

CONTRIBUTION TO FINAL DISCUSSION

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I join with those who have already expressed their appreciation of the organisation of the workshop and for the personal invitation to take part. It has been an excellent illustration of the possibility and of the fruitfulness of dialogue between those concerned with hydrologic processes or atmospheric or ecological processes.

In considering the possibility of a further step in relation to water and the environment, the Pontifical Academy should consider carefully what is the type of role best suited to promotion of its special objectives. In my opinion this role should combine interdisciplinarity and outreach.

The promotion of interdisciplinarity in relation to the problems facing humanity in regard to water and the environment has been a feature over the past few decades of a number of important international organisations both non-governmental and inter-governmental. For example the International Council for Science (ICSU) initiated a key break with the traditional reductionist approach of concentrating on research in a single discipline by establishing the International Geosphere Biosphere Programme (IGBP) to bridge the gap between the earth sciences and the biological sciences. The water science division of UNESCO widened the scope of successive phases of their International Hydrological Programme. Recent initiatives of the Water Science Division of UNESCO have included the establishment of a Research Centre for Ecohydrology in Poland and the publication of a series of 12 essays on aspects of water and ethics in order to promote an interdisciplinary dialogue with the social scientists on this topic. In dealing with climate, the World Meteorological Organisation (WMO) has widened the dialogue from the First World Climate Conference (1979), attended only by scientists, to the Second World Climate Conference, attended by both scientists and ministers and their advisers to the Intergovernmental Panel on Climate Change (IPCC) to the U.N. Convention on Climate.

It would not be appropriate for the Pontifical Academy of Sciences to seek to rival these large-scale initiatives but rather to seek a niche of its own that would be complimentary to them. The selection of such a niche would be a suitable focus for a second workshop in relation to water and the environment. There is a wide range of possible topics for special study with varying degrees of interdisciplinarity and outreach. If a specific science-based topic is desired, a number of areas could be considered. Studies in recent years have shown that in both hydrological analysis and ecological analysis difference in the scale being investigated may result in quite different approaches in each case. There is room for further work on the matching of the critical scales in hydrology and in ecology and of the relationship between them. If a greater emphasis or outreach is required, consideration should be given to a more general exploration of cooperation between natural scientists and social scientists in relation to the problem of water and the environment and human development.

In either case, we should be prepared for the difficulties in any trans-disciplinary dialogue. The conditions of success in such development involve overcoming three key obstacles: (1) the difficulty in choosing and defining a sharply focused topic of interest to all participants; (2) a recognition that the supposed common language of science includes many different dialects; and (3) the need for the skill and humility to listen to scientific strangers with the same efficiency as that with which we seek to express our own viewpoint.