

## CONCLUSIONS

JACQUINOT

Mr. Chairman, we are now approaching the end of this beautiful meeting, and I would like to make a very short remark. We have heard that Academies may have different types of duties and of course we already know that: this has been splendidly summarized by the talk of Professor Caglioti. It seems to me that not all, but at least many, duties of the Academies could be characterized, or summarized maybe by a single word, which to my knowledge has not been pronounced here. That is the word "*conscience*". *The Academies should be the conscience of the scientific world, or maybe the scientific conscience of the world.*

PETERS

I have been very impressed in this meeting to hear so many times of the problems of developing countries. Although it is not the main subject of this meeting, I would like to say something on that problem too, because I think that the Academies could do something about it. We have heard the intervention of our friends from Ghana and from India, and of course they say: well, *brain drain is brain drain*. But I think that the Academies of the whole world should have a role to play in order to inform and to take action so that the scientists and the professors at universities, and the research workers, of the developing countries at present in developed countries, would have a status which would allow them to do their own work in their own country.

I think that the international organizations are doing the wrong work. They favour the brain drain in a scandalous way. I have been involved in development work for more than ten years. I am amazed to see the rules of projects by international organizations that, because they did not do the follow-up of the people they educated, in order to keep them on the project, pay the same people in some of those countries to go to other countries. I can cite cases where people of Sri Lanka and India, for instance are taken away, by higher wages and possibilities to Nigeria and other African countries where they later complain that they have left their countries and their work and that they are not used either to the climate or to the language. Why is not there some action taken internationally by our Academies to support the effort of these people so that they can work and live in their own country?

MENON

Mr. Chairman, I want just to make a few brief points. First of all, I would like to refer to the very important statement made by Professor Caglioti, that

the Academies should do what they are best suited to do, and certainly not undertake those tasks which others are much better equipped to perform. I think we should bear that in mind. That is a very important statement when we talk about what the Academies should do towards the year 2000.

We are also talking of academies of science at the present moment. We do not have here the very large structures that correspond to medicine, engineering, agriculture, technology, etc., though of course the scientific component of these is represented in the Academies of Science. The third point is that, when one talks of Academies of Science in this particular matter, one is concerned with work at the frontiers, with new developments which we know from past experience are bound to have considerable impact on the world, on humankind. The Academies should therefore, apart from being the scientific conscience, as Professor Jacquinot very clearly put it, also be the place for delineating excellence. And I am not afraid of the word "elitism" in that regard because one must recognize the fact that one works at the frontiers, one develops the very best people, and they must therefore stand for excellence. But it is equally the responsibility of the Academies to point out to society, to governments, to humankind, what the consequences are of the great advances that are taking place in science in the long term.

One can indicate the directions in which developments are taking the world. We have heard of many examples of the manner in which all the developments in space, in electronics, in biology, are transforming and will continue to transform the world. We ought to take note of these and their implications for humankind; and therefore advise on what should be done in the various fields, whether they relate to education, or to the manner in which the material needs will be met in the fields of food, energy, etc. Several speakers, in particular the first chairman, Professor Badran, Tom Malone, Professor Beloe have referred to the developing countries in particular. And here one aspect which has come out, (and Dr. Malone referred to the U.N. Conference on Science and Technology for Development in Vienna in 1979) is a striking feature that if you want to develop the less developed countries, you have to make it possible for them, but they will have to do it themselves, developing indigenous science, and therefore the scientific method, the objectivity, the rational approach. They will have to bootstrap themselves and lift themselves up, because the magnitude of the developing countries is so great that nobody outside can really develop them, they have to develop themselves. And science is an enormous multiplier force for this purpose. But the Academies of the world can play a significant role in international cooperation to insure that these developments do take place.

I think that very little thought has been given to a meaningful point made by Dr. Malone, that whereas we have large structures relating to financing, e.g. the International Monetary Fund, the World Bank, the AID of the United States, the Overseas Development of U.K. and so forth, all the funds which flow into actual development projects, they still do not correspond to the Chinese proverb that it is better to teach a man to fish rather than to give him a fish, because that is then a self-generative force. And that is what one really needs and there I think the Academies should act with long-range perspective, dealing with science, which is a self-generative process once it gets started; and I think perhaps of everything that has grown in the world, the rate at which science has grown has been the most spectacular. There I do think the Academies have a role to play, particularly since they remain by and large independent structures, without depending only on governmental support. I think that this could be one of the very important directions, the aspect of international cooperation.

I think the Chairman made a very important point about the question of cooperation among developing countries, which also ought to be focussed on. Thank you very much.

TRYPANIS

Mr. President, in a sense I am here under false pretenses because I am a humanist and not a scientist, but in the Academy of Athens, which embraces arts, letters and science, I happen to be the General Secretary and I have been asked to represent the Academy at this meeting. I would first of all like to thank you for all that I have heard and learned, and also to congratulate you for the admirable relaxed manner in which the whole thing has been conducted. Of all the things I have heard, of course one which is closest to my heart, was the wonderful message that His Holiness gave to our meetings. He spoke in an inspiring manner about a number of things that scientists should do and should bear in mind, and stressed that the Church is at present no longer an enemy but a friend of science and scientists. This is quite true, but it does not exhaust the great problem of science and religion. Now this is the point I would like at this moment to stress.

I am afraid that in the modern world again we are much too much overestimating the human intellect. There is much more than that in man, and there is much more than that of course in the world. As a classical scholar I cannot but remember what happened in the 5th century, when the Sophists brought to Athens their teaching, and of course they put the human intellect again in the center of the picture. Protagoras with his famous sentence: "Man is the measure of all things" put God out of the picture and put man in the middle of the picture. I have children and grandchildren. I have lived the experiences of my own generation and part of the experiences of the generation of my parents and I have noticed a very rapid decline in religion. There can be no doubt about that. Though of course it is unfair to speak about science as a whole, there can be no doubt that science is partly responsible, or to a great extent responsible for this decline.

The scientific Jews today cannot any longer tolerate the Jews of the Bible on the creation of the universe. People, the younger people in particular, do not believe in parthenogenesis, they do not believe in the existence or the possibility of miracles. It is again the intellect that is in the middle of the picture, and only what is intellectually acceptable is accepted. And this is of course a thing which one respects and one is grateful for, for all the magnificent work that is done in the various fields of science. At the same time, however, although the great and leading scientists are very well aware of the limitations of the human intellect, science as popularized is not aware of them. We have reached the moon. We are exploring outer space. We have created computers that are as perfect as the human mind if not more perfect. We have done this. We have done that. And this is what gives a completely false and dangerous position that the young take for the significance and the position of man in the universe. And it is very essential that in education, when science is taught — and it should be taught — it should be taught in a way that it is also accompanied by a sense of humility, because without that it can be extremely dangerous. I have seen it in children in my own country and I have had the same experience elsewhere too for I have had the opportunity to teach in many countries. And this is one of the great things: where do we place science within the great framework of the world, without underestimating its significance, without making this realiza-

tion shake our confidence in what we have achieved through science, but also having the right proportion, and the right perspective to it? We know and we are told that great scientists — I have been told that about Einstein — have never lost their faith. I do not know if this is true, I cannot verify it, but I know of others that certainly have not lost their faith. And I do not think that science must be seen as incompatible with faith. I am not referring to the real leading scholars who know exactly where they are.

These general observations I would like to make with my thanks for all that I have heard and all that I have benefitted in this wonderful meeting.

#### CAGLIOTTI

I should like to answer the question of Professor Menon concerning the study of the direction of development. When I suggested — in my presentation — that the Academies of Science should study and prepare reports on research priorities and national goals, I was just indicating the need of this activity.

I remember, for example, that the National Academy of Sciences has issued a number of reports both on the national goals in the forthcoming years and on the tasks of science in relation to society's problems.

#### DE GIORGI

Having followed the discussions of these days it seems that all of us agree that the progress of Science and technique may open the way to great hopes but also to great fears for humankind.

If progress makes necessary a wisdom proportional to the unprecedented power of man today, the Academies of Sciences of all the world may make an important contribution to the search for this wisdom, for the following reasons:

First: Academies are formed by scholars of different disciplines united in a common and disinterested search for truth and for an open dialogue among persons of different ideas.

Second: There is a tradition of mutual trust and esteem between Academies of different countries, which is very important in order to overcome mistrust and bias which still make the dialogue among different cultures difficult, and in order to improve the free circulation of information in the international scientific community.

Third: the Academies of Sciences, because of their prestige and moral as well as scientific authority, are potentially in the best position to give the public objective, honest and reliable information on many problems of vital importance for the future of humankind.

In order that these possibilities become realities some preliminary conditions are required.

It is necessary that the members of the Academies should not consider their membership only as an honour but as an active engagement and clear evidence of the ethical principles on which scientific work is based: the love for wisdom, the research of a cultural horizon as bright as possible where they may insert their own specialized work.

It is also necessary sometimes to obtain for the Academies substantial financing without renouncing their independence.

For this reason it should be explained to the governments and public opinion, and even to the great international organizations, like UNESCO or the

World Bank, that the efficiency and the independence of the Academies are very beneficial for single communities as well as for all humankind.

In some cases the Academies should change their statutes and organization systems and even their methods of working.

These changes should be made with constant faithfulness to the spirit of their original aims and traditions. They should improve the activity of the Academies and promote participation in their work by the more enlightened personalities of the scientific community.

Moreover it may be useful to propose every year a special subject of great interest, to which one or more Academies should devote their attention, studies and efforts. This will make it possible to give the public truly reliable information in a form that is accessible to and understandable by everyone.

These, in synthesis, are the main questions discussed in this meeting. Now let us reflect for a moment.

If every participant submits to discussion in his Academy these points and promotes actual initiative for collaboration in order to reach the above mentioned goals, then I would say that our meeting has represented an important moment in the growth of world culture and in particular in establishing the new role of the Academies of Sciences in the world.

#### MARINI-BETTÒLO

I think we have come to the end of this meeting and that, as Professor Trypanis said, we have had two days of hard work but also of satisfaction and, I would add, of pleasure, because we have learned so much. We have enriched ourselves spiritually but also materially, acquiring much information. Many problems have also been raised and many wishes expressed.

I thank all of you who represent 47 Academies of Science and Scientific Institutions all over the world, the representatives of the Italian Academies and of the Institutions who have collaborated with us during the last two centuries, the Academies who sent messages, all the Forty as well as every participant who has brought here his personal contribution.

On behalf of the Accademia Nazionale delle Scienze detta dei XL, I thank you for having come to Rome for our Bicentenary and for your participation in discussing problems of great interest not only for the promotion of Science and the future of the Academies of Sciences but also for the future of mankind.

Let me, at this point, express my thanks also to my colleagues and collaborators who made possible, in different ways, the organization of this meeting, and in particular to the General Secretary of the Academy Professor Alessandro Ballio. The Academy is also very grateful to the institutions who gave us the financial support: the Ministero per i Beni Culturali e Ambientali, the Cassa di Risparmio di Roma and the ENEA.

I believe that even if the subject of the meeting: *"The Academies of Sciences towards the year 2000"*, may have been a bit ambitious, it gave us a guideline for discussion and many ideas.

As Professor Caglioti has very well synthesized, the lectures and the discussions held in these days have suggested what we should do in the future in order that our governments can better support our Academies, but also they have shown that the Academies have important obligations towards society.

They can no longer be, as the Holy Father said yesterday, *Ivory Towers* but must look at society and give their scientific contribution to society.

I think that the most important result of our meeting was the identification of the main role of the Academies of Sciences given by Professor Jaquinot:

"The Academies should be the conscience of the scientific world or maybe the scientific conscience of the world".

I think we all fully agree because in our rapidly evolving society science has become a fundamental factor of progress, which more than ever should be directed only towards the benefit of humankind.

I think, as De Giorgi said, that we should also go further, that is, the Academies should bring out of their circle the problems we have discussed in order to promote a broader interest in them and, if possible, new solutions for the future world.

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I wish now to conclude with a formal act which recalls the obligation undertaken by our founder when the Academy was established.

I have just received from the printer the first copies of the hundredth volume of the *Memorie*. I am glad to present and give them to you as a remembrance of our Bicentenary and of your participation, recalling your attention to what our first president, Antonio Mario Lorgna, wrote in 1781 when announcing the first volume of the *Memorie*: *Ogni due anni si pubblicherà un volume* (\*), i.e. Every two years a volume will be published. The Academy has fulfilled this obligation during two hundred difficult years and realized the intention of Lorgna as the hundredth volume now appears.

This is a demonstration of the continuity of the Academy's scientific effort through the centuries and a manifestation of its will to pursue its tasks together with you in the future.

(\*) A.M. LORNA: Lettera circolare agli Scienziati italiani (1781). Copia diretta all'astronomo de Cesaris (Biblioteca Civica di Verona).