



28 October 1986



Address on the Occasion of the Fiftieth Anniversary of the Pontifical Academy of Sciences

John Paul II refers to the history of the Academy and recalls that Pius XI wanted it to be the 'scientific Senate' of the Church. He adds that there is 'no contradiction between science and religion' although science needs to be in harmony with wisdom and ethics. The Pope then declares that a 'new type of dialogue has now begun between the Church and the world of science'. He surveys the past and refers to the Galileo case. In its pursuit of truth, science must serve culture and man; fragmentation should be avoided, and scientists, thinkers and theologians must combine in a common effort. Science should work for peace and ecological balance. The Pope concludes by praising the Academy, which 'bears witness to the harmony between the Church and men of science'.

Your Eminences,

Mr. Director-General of UNESCO,

Mr. Minister of Scientific Research of Italy,

Your Excellencies,

Ladies and Gentlemen,

It is with great joy that I celebrate with you the fiftieth anniversary of the act by which Pope Pius XI renewed the Pontifical Academy of the 'New Lincei' and made it the Pontifical Academy of Sciences with the *Motu Proprio In Multis Solaciis* of 28 October 1936.

1. The word 'Linceo' belongs to your history and to your very being, dear Academicians, because you draw your origin and your fundamental inspiration from the group of young scientists who were gathered by Prince Federico Cesi and gave birth in the year 1603 to the Academy of the 'Lincei'; Galileo Galilei became a member in the year 1611 and thereafter signed all his works with the title 'Linceo'.

The bonds between the Church and the Academy became particularly intense under Pius IX, who entrusted to it tasks of scientific research in the service of the Papal States, and the relationship became even deeper under his successors, especially under Pius XI, who conferred on it the title and the function of *Scientific Senate* of the Church, made up of seventy members whom the Sovereign Pontiff asked to 'promote ever more and ever better the progresses of the sciences', adding: 'We do not ask anything more of them, for this noble goal and this sublime task constitute the service that we expect from men closely bound to the truth'.

My venerated predecessors Pius XII, John XXIII and Paul VI encouraged the Pontifical Academy, fully convinced of the indispensable role of science in the service of created truth, and ultimately in the service of the First Truth, who is God, following the path from the finite to the infinite – a path that is printed on the human spirit. The Sovereign Pontiffs were actively supported in this by the succession of Presidents, from Father

Agostino Gemelli, Monsignor Georges Lemaître, and Father Daniel O'Connell to Professor Carlos Chagas, whom I thank warmly for the important work which he has carried out. Thanks to these Presidents, thanks also to the collaboration of all the members of the Chancellery, this Academy has acquired a celebrated prestige and a scientific role on a very high level, awakening elsewhere participation in important work of many representatives of the world scientific community.

2. In the course of the fifty years of your history, Ladies and Gentlemen, you have very properly given primacy to *pure science*, claiming for it its legitimate autonomy. When I addressed you in my first discourse in this very place, on 10 November 1979, I proclaimed the dignity and the high value of science, with regard to its theoretical side: 'Fundamental research must be free in its relationship to political and economic power, which must cooperate in its development, without placing obstacles in its path ... Like every other truth, scientific truth is obliged to give account of itself only to itself and to the supreme truth that is God, the creator of man and of everything'.

In addition to pure science, you have dedicated yourselves to the study of its consequences for *applied sciences*, which – as I said in that same discourse – 'has rendered and will render immense services to man, provided that it is inspired by love, guided by wisdom, and accompanied by the courage that defends it against the undue interference of all tyrannic powers'. Your Academy has been actively involved in the applied sciences as these relate to the needs of humanity as a whole, always in awareness of the requirements of the moral law.

3. The existence and the activity of this Academy, which was founded by the Holy See and is in constant liaison with it, illustrate above all the fact that there is *no contradiction between science and religion*. The Church esteems science, and even recognises a certain connaturality with those who dedicate their endeavours to science, as with all who seek to open up the human family to the noblest values of the true, the good and the beautiful, to the understanding of the things that have universal value.¹ The Pontifical Academy, for its part, shows clearly that *science*, likewise, needs to be in harmony with wisdom and with ethics, in order to satisfy the deepest requirements of man's spirit and heart, so that his dignity may be safeguarded.

A new type of dialogue has now begun between the Church and the world of science. In my address to men of science and students at Cologne, on 15 November 1980, I went so far as to say: 'The Church takes up the defense of reason and of science, recognising that science has the capacity to attain to the truth ... defending the freedom of science which gives it its dignity as a human and personal good ...'. If divergences can appear between the Church and science, 'the reason for this must be sought in the finitude of our reason, which is limited in its extent and thus exposed to error'.

4. We have the good fortune to experience today the close of a history in which the harmony between scientific culture and Christianity was not always easy.² At the beginning of this address, I recalled the institution which prefigured the Academy around the year 1600. But one must consider above all the manner in which the question of the relationship between theology and the natural sciences was posed on the threshold of the modern period.

Isaac Newton synthesised and brought to completion the discoveries of Kepler, Copernicus, Galileo and Descartes; he was the witness and the decisive agent of *the scientific revolution* of the seventeenth century. It was then that modern science broke through the traditional boundaries which had been determined hitherto by a geocentric view of the universe and by a conception of the elements of nature that was more qualitative than quantitative. These great *scholars* who were experts in an experimental study of the universe, with ever increasing precision and specialisation, did no less remain in an attitude that sought the global meaning of nature; their speculation as *thinkers* about the cosmos bears witness to this. Their bold researches helped to define better *the boundaries between the different orders of knowledge*. They were not always accepted on this point, and the Church herself took a long time to become reconciled to their points of view.

The experience of *Galileo* is a typical illustration of this. Although it was a painful experience indeed, it rendered an invaluable service to the world of science and to the Church, leading us to understand better the relationship between the revealed Truth and the truths that are discovered empirically. Galileo himself did not accept a genuine contradiction between science and faith: both come from the same Source and are to be brought into relationship with the first Truth.

Christians have been led to read the Bible afresh, without seeking in it a scientific cosmological system. And scientists themselves have been invited to remain open to the absoluteness of God and to an awareness of creation. In itself, no field is barred to scientific investigation, provided that this respects the human being; it is, rather, the methodologies employed that bring the scientists to make certain abstractions and delimitations.

5. One could mention other very vivid tensions that belong – let us hope – to a vanished past. *In the last century*, in the name of the new sciences and the new philosophies, positivism blamed the traditional positions of the Church, accusing her of being opposed to science and to research. Leo XIII took up the challenge and

showed that the Church joyfully welcomes whatever permits man to explore nature better and to improve the human condition. At the same time, he gave a vigorous impulse to the renewal of the ecclesiastical sciences.

In our days, *the distinction* and the complementarity of the orders of knowledge – the order of faith and the order of reason – were expressed with decisive clarity in the teaching of the *Second Vatican Council*: ‘The Church affirms the legitimate autonomy of culture, and particularly that of the sciences’.³ ‘It is by virtue of creation itself that all things are established in accordance with their own substance, truth and excellence, with their ordering and their specific laws’.⁴ One must recognise the particular methods of each of the sciences. ‘This is why methodical research, in all the fields of knowledge, will never be truly opposed to faith, if it is carried out in a truly scientific manner and follows the norms of morality: worldly realities and the realities of faith find their origin in the same God’.⁵ But it would be false to understand this autonomy of earthly realities to mean that they did not depend on God, and that man could dispose of them without reference to the Creator.

The principles are clear and ought from now onwards to remove every attitude of fear or of defiance, but this does not mean that every difficulty is resolved: new researches and discoveries of the sciences pose *new questions* which will all be new demands for theologians in the way that they present the truths of the faith while always safeguarding the sense and the meaning of these truths.⁶ But scientists themselves for their part go on to make a criticism of their methods and objectives.

Today, far from shutting herself up in an apologetic or defensive perspective, the Church rather makes herself the advocate of science, of reason, and of the freedom of research, to legitimise authentic science. Your Academy can bear witness to this. And I speak here, beyond your own persons, to the scientific community of the whole world.

6. It is indeed important to situate scientific endeavour *within the general context of culture*. Man can never neglect to ask himself the question of the profound meaning of culture and of science for the human person.⁷

Man lives a truly human life thanks to culture, that is, by cultivating the goods and the values of nature, affirming and developing the manifold capacities of his spirit and his body. A principal aspect of culture is the submission of the universe by means of knowledge.⁸ The widening and deepening of scientific knowledge constitute therefore an undeniable progress for man, because this brings him closer to a precise knowledge of the truth.

This free search for truth for its own sake is one of the noblest prerogatives of man. Science goes astray if it ceases to pursue its ultimate end, which is the service of culture and hence of man; it experiences crisis when it is reduced to a purely utilitarian model; it is corrupted when it becomes a technical instrument of domination or manipulation for economic or political goals. There is then what one can call a crisis of the legitimation of science, and it is therefore urgent to defend authentic science that is open to the question of the meaning of man and to the search for the whole truth, a *free science that is dependent only on the truth*. From the point of view of the Church, it would be impossible to separate science and culture.

In the same way, the Church considers man to be not only the object of culture, but its subject, and she encourages the work of science: she appreciates not only the scientists’ use of intelligence, but their professional and moral merit, their intellectual honesty, their objectivity, their search for what is true, their self-discipline, their cooperation in teams, their commitment to serve man, their respect in the presence of the mysteries of the universe. These are human values that display the spiritual vocation of man.

7. Besides this, the man of science is called in a new way to *openness*. With all respect for the methodological requirements of abstraction and specialised analysis, one may never neglect the unified orientation of knowledge. Modern conditions have brought to light *a risk of fragmentation* and the risk of limiting oneself to the immediate object of the research. Science cannot neglect the fundamental questions concerning its role and its goal; it cannot close itself to *the universal*, nor to the knowledge of things as a whole, nor to *the Absolute*, even if it is unable by itself to answer the question of meaning.

It seems to me today that the scientific community, after a necessary period of extreme specialisation on the level of experimentation, is in the process of recovering interest in things as a whole, *the question of the meaning of the universe*, the marvellous mystery of nature and of the human being. Many scientists venture into this field; they may perhaps do so timidly, because of a certain agnosticism or through fear of going beyond what their own research permits them to say. But the fact that a certain number are more sensitive to the values of the spirit and of morality brings a new dimension to their disciplines. Does not the scientist remain a man, open to all human questions, to everything that is to serve man, to the search for the Truth in all its depth?

It may perhaps be difficult to ask all the specialists today to become philosophers, but the needs of contemporary culture spur you on strongly to contribute your indispensable participation in the *interdisciplinary researches in which scientists, thinkers and theologians must collaborate*. Philosophical and theological studies of man and nature need your contribution, so that our common knowledge of the inanimate world, of the living universe, and of the human being may advance.

8. If we go on from the progress of pure knowledge to consider the manifold technological applications of the researches and discoveries of science, we may say that the world scientific community has considerable moral responsibilities, of which it is more vividly aware.

When I spoke to this Academy in 1983, I emphasised how the collaboration of the scientists of the entire world had permitted discoveries that were greatly beneficial to the progress of all humanity. This is obvious.

But how could one fail to speak clearly about the dangers too, which humanity incurs if it uses thoughtlessly the power that comes to it from science? And although this goes beyond the competence of the researcher, he cannot remain indifferent: more and more, people turn to the community of scientists for an answer to the questions of collective ethics. As I said on 3 November 1982 to the university teachers at Madrid: 'Men and women of science and culture, your *moral power* is considerable. Together, and thanks to your prestige, you can see to it that the scientific sector serves first of all man's culture, and is never employed for his destruction'.

One thinks spontaneously of the dangers of *nuclear energy*. When atomic power was unleashed, the researchers who did so had their own share in the origin of a moral crisis that is without parallel in history, as I emphasised at Hiroshima. At Unesco, I insisted on the fact that the future of man and of the world would remain radically threatened, despite the intentions of men of science, if one were to use their discoveries for destructive purposes. I appealed also in a solemn manner from that distinguished seat of culture to scientists to help humanity by uniting conscience and science, by making the primacy of ethics respected, and by being vigilant so that science should serve life and man.⁹

The maintenance of *peace* among peoples is absolutely fundamental, and we hope that the witness of many religious leaders, praying yesterday at Assisi for peace, will contribute in its own way to establish this peace, which is also a gift of God.

The harmonious relationship between man and nature is a fundamental element of civilisation, and it is easy to grasp all the contribution that science can bring in this field of *ecology*, in the form of defence against violent alterations of the environment and of growth in the quality of life through the humanisation of nature.

But how could one fail to think above all of the field of *genetics*, which is so immense nowadays? The temptation to manipulate man radically here, determining the conditions of his procreation, with the risk of damaging human life even in the state of the embryo or the foetus, and of damaging the integrity and equilibrium of the human being, poses such grave questions that some scientists themselves are asking themselves whether they should continue their experiments.

To sum up: scientists are asked to remain conscious of all the demands of ethics, which ensure the transcendent dignity of the human being. The decisive question is how can science *serve man*? How can it respect and ensure the objective fundamental rights of the person?

9. *The specific contribution of the Pontifical Academy of Sciences* is the objectivity of the data that are gathered scientifically by scientists who are outstanding, in the highly specialised fields that are theirs, for the rigour of their analysis of the facts, for the depth of their scientific insights, for their disinterested service of the truth, and for the importance which they give to moral values also. Politicians will be able to profit from these objective analyses and syntheses – for example, to measure the risks of using certain sources of energy or certain weapons, or the ecological consequences of certain undertakings. Sociologists and economists can likewise profit here; as can practitioners of medicine and surgery, in order to evaluate the meaning and the effects of their experimentations and operations; moralists, who need to know the laws of nature with precision; philosophers, who research into the meaning of existence and transcendent truth; theologians, who are especially interested in the relationship between faith and science. Your scientific contribution is therefore of first importance for all these fields, even if it is directly neither political nor theological; it constitutes an indispensable basis for the work of those who bear responsibility, and for the specialists whom I have just mentioned. For its part, the Holy See has received the much appreciated service of the scientific competence of this Academy on various occasions, for questions that touched directly natural and evangelical morality, and it continues to count on you.

As a Body established at the Holy See, the Pontifical Academy of Sciences bears witness to the harmony between the Church and men of science, to their reciprocal support; and it is an appeal to the values of the conscience in the world of science.

10. One must *wish* that your work should be better known in the Church and in the world. It seems opportune that your intellectual research, your studies and your publications should continue to give even greater help to *the work at the Holy See* and of the Church *in universities and in the field of culture*, for example in liaison with the Congregation for Catholic Education, the Pontifical Council for Culture, the International Theological Commission, with the other Academies and with the universities. Is there not a need to explore some common projects, in which the link between science and culture would be manifested? The Academy, which unites

various disciplines, has also an *interdisciplinary vocation* to realise this 'cultural ecumenism' of which I have already spoken.

At the beginning of my pontificate, I had thought of an Academy of human sciences and culture. After consultations, I opted for a Pontifical Council for Culture. This indicates to you my concern to promote and defend man's culture, which is the basis of his dignity. I am convinced that the Pontifical Academy of Sciences shares efficaciously in this objective, and I encourage you warmly to emphasise more and more the cultural aspect of your labours; the intrinsic value of these is in itself a precious contribution to the progress of knowledge.

11. Your Eminences, Your Excellencies, Ladies and Gentlemen: in this half-century the Pontifical Academy of Sciences has carried out a task of historic importance, for it has situated the objective fruits of scientific research in the perspective of truth, of freedom, of morality, of the service of humanity and of peace, of the ascent to the first Truth, which alone can answer the fundamental questions about the reason for existence and about the meaning of human life and of the world. I thank the President and each one of its members who have given their collaboration with great competence and with a meritorious dedication.

For my part, I have invariably had a great interest in the continuation and development of this Academy, in the line of the remarkable intuition of my venerated predecessor Pius XI who founded it, but with an increased insistence on looking at the human, moral and spiritual problems of our time. In this Jubilee Year, I express my heartfelt wishes for its future: for the value of its work; for the enrichment which its members, so diverse in their origin and in their personal convictions, can bring to each other, and can bring together to humanity; for the unequalled service which the Academy can render to those who bear a heavy responsibility in the world community or in the Church, and especially at the Holy See, offering valuable data for their reflections and decisions, and shedding light on the object of their moral responsibility. And above all, may this senate of scientists – who have been called to membership in the Pontifical Academy and who have loyally accepted this honour and this responsibility – bring more and more to the world the testimony to the esteem in which the Church holds science that is worthy of the name, and to the trust which she has in those who dedicate themselves competently and honestly to science, and to the invitation which she offers them of dialogue and of cooperation that goes across all boundaries, and to the responsibility which she recognises they have for the good of humanity!

I am touched to see that many Academies of Sciences in the whole world have accepted the invitation addressed to them to come and associate themselves with this jubilee celebration. I greet their delegations and thank them warmly. I express my best wishes to these Academies also, that they may encourage their members to promote the progress of scientific knowledge in all liberty, in openness to the fundamental truth about man and about the cosmos, in order that their mutual relationships may be fruitful and that together they may, as it were, form a significant body within the world community, which uses the prestige of its moral authority to see that science always remains, in all its applications, at the service of man, at the service of his life, of his culture, and of his moral and spiritual elevation.

I am very happy to be able to pay homage to all the men of science present here, before the Cardinals and the Diplomatic Corps, and I invoke on you, as also on your families and those who collaborate with you, the Blessings of the Lord 'in whom we live and move and have our being'.¹⁰

1 Cf. *Gaudium et Spes*, n. 57, § 3.

2 Cf. *Gaudium et Spes*, n. 62.

3 *Gaudium et Spes*, n. 59, § 3.

4 *Ibid.*, n. 36, § 2.

5 *Ibid.*

6 Cf. *Ibid.*, n. 62, § 2.

7 Cf. *Ibid.*, n. 61, § 4.

8 Cf. *Ibid.*, n. 53.

9 Cf. John Paul II, *Discourse to Unesco* (2 June 1980), pp. 20-22.

10 *Ac* 17:28.