



## Address to the Plenary Session on the Subject 'Science in the Service of Peace', and to the Study Week on 'Chemical Events in the Atmosphere and their Impact on the Environment' and to a Working Group on 'Specificity in Biological Interactions'



*The Supreme Pontiff observes that the Church supports the scientific quest for truth and hopes that scientists will be 'assisted by the sense of the divine'. He takes Newton as an example, a scientist who 'saw in the Universe the presence of God'. Knowledge should be used for the benefit of mankind and the Pope asks from Men of Science 'the love of knowledge that builds peace'. Peace is born of justice and scientists should thus strive to promote justice in the world through a diffusion of the benefits of science. In this context 'every form of scientific and technological colonialism must cease'. Science must not serve 'war, tyranny and terror' but be based upon 'truth, freedom, justice and love' in order to benefit humanity and especially humanity in need.*

1. In this prestigious Assembly of Scientists, honoured by our presence, Cardinals and brother Bishops, and by the Diplomatic Corps accredited to the Holy See, as well as numerous representatives and leaders of the world of culture, I wish to extend heartfelt greetings and an expression of my highest consideration to the distinguished members of the Pontifical Academy of Sciences as they prepare to address in their Plenary Session the subject: 'Science in the Service of Peace'.

With the same cordial sentiments I greet the distinguished scientists who have come from every part of the world for a week of study on the subject: 'Chemical Events in the Atmosphere and their Impact on the Environment', and, in a working session, another equally important subject:

‘Specificity in Biological Interactions’.

In a few days’ time another working group will meet to deal with ‘Modern Biology applied to Agriculture’.

I congratulate you, Mr. President, Professor Carlos Chagas, for the wisdom and dedication with which you have contributed new and important developments to the life of the Academy. I congratulate you for the planning and promotion of this present series of meetings of personages who devote their energies to the search for truth at the service of humanity.

2. All knowledge takes its nobility and dignity from the truth that it expresses. Only in the unbiased pursuit of truth do culture and especially science preserve their freedom and are able to defend it from any attempt at manipulation by ideologies or powers.

‘The truth will set you free’: these words from the Gospel enjoy perennial validity and illumine with divine light the endeavours of the scientist who refuses to subordinate his commitment and his research to anything but the truth.

Truth is the goal of the whole universe: *finis totius Universi est veritas*, as one of the greatest thinkers of all time, Thomas Aquinas, wrote.<sup>1</sup> The truth of all beings, their forms and their laws are hidden in the bosom of the Universe, which yearns for its truth to be discovered by the human intellect. You, Men of Science, who welcome the world into your minds, work upon it in your laboratories, and investigate its most secret byways in your dedicated efforts, what are you seeking if not the truth?

Have courage and the boldness of reason that untiringly seeks the truth and you will find in the Church and in this Apostolic See your most convinced allies. Of course, the conquests of science are at times provisional, subject to review and rethinking, and they will never succeed in expressing the whole truth hidden in the Universe. The sense of mystery is part of your intellectual heritage and reminds you that what you do not know is much vaster than what you do know. In the search for truth, the boldness of reasons is linked with the humility of its own limits, the joy of knowing goes hand-in-hand with wonder at the unknown.

Furthermore, the sense of mystery also envelops those truths which science cannot discover, but which question the mind of the scientist in the innermost part of his being, where he experiences an irresistible longing and yearning for the divine. The goal of the Universe is not only to reveal the truths it holds within itself, but to manifest the First Truth which gave the worlds its origin and form.

3. Whatever the paths of your scientific research, may you always be assisted by the sense of the divine. How can one fail to mention here Isaac Newton? He in no way thought, as Auguste Comte was to claim later, that science must rise on the ruins of religion and metaphysics; but he saw in the Universe the presence of God, a presence not immanent but transcending nature.

In the *Scholium Generale* added to the second edition of his *Philosophiae Naturalis Principia Mathematica*, Newton wrote: ‘This most elegant order of the sun, planets and comets could not have been born without the design and power of an intelligent and powerful being. He rules all things, not as the soul of the world, but as Lord of the Universe ... From blind metaphysical necessity that is absolutely identical always and everywhere, no variety in things can be born. The

whole truth of things, including places and times, could only have arisen from the ideas and the will of a necessarily existing being'.<sup>2</sup>

The message addressed by the Second Vatican Council to the 'men and women of thought and science' agrees with Newton in his conviction that scientific thought and religious thought are inseparable: 'Never perhaps, thank God, has there been so clear a possibility as today of a deep understanding between real science and real faith, both in the service of the one truth. Do not lose the occasion of this important encounter: have confidence in faith, this great friend of intelligence'. Gentlemen, the scientific truth which ennobles your intellect and lifts your research to the level of contemplation of the world and of its Creator, must be transmitted to the whole of humanity for the integral development of each human being and of all nations, for the service of peace, which is the object of your reflections and projects.

4. There are different ways for men and women of culture to live the precious value of knowledge. Bernard of Clairvaux, one of the strongest personalities in history, who came down from the loftiest peaks of mysticism to share divine and human truth with the ecclesial and civil society of his time, as a true master of love and knowledge, described the different types of men and women of culture always found in history. According to Saint Bernard there are five motives that lead human beings to study: 'There are people who only wish to know for the sake of knowing: this is base curiosity. Others wish to know in order that they themselves may be known: this is shameful vanity, and such people cannot escape the mockery of the satirical poet who said about their likes: "For you, knowing is nothing unless someone else knows that you know". Then there are those who acquire knowledge in order to re-sell it, and for example to make money or gain honours from it: their motive is distasteful. But some wish to know in order to edify: this is charity. Others in order to be edified: this is wisdom. Only those who belong to these last two categories do not misuse knowledge, since they only seek to understand in order to do good'.<sup>3</sup>

The words of Saint Bernard the mystic indicate a profound grasp of what motivates those who engage in culture, and they are more than ever relevant in order to remind both the teachers of thought as well as their disciples of the true purpose of knowledge. In my address of 15 November 1980 in Cologne to the scholars and students of the German Universities I pointed out that "all areas of our culture are impregnated by a science that proceeds in a mostly functional way". And I warned that "a purely functional science, deprived of values and alienated from truth, can be completely enslaved by one or other ideology".

I gladly recall here what an illustrious and now deceased member of the Pontifical Academy of Sciences had to say some forty years ago in a conference to young university students at Lausanne: 'One has come to replace the search for truth by the search for what is useful. The young people who previously turned to the masters of thought in order to enlighten their minds, began to ask them for the secrets of nature from which would spring material goods in such abundance. Of the various fields of knowledge, one little by little came to value not those that seek the highest reaches of thought but those that seem more fertile in practical applications'.<sup>4</sup>

Saint Bernard of Clairvaux raised knowledge to the level of love, to the level of charity and understanding: *Sunt qui scire volunt ut aedificent et caritas est.*

5. Members of the Academy, Men of Science, at this very grave moment of history, I ask from you the love of knowledge that builds peace.

Peace is a gift of God offered to people of good will. I speak now to all men and women of good will, whatever faith they belong to, and especially to you who are listening to me now.

The science which brings together those engaged in research, technicians and workers, which mobilises political and economic powers, which transforms society at all levels and in all its institutions, has a task today which is proving more urgent and indispensable than ever, namely the task of cooperating in preserving and building up peace.

From the depths of centuries past there rises the voice of an unarmed prophet, Isaiah: 'They shall beat their swords into ploughshares and their spears into pruning hooks'.<sup>5</sup>

In recent times, at a moment when war was imminent, there rose with biblical force the prophetic voice of an unarmed Pope, Pius XI, who quoted the Psalm: *Dissipa gentes quae bella volunt*.<sup>6</sup>

Unarmed prophets have been the object of derision in every age, especially on the part of shrewd politicians, the supporters of power. But today must not our civilisation recognise that humanity has need of them? Should not they alone be heard by the whole of the world's scientific community, so that the laboratories and factories of death may give place to laboratories of life?

The scientist can exercise his freedom to choose the field of his own research. When, in a particular historical situation, it is all but inevitable that a certain form of scientific research will be used for purposes of aggression, he must make a choice that will enable him to work for the good of people, for the building up of peace. By refusing certain fields of research, inevitably destined, in the concrete historical circumstances, for deadly purposes, the scientists of the whole world ought to be united in a common readiness to disarm science and to form a providential force for peace.

Faced with this great patient in danger of death which is humanity as a whole, scientists, in collaboration with all the other members of the world of culture and with the social institutions, must carry out a work of salvation analogous to that of the doctor who has sworn to use all his powers to heal the sick.

6. Peace is born not only from the elimination of theatres of war. Even if all these latter were eliminated others would inevitably appear, if injustice and oppression continue to govern the world.

Peace is born of justice: *Opus iustitiae pax*.<sup>7</sup> Now science, which seeks the truth and is free from all ideologies, can and must promote justice in the world; while not remaining a slave of the economically privileged peoples, it can and must spread everywhere, in order to ensure, through appropriate technical means, that all peoples and all individuals are given their due. The modern world awaits the liberation of science that is a result of the liberation of the mind. Gentlemen, be united in the defence of your liberties in order to build up peace in justice throughout the world.

This is a relentless work that will never cease, for because of sin, both individual and social, sources of injustice continually arise in the world. With an acute sense of history, the Second Vatican Council warned us of this: 'The common good of people is in its basic sense determined by the eternal law. Still the concrete demands of this common good are constantly changing as time goes on. Hence peace is never attained once and for all, but must be built up ceaselessly'.<sup>8</sup>

*Pax perpetuo aedificanda*: peace has to be ceaselessly built up. Peace is a continuous effort



which, in so far as it is up to you, is entrusted to your research, to the technical applications that you must direct, through your authority, to the promotion of justice, with that freedom, that freedom of thought which enables you to make other choices when efforts are made to do you violence, in order to exploit your research and discoveries against justice and peace.

7. More than any other, the scientific community is a community of peace, for your rigorous search for the truth in the field of nature is independent of ideologies and therefore of the conflicts that result from them. Your activity demands sincere collaboration, and the frank communication of the results of your research.

The scientific community, a community of peace, must be extended to all nations, through the foundation everywhere of institutes for research and sound technological application. It is not enough that political colonialism has ceased; every form of scientific and technological colonialism must cease as well. I cannot fail to note with satisfaction that the Pontifical Academy of Sciences includes an ever greater number of scientists from all the nations of the world, with no racial or religious discrimination. This is a form of cultural ecumenism which the Church, as the promoter of true religious ecumenism, cannot but regard with a sense of lively satisfaction.

8. From the scientific community, especially when it extends to all the regions of the world, there have come discoveries which have helped the development of humanity in every field: diseases and epidemics have been conquered, new food resources have been found, communications between people have been intensified, the peoples of all the continents have come closer together, natural disasters have been foreseen and overcome. Who can list the benefits brought by science? And cannot one say that these benefits would have been much more important if the techniques resulting from science had not been manipulated by evil powers? Who can deny that science and its applications can be placed at the service of man and of a greater justice?

It is an irreplaceable task of the scientific community to ensure, as is your intention, Mr. President of the Pontifical Academy of Sciences, that the discoveries of science are not placed at the service of war, tyranny and terror.

The intention to direct science to the promotion of justice and peace demands a great love for humanity. Every human virtue is a form of love. This is the case, in particular, of justice, which is love of neighbour, of individuals, and of peoples. Only the person who loves wants justice for the other person. The person who does not love seeks only to obtain justice for himself.

9. Truth, freedom, justice and love: such, Gentlemen, must be the cornerstones of the generous choice of a science that builds up peace. These four values, the cornerstones of science and of the life of civilised society, must be at the basis of that universal call of scientists, of the world of culture, of the citizens of the world, which the Pontifical Academy of Sciences, with my full and convinced approval, desires to address to the world for the reconciliation of peoples, for the success of the only war that must be fought: the war against hunger, disease and the death of millions of human beings whose quality and dignity of life could be helped and promoted with seven per cent of the amount spent each year for the incessant and threatening rearmament of

the richest nations.

Permit me at this point to recall with you, in the name of science and in the name of your personal moral authority, the need for a universal conversion to the true goods of man. Peace cannot be invoked, as it is too often, in order to guarantee ethical permissiveness and consumerism. The universal call for peace must be marked by profound reflection on the destiny of man, on the meaning and quality of life. When conversion to truth, freedom, justice and love does not become a necessity widely recognised and put into practice everywhere, social peace is unstable, because it lacks its deepest root, which is found in the heart of man.

**10.** It is from God that peace comes for those who are in communion with Him and also for those who, even though they have not found Him, are seeking Him with a sincere heart, in a spirit which, far from stifling the sense of the divine, seeks to liberate it within itself. Mr. President, Members of the Academy, and distinguished scientists, I renew the expression of my confidence in you, and as I bring this speech to a close I would like to make my own the words which my predecessor Paul VI addressed in 1966 to the Pontifical Academy of Sciences: 'More than anyone else the Church rejoices in every true conquest of the human spirit in whatever field it may be. She recognises and values highly the importance of scientific discoveries ... she sees in them not only a magnificent use of the intelligence, but she discovers in them also the exercise of high moral virtues, which confer on the scientist the character and the merit of an ascetic, sometimes of a hero, to whom humanity must repay a generous tribute of praise and gratitude'.<sup>9</sup>

Gentlemen, as men of thought and science, as pilgrims of the truth, as explorers in the different branches of science and knowledge, about man and the universe, who submit yourselves to the labour of observing, thinking, searching, so that man may be ever more man and may find in nature the proper environment for his development: I ask you to work for justice, love and peace, and to believe that today more than ever the Catholic Church is your ally, this Church which loves true science and right thinking, this Church which prays for you and which in my person, respecting your beliefs, invokes upon each one of you the blessing of God.

1 *Contra Gentiles*, Bk. I, Ch. 1.

2 Cf. L. Geymonat, *Storia del pensiero filosofico e scientifico* (Milan, Garzanti, 1970), vol. II, p. 646.

3 St. Bernardus, *Sermo XXXVI in Cantica*, PL, CLXXXIII, 968.

4 G. Colonnetti, *Pensieri e fatti dall'esilio. Conferenza del 12 giugno 1944* (Accademia Nazionale dei Lincei, Rome, 1973), p. 31.

5 *Is* 2:4.

6 *Ps* 67:31.

7 *Is* 32:17.

8 *Gaudium et Spes*, n. 78.

9 Address to the Pontifical Academy of Sciences on 23 April 1966: *Scripta Varia*, 31, p. XLV.

