

IIASA'S ROLE IN GLOBAL MODELING

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The International Institute for Applied Systems Analysis is an international research institute, founded in October 1972 at the initiative of the academies of science or equivalent institutions in 12 countries, both East and West. Since then, scientific bodies from five more countries have joined the Institute, thus bringing the number of "National Member Organizations" (NMOs) to 17. These scientific institutions have set IIASA the task of tackling the complex problems facing mankind today, problems that are the consequence of the success of modern science and technology and that now require the joint efforts of East and West in order to find approaches adequate to the challenge of the future. The Institute therefore conducts and stimulates research on problems of modern societies having international importance.

With these goals in mind, IIASA, in its early days, was also faced with the question to what extent it should involve itself in "Global Modeling". When IIASA was founded, "Limits to Growth" had just been published. This first "Global Model" had not only created worldwide discussion and criticism, but had also given rise to what is - in retrospect - being referred to as a "Global Modeling Movement", attempts by many other institutions to "do better".

The first global model to be developed after "Limits to Growth", the Mesarovic/Pestel model, was much larger in size and in manpower requirements. If IIASA had involved itself in elaborating its own global model, this venture might have absorbed too high a part of its entire capacity; if, however, IIASA would not involve itself in global modeling at all, there was danger of bypassing an important new development of unknown potential.

In this situation, IIASA decided to take up a "monitoring role": to serve as a focussing point for an exchange of opinions and findings, to help avoid overlapping and duplication of efforts, and to follow closely to what extent the findings could be of use to other IIASA work.

This goal was implemented mainly by conducting a series of

global modeling conferences. Whenever a major model reached a state of completion IIASA invited its authors to present the model before an international community of experts; the advantage on the side of the authors being that the results of the discussion could still enter the work before its final publication.

It was obvious that the First Global Modeling Conference, held in April/May 1974 was devoted to the Mesarovic/Pestel model. How much importance the authors attached to this conference can be judged from the fact that the (five) technical volumes of the model appeared as proceedings of this conference¹⁾. The popular volume, "Mankind at the Turning Point"²⁾ was published half a year after the conference.

At each IIASA global modeling conference, the last day was devoted to a presentation and discussion of other global modeling work. This did not only serve for a mutual information within the rapidly growing "global modeling community", but also facilitated the selection of the next model to be invited for an IIASA conference. In this sense, the model elaborated by a group of scientists of the Fundacion Bariloche (Argentina) was invited to be the main model of the Second IIASA Global Modeling Conference (October 1974). The presentation of this model met vivid interest; it had been set up as a normative counter model against both the Forrester/Meadows and the Mesarovic/Pestel model. Its purpose was not to shed light on the future of the globe but rather to assess paths which would secure a decent standard of living to the poorer parts of this world. The conference proceedings³⁾ were published long before the final version of the model⁴⁾.

The main model to be presented and discussed at the Third IIASA Conference (September 1975) was MOIRA, worked out by a Dutch team under the chairmanship of Hans Linnemann. The main purpose of this model was an investigation of ways and means to reduce hunger in the world. The model, therefore, was very elaborate and detailed in the food and agriculture sector, but deliberately treated the rest of the economy as more or less exogenous. Again, the conference proceedings appeared long before the book^{5), 6)}.

The Fourth Conference (September 1976) was devoted to a presentation and comparison of two models, of the SARUM model developed by the Department of the Environment (United Kingdom) and the MRI model developed by the Polish Academy of Sciences. The confrontation of a Western type and an Eastern type model proved extremely fruitful. Whereas SARUM was published in full elsewhere⁷⁾, the only full version of MRI (outside of Poland) is contained in the conference proceedings⁸⁾.

The Fifth Global Modeling Conference (September 1977) was not so much devoted to a single model, but to an approach, i.e.,

"Input-Output Approaches in Global Modeling". Amongst the models presented were the Leontief model⁹⁾, the Japanese model FUGI, the Swiss model ZENCAP (Fritsch/Codoni/Saugy)¹⁰⁾, and the model by Bottomley. At this conference, for the first time in an IIASA global modeling conference, a report was also given on modeling work in the Soviet Union. The conference proceedings contain the only full version of FUGI published in any language other than Japanese.

The Sixth Global Modeling Conference (September 1978) deviated in scope and format from all earlier conferences. Its purpose was to assess the state of the art. With that goal in mind, a questionnaire was designed and sent out to all major global models; the replies to the questionnaire formed the background material of the conference. The conference itself was not organized by model, but by question. All main results of the conference will be contained in a forthcoming book¹²⁾; other papers presented at the conference are available from IIASA upon request.

The Seventh IIASA Global Modeling Conference (September 1979) was devoted to a special topic, "Environmental Aspects in Global Modeling". The conference brought together environmentalists on one side and global modelers on the other side. It definitely served to increase mutual understanding of the difficulties each side encounters. The proceedings are still in print¹³⁾.

The Eighth Global Modeling Conference (July 1980) was devoted to a comparison of "International Economic Modeling" work. Econometric, input-output, and general equilibrium models were presented and discussed.

The Ninth IIASA Global Modeling Conference, to be held September 14-18, 1981, will be different again; whereas all earlier conferences were inside-oriented (discussions amongst the global modeling community), the ninth conference will be outside-oriented. Under the working title "Global Modeling at the Service of the Decision Maker", a wide audience of policy makers, government advisors, and media experts shall be informed about global modeling. Similarly as at the sixth conference, all major models will be asked a set of questions of particular importance to policy makers. They will work out the answers before the conference; these answers will be sent to participants as background material. The conference itself will be focused around these questions; in each session, one of these topics will be taken up and the answers which the different models give will be confronted and compared. It will definitely be a unique opportunity to have all major models together at one conference, giving their opinions on issues vital to mankind.

Summarizing, it may safely be stated that IIASA has been able to actually implement the self-chosen monitoring role in the field of global modeling.

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