

Harold I. Schiff

Atmospheric Chemistry



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The work plan for my fellowship period had three major goals. The primary goal was to contribute to the writing of the IGBP (*International Geosphere-Biosphere Programme*) Report which provides the working plan for the entire IGBP programme. The second was to broaden my horizons on global change issues through interaction with the other IGBP fellows and through the IGBP meetings and workshops. The third goal was to write a book, in collaboration with the other IGBP fellows which would describe the Earth System and Global Change in a holistic manner.

I suspect such work plans are frequently over-ambitious and that achievement generally falls somewhat short of the goals. The IGBP Report was the primary priority of IGBP and was completed. It involved, in addition to actual writing, a number of meetings, some of which were held at the Kolleg in which all fellows participated. But a number were held elsewhere which resulted in each of us being absent from the Kolleg for considerable periods of time. What was perhaps more regrettable was the fact that these meetings took the fellows to different places at different times, limiting the interaction which I had hoped for. This seriously interfered with goals two and three.

My section of the Report was largely based on the *International Global Atmospheric Chemistry* (IGAC) Programme developed during a workshop held in Australia in November 1988. In that sense my task was somewhat easier than that of the other fellows. However, IGAC recognized the need for a strong biological component in the Programme. I attended a meeting in Woods Hole, USA, in November 1989 to plan the

linkage with the ecological community. Plans were made for an IGBP/SCOPE workshop in Sigtuna, Sweden, in March 1990 to develop the scientific action programme for research on the relationships between terrestrial ecosystems and the chemistry of the atmosphere. I participated in this workshop and undertook the task of combining the outputs of this workshop with the IGAC plan into the IGBP report. The combined Programme was presented to the IGBP meeting in Moscow in April 1989 which I also attended and will be part of the IGBP Report.

As for my second goal, I did indeed broaden my horizons on global change issues as a result of my interactions with scientists from other disciplines at these meetings, by extensive reading, and by interaction with the other IGBP fellow when our periods at the Kolleg coincided.

And now we come to the third goal — the book. At the November IGBP Special Advisory Committee meeting held at the Kolleg I proposed the concept of such a book and pointed out the unique opportunity provided by experts in different key areas being fellows of the Kolleg at the same time. My proposal met with enthusiastic but conditional approval. The condition was that the writing of the book must not be allowed to interfere with the writing of the IGBP Report. Concern was also expressed that writing such a book might not be achievable within the available time. I shared this concern and pointed out that it would be possible only if we had a full-time assistant working with us. I also agreed to serve as editor of the book provided that I could leave the Kolleg with at least a working draft. The Kolleg generously provided the funds for the assistant. The other fellows accepted my second condition and made commitments to provide a working draft by June 1.

Several meetings were held to identify the target audience and to define the scope of the book. Three target audiences for the book were identified: (1) Participating or prospective IGBP scientists wishing to become more familiar with disciplines relevant to their own area of specialization, (2) Graduate students who must become aware of the fundamentals of related disciplines if they are to conduct research in IGBP programmes, (3) Senior undergraduate students who need to become aware of the opportunities and challenges of research in this important interdisciplinary global research initiative.

The book was to contain only the essentials of the physical and life sciences that are involved in studying the Earth as an interacting system. It would also emphasize the areas of uncertainties in our current understanding and point out the opportunities for innovative research. The presence of senior fellows this year at the Wissenschaftskolleg provided a unique opportunity to produce such an interdisciplinary book. An outline of the book was produced and the fellows agreed to their individual

assignments. No fellow was available to cover the very important marine component but we were able to elicit a commitment from Prof. B. Zeitschel, of the University of Kiel, to take responsibility for the marine sections. Prof. Claude Lorius, who had an association with the Kolleg, also undertook responsibility for the cryosphere component.

Unfortunately, as of June 1, 1990 much of the material required for the first draft had not been completed, largely due to the heavy involvement of the fellows in producing the IGBP Report. I therefore felt I had to withdraw from my responsibilities as editor of the book and so informed IGBP. At their May meeting in Stockholm IGBP reconfirmed their desire to produce such a book and undertook the task of finding a full-time editor. I had personally completed most of my writing assignments for the book and am prepared to complete my sections if IGBP is successful in finding another editor.

I also managed, during my stay at the Kolleg to initiate two other projects which were not among my original goals. First, the events in Eastern Europe stimulated me to propose that the Canadian government set up an International Centre for the Science and Technology of the Environment to train scientists from Eastern Europe and the Third World and to promote technology transfer to these areas. I visited Professor Abdus Salam, President of the Academy of Sciences of the Third World, and his colleagues in Trieste who were enthusiastic about seeing a Canadian Centre established which would have close connections with the Third World Academy. I presented my proposal to the Canadian Deputy Minister of Industry, Science and Technology and to senior officials of the Ministry of the Environment during a visit to Ottawa in March. They approved the proposal and provided funds for a one year development plan for establishing this centre and assigned a senior government official to work with me in producing the plan.

In April I was asked to undertake a study for Trans Canada Pipelines. This study is to assess the environmental impact of implementing Trans Canada Pipeline's plan to build a natural gas pipeline from Alberta to Eastern Canada and the USA. Since natural gas which this pipeline will carry consists mainly of methane, a major Greenhouse gas, the Canadian government is concerned that it might pose a potential threat to global climate. I have been working on this and associated problems and will be asked to testify at hearings to be held in Canada in June.

During my stay in Berlin I have also had interactions with the German national IGBP programme. The IGBP headquarters will be centred at the *Freie Universität* and I have had several meetings with Professor Bolle, the chairman of the national committee and his colleagues. I have also visited the laboratories of Prof. Dr. Klaus Schäfer of the Heinrich-

Hertz-Institut in East Berlin and Dr. J. Cerny of the Environmental Geology Department in Prague. Plans were made with both these groups for future collaborative research activities.

Last, but not least I benefited enormously from my association with the other fellows who helped open my mind to new areas of knowledge which I would not normally have encountered. The extraordinary historic events that occurred during this year, the insight into these events I obtained from the other fellows and, of course, the remarkable facilities and environment I enjoyed at the Wissenschaftskolleg made this year one of the most important in my life. I am enormously grateful to the Kolleg and all its staff for providing me with this marvellous opportunity.