Science and Religion: New Concerns[1]

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Preliminaries

I shall start on a personal note, admitting not to be a professional philosopher but declaring myself as a mere practising scientist and a Christian, exposed though for 40 years to some basic questions of the relationship of my own life (in its philosophical and theological aspects) and my activities as a scientist. This story of my periodically more or less intense and concrete preoccupation would have probably remained strictly private and unrecorded, had it not been for an unusual event which confirmed that these same interests are shared by a large section of the scientific community, even showing a nontrivial degree of coherence in their views.

Last year, on 9 September 2000, I had an unexpected opportunity to address Pope John Paul II in front of an impressive audience in the Aula Paolo VI in the Vatican. The occasion was the final event of the *Jubilee of the Universities* – the meeting of the Pope with the academic community, including participants of the *World Meeting of the University Professors* and of similar meetings of university rectors and presidents, university managers, students, and so on. The motto of this huge gathering, "The University for a New Humanism", was related to the general message of this and other numerous events organized in the framework of the Great Jubilee of the Year 2000 – jubilee with a deep meaning not only for the Christian world but also for the whole Western civilization.

Together with three other scientists (from US, France and Poland) I had to summarise the results and conclusions of the 46 international symposia held during this Jubilee in all fields of intellectual activities, including science and technology. This assignment was strictly personal, based on my academic career, and unrelated to my diplomatic position.

The task seemed almost impossible – to prepare a brief summary (6-8 minutes) of 15 already condensed summaries provided by the conference organizers, covering a vast area of topics, discussions and final or preliminary conclusions. The solution I therefore chose was to look for personal "resonances": to scan the provided material in the light of my –already mentioned- personal experience, and identify the "hot spots", recognizing the topics and concerns which occupied myself and some of my colleagues in the scientific community during my 40 years in physics. The final result – the response of my fellow scientists and other participants – proved that this approach was justified.

In Defence of *Ratio*

It has to be stressed that, to a large extent, scientists can and mostly do function without reference to these more fundamental questions, and this was a pragmatic attitude which reigned for most of the last century, mostly ignoring – for practical reasons or otherwise

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–perfectly valid activities such as philosophy and sociology of science, science of science, etc. We simply cannot wait for the final results or conclusions of these efforts, which often seem to acquire a purpose of their own, to become their own goal ! Or we cannot follow the specialized jargon of their discipline, or maybe we cannot recognize our own preoccupations and relate to the objects of their research.

However – problems do arise, as will be also argued here, inside and around science, and these problems often refuse to be resolved easily in the framework of one or another existing rational approach. And then strange things may occur. I shall refer briefly to one such extreme – an attempt by a group of sociologists of science, called, *inter alia*, "social constructivism", or ""ontological relativism", or simply "constructivism". Their claims e.g. that everything, including truth, reality, facts, knowledge, are just negotiable social constructs, threaten to destroy the basic tenets of science and scientific work – existence of truth and rationality, rational comprehension of the world and of oneself, and impose ultimate relativism (even in "hard" sciences!).

It is perfectly valid to study social conditioning of scientific research and its results, the influence of various factors – from personal attitudes, group dynamics, to the funding system and even the civilization itself. However, it is always dangerous to extrapolate and generalize without adequate caution. Apart from many controversial claims of this provocative theory , and from disastrous results for science itself, what is really frightening are the possible social and political consequences of this suppression of rationality and of the existence of truth. It would immediately lead to the destruction of morality, all norms of civilized, ethical behaviour, of social and political order, ... What is left would be only *power,* physical, military, financial, ...unrestricted by any other considerations, bare and brutal, absolute power!

Understandably, the reaction of the scientific community ("practitioners" and others !) was swift and overwhelmingly negative, but this will not be elaborated here. I quoted this latest attack on *ratio* as an extreme but not isolated event in the eternal struggle between the apollonian and the dyonisian, which I find relevant for the position of science today. In fact, I was (another coincidence !) surprised to find a most systematic defence of reason, of the importance and complementarity of both *ratio* and *fides* in the encyclical letter by Pope John Paul II called (evidently) Fides et Ratio. Though he mostly discusses the link between philosophy and theology, arguing for the complementarity of these two approaches to reality and human existence, I was impressed by the relevance of his analysis and the arguments to my personal experience, both in research and in life.

"Jubilee of the Universities"

Therefore, understanding of what happens when we reach the limits of this approach, where science meets other human attempts to understand reality - like faith, was the idea of this ambitious analytic and then synthetic effort in the framework of the "Jubilee of the Universities".

The analytic part of this Jubilee consisted of 46 international conferences, held at various universities on topics divided (through with certain overlap) into 4 cycles :

- *The Human Person : Genealogy, Biology ,Biography*

- *The City of Man : Society, Environment, Economy*
- *The Vision of Sciences : Discoveries, Technology, Applications*
- *Creativity and Memory : Visual Arts, Literature, Drama*

I was supposed to review the results and conclusions of 15 conferences on science and technology. Their titles[2] reveal a broad range of topics, quite typical for the scientific gatherings. My synthesis of these conferences obviously had to emphasise the results and significance of scientific research and of technological advances for the new humanism on the eve of the third millennium.

In this wide range of topics one could observe that three groups of issues dominated:

- the character and scope of science: its humanistic nature, its origins and its limitations, the fragmentation vs. unity of science, with the emphasised role of the university, ethical considerations in research, the individual position of a scientist as a human being, specifically the relation between science and faith;
- the social relevance and impact of research: the growing influence of science-based technology, usually controlled by global or particular financial interests, and the need for its re-humanisation;
- and finally, the most numerous group dealing with the urgent problems of life, from research in pure biology, biotechnology and medicine to its unavoidable implications for the individual and society.

The Character and Scope of Science

Several events in the other three groups also treated related themes and ideas. This is not due to any specific division of topics but yet another proof of the necessary unity of human knowledge, of science within itself, but also of complementarity of science and other disciplines which strive to rationally comprehend the world and our existence.

This brings us to the theme and common concern of several conferences, which intended to review recent scientific results and prospects for new discoveries, e.g. in physics, space research, biology, geosciences, or information sciences (including artificial intelligence). The evolution of science and its great advances were accompanied by increasing diversification and extreme specialisation, often necessary and useful, but ultimately leading also to some negative tendencies, in particular to its fragmentation. Separation of teaching from research, education from professional training, natural sciences from humanities and engineering, also contributed to the dehumanisation of sciences. Scientists and students were gradually getting absorbed by the details of their scientific research, losing broader perspective, including ethical and moral aspects of their work. University as a unique institution with a mission of creating, preserving and disseminating knowledge, as well as acting as a beacon of

[2] *"University as a Bridge from Technology to Society", "Workshop on Life", "Science and Cognition :Towards which Rationality", "Physics for the 21st Century", "Contribution of Earth Sciences to the Elimination of Natural Risks", "Man and his Environment in the Third Millennium : Earth and its Cities", "Man and his Environment in the Third Millennium: The Space", "Information Science and Technology for the Next Century", "Taking Care of Man in the Technological Society", "Bionics for the Advance of Man in the Third Millennium", "Ethical Problems in Clinical Experimentation", "Human Person in the Third Age. Quality of Life in Health and in Illness", "Women Serenpidity. Working for the Natural Well-Being of Women Worldwide", "Mankind and Cancer. Surgical Oncology at the Start of the Third Millennium", "Blood and Bone Marrow Donation".*

academic and civilizational values, was thus gradually changing its character. Also, the perennial ideal – the unity of knowledge, including specifically coherence and complementarity between "hard" and "soft" sciences and philosophy and even theology seems to be more distant than ever.

Therefore, apart from the review of specific scientific issues, numerous discussions and roundtables focussed intensely on the scientists' vision of the world – showing the need to find an appropriate broader, philosophical, framework for "purely technical" scientific results. The desire for the humanisation of the world, including the role of science and technology was often expressed as the ultimate goal of these discussions by many scientists of all faiths, and even non-believers.

Social Relevance and Impact of Research

The chain of research leading from pure sciences, often said to be "value-free", i.e. independent of any external value system, to its applications and subsequently to science-based technologies, has a human being on both ends, as the subject and creator, and as the object and beneficiary. The first question – is science so completely independent, value-free, is this great achievement of human spirit just a precise and skilful mechanical application of certain rules and procedures, or does it require a broader – conceptual – framework, was emphasised and discussed in several, otherwise "technical", symposia. How "exact" is scientific research? How rational is rational? And also the crucial question, is faith compatible with science, or is their relationship neutral, non-conflictual but mutually irrelevant, or is faith essential and necessary – for the scientist, in the first place?

Even if we accepted that "pure" science is independent of any value system, its applications and technologies based on results of scientific research certainly cannot be, as shown by the examples of the nuclear bomb and other means of destruction, chemical pollution and environmental degradation, etc. Technology is expanding at an unprecedented rate and influencing every aspect of life of an individual and the society. As analysed and stressed in several symposia, unrestricted implementation of possible technologies could lead (as has often led in the history of mankind) to detrimental effects and dehumanisation. There is obviously a need to select and implement, among all <u>possible</u> technologies, those that are <u>acceptable</u> and <u>desirable</u>. However, this is the step which is outside pure sciences and technology, requiring a broader framework, a value system based on more fundamental, ethical, considerations. The university, committed from its beginning to look at a human life and knowledge in a unified way, should certainly contribute to bridging this gap between technology and society. Can it respond to this challenge ?

Urgent Problems of Life

Recent developments, especially in biosciences , have shown that even pure scientific research becomes impossible without strong ethical guidelines, requiring not just a simple agreement to report and interpret scientific results correctly and honestly ("Do not cheat!", "Do not make stupid mistakes!", etc.), but much more! When the objects of scientific research became e.g. human embryos, or genetically modified life forms, the fiction of pure "value-free" science started disappearing. Very soon every scientist involved in this research becomes aware of the need to recognize both the "intrinsic" (his own, internal) and "extrinsic" (external, socially defined and accepted) values. Several scientific conferences in the fields of biology, organically connected with the

topics in biotechnology and medicine, included intense discussions of moral and social implications of this research. It is obvious that bioethics is becoming one of the fastest growing and widely relevant disciplines.

Bioethics is a paradigm for all similar attempts which strive to provide this broader ethical and philosophical framework for scientific and technological achievements. But one immediately recognizes the problem - its *prescriptive* character: bioethics has to deal with values, with categories such as good or bad or forbidden or allowed or recommended...On the other hand, if we treat it (as many tend to do) as yet another scientific discipline, these value-statements become forbidden or even impossible – science is value-free, science is *descriptive*. So we are faced with the difficulty of establishing the foundations of bioethics, and all similar disciplines, which simply cannot be resolved inside science ! As is amply confirmed by elaborate attempts of so many brilliant minds to invoke various auxiliary principles *ex machina,* in order to save their theories. Would it not be easier to remember the words "Love thy neighbour!", which would resolve this problem ? Or maybe it would not sound scientific enough ?

Most conferences were, thus, concerned with the great questions of life, its origin and values, related religious and legal issues in the dialogue between science and technology, including care for the old and suffering, protection of a child from the moment of conception, problems of distinction between health and disease, transplantation of organs, the responsibility of medical doctors toward a patient, especially in psychiatric cases, ethics of clinical experimentation, with particular concern for poor countries and social groups, ethical questions in the treatment of cancer, and so on.. Enormous interest in these issues, with the participation of many concerned theologians, politicians, journalists and lawyers, proves their urgency.

Aging is an especially relevant and growing problem because of demographic decline in many developed countries, but also in less developed countries like China, with its huge population. The disappearance of the culture of aging may lead to global disasters if a decent role is not rediscovered and recognised for the old people! Euthanasia certainly cannot be accepted as a solution, so again, the problem of values arises – namely, love, caring, family, experience, social and spiritual continuity and tradition, all these are contributions that only old people can provide, and the lack of which our globally "efficient" society so sadly feels.

Conclusions

Much discussion was devoted to the problem of the dialogue between science and theology, the University and the Church – the dialogue that started so fruitfully nine centuries ago in the cultural and philosophical climate of Medieval Christianity and contributed so much to the spiritual and material development of our civilization. It was emphasised that in the necessary process of redefining the project of the university and its adaptation to the needs of the new millennium, Christianity can and should again provide the value system compatible with its project of man. Remembering the origins and rise of the university – the institution uniquely linked to our civilization, one may ask if there exists another value system that would be able to play an equivalent role.

While consensus is growing that the old 19th century pseudo-conflict between religion and science is definitely over, the debate of these issues is still relevant and necessary,

more than ever. It may sound controversial to find a scientist – a person who believes in truth and seeks it – to be a complete agnostic – not declared or even convinced, but real ! Probably the most important qualitative advance and mental transformation, resulting from the hectic development of sciences and technology in the last few centuries (and I believe in philosophy as well), is the *sense of humility* – we have experienced and accepted in many instances the limitations of our intellectual capacity to comprehend and change the world. We should expect the old arrogance to be (mostly) gone and giving place to tolerance, to acceptance of other methods and approaches, earlier exclusiveness to be replaced by the idea of complementarity. Or shall we call it, as before, "the unity of knowledge" ? However, in spite of all these advances, much animosity and misunderstanding is still around us, leading to destructive and fruitless confrontations ! It is significant that the Pope John Paul II recognized the urgency of this and related issues, and provided a rare opportunity for the academic community to meet and discuss them, as one of the central events of the Jubilee Year 2000.

Scientists should therefore continue analysing their personal attitudes and beliefs on this issue, and in this respect I found that the recent encyclical letter *Fides et Ratio* provides – especially for Catholic intellectuals - a most systematic and relevant platform. The dialogue on these and similar questions has already started in many places, lively and certainly controversial, but far from satisfactory. The humanistic basis of our culture, of our science, originally provided by the Christian system of values, as expressed best in the idea of the university, obviously has to be reconsidered in the new circumstances and given a new meaning at the beginning of the new millennium, but with the same goal. Even now in my opinion it presents the best (and only ?) starting point for the unification of knowledge and development of a new humanism. How active are intellectuals, especially Christian intellectuals, in this debate? Are they – are we – still suffering from the inherited, more than two centuries old, inferiority complex, imposed in the illuminist era of simplistic arrogance, are we still retreating ? Is it enough to be a Christian and a scientist, or should our goal be to become Christian scientists? How compatible, and how necessary is this shift in our attitudes and in our activity ? Or, to state a more general dilemma: Can a scientist (of any persuasion !) dissociate himself from his value system, from being and acting as a complete person ?

The Jubilee of the Universities and my personal involvement in it were a great experience – as well as the whole Jubilee Year 2000. Obviously, this report reflects my own views – though substantiated and supported by the analysis of these and many other academic events, including some recent communications. I shall never stop being surprised by this whole incredible set of coincidences which I humbly aspired to present to you. The fact that we are living in a dramatic period of – not only intellectual - history of Europe and the crisis of our Western civilization can only stimulate us to reconsider its origins and foundations, in the attempt to provide new stability and inspiration for its regeneration, in the face of an uncertain future.

References

See e.g. Andre Kukle: *Social Constructivism and the Philosophy of Science*

(Routledge, 2000)

Papal encyclical letter *Fides et Ratio* (1998)

See e.g. the opinion of Sir Robert May, in *Europhysics News* (May-June 2001)