which give access to Mystery’ ⁵”.

Science is, first of all, a search for truth. Its progress is a triumph of the realistic program that, in some way, has an ethical character. It is possible to argue that science has ethical bases and leads to the diffusion of values that, by themselves, have an ethical

character. The rigorous reflection on science is the best antidote to oppose materialistic reductionism, and it provides interesting bridges to communicate the world of science with the world of religion.

Notes 📌

(1) See this proposal in: *Filosofía de la ciencia experimental. La objetividad y la verdad en las ciencias*, 3rd ed. (Pamplona: Eunsa, 1999).

(2) See: W. Pannenberg, “Theologie der Schöpfung und Naturwissenschaft”, in: N. H. Gregersen, M. W. S. Parsons and C. Wassermann, eds., *The Concept of Nature* (Geneva: Labor et Fides, 1997), part I, p. 84.

(3) See: M. Artigas, “Teleology as a Bridge between Nature and Transcendence”, *ibid.*, pp. 46-51.

(4) M. Artigas, *The Mind of the Universe* (Philadelphia and London: Templeton Foundation Press, 2000); *La mente del universo* (Pamplona: Eunsa, 1999).

(5) John Paul II, Address to the University of Krakow for the 600th Anniversary of the Jagellonian University (8 June 1997), 4: *L'Osservatore Romano*, 9-10 June 1997, 12.