INTRODUCTION TO THE PROCEEDINGS OF THE
FOURTH INTERNATIONAL CONFERENCE ON SCIENCE
AND TECHNOLOGY INDICATORS

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From 5 to 7 October 1995 the Fourth International Conference on Science and Technology Indicators was held in Antwerp, Belgium. It was the fourth conference in a successful series (Leiden, The Netherlands, 1988; Bielefeld, Germany, 1990; Leiden, 1991). The general scope was "performance at the national, regional and institutional level", broadly characterized by three main themes:

- design, development, and application of science and technology indicators in science policy, with a focus on their potential and limitation;
- relations of indicator research to science and technology studies in general;
- advances in information systems on science and technology.

The audience of the conference (about 160 participants from more than 20 countries), included researchers in the field of science and technology studies, science and technology indicators in particular; policy makers; R&D managers in the business sector; information scientists, particularly those engaged in science and technology; science publishers; science and technology writers and journalists. The organizers of the conference made special effort – successfully – to get scientists from the East-European countries actively involved in this conference.

Whereas the three foregoing conferences in this series resulted in impressive conference proceedings, we now decided to publish the results of this fourth conference in special issues of three journals. We think that this publication strategy will considerably enhance the dissemination of the many very good papers presented during the conference. A special issue of the Journal of the American Society for Information Science (JASIS) will cover the more information-science and data-systems oriented papers. A special issue of the journal Research Evaluation will focus on the practice of evaluation and assessment procedures, as well as on policy-oriented work in the analysis of innovations.
This special *Scientometrics* issue has a strong emphasis on the methodology of quantitative studies of science and technology, and related indicator studies. With this issue we present ten articles, aiming at a coherent set of papers which cover the broad spectrum of methodological work in science and technology studies.

The first article by Glänzel and Czerwon discusses a new methodological approach to bibliographic coupling. On the basis of a set of identified 'core documents' the authors carry out a research performance analysis on a macro-level (national level) and a meso-level (institutional level).

A related technique is co-citation analysis. Like bibliographic coupling, it is a technique with an already long history. A major problem with co-citation analysis is the low 'recall rate'. Zitt and Bassecoulard show how this problem can be tackled by appropriate clustering techniques and by addition of 'medium-cited' papers to the co-citation cores.

The following article by Niwa and Tomizawa describes the construction of a set of general indicators to provide an overall estimation of national performance in science and technology. The method is applied to five major countries.

Next to the more general indicators, there is also a need for detailed analysis of specific features of the science and technology system. Tomov and Mutafov address the problem of interdisciplinarity, particularly in the bio-medical fields. Their analysis is on the level of journals.

Another important aspect of the scientific enterprise is collaboration. Again for the bio-medical fields, Bordons and co-authors describe collaboration practices of Spanish scientists and analyse different types of collaboration: local, domestic, and international. They correlate these collaboration types with interesting aspects of research performance: team size, visibility, and basic versus applied research.

A different methodological approach to science indicators is provided by the article of Artus. He discusses the problems involved in the construction of indicators for the social sciences. The main focus is on the social processes underlying this construction.

The following paper moves to the more technological side of research. In the article of Hinze and Grupp, also one of the earlier mentioned essential aspects of science, interdisciplinarity, is a central issue. In a more dynamic perspective, it is called 'transdisciplinarity'. With help of co-word and co-classification analysis, maps of the science and technology 'side', respectively, are constructed for a specific field: biotechnology in food science. The usefulness of the maps is assessed by experts in the field.

The next article by Sigogneau also focuses on transdisciplinarity. The author describes a scientometric method to make international comparisons concerning an