JISSI

The International Journal of Scientometrics and Informetrics

olume 1 Number 1 March 1995

In This Issue

ISSI NEWSLETTER

Also

Preface : Hildrun Kretschmer

Introduction :Subir K Sen

Scientometrics & Informetrics Come of Age : L Egghe & R Rousseau

Librametry and Its Scope (Reprint) : S R Ranganathan

Guidelines to Contributors

bis
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JISSI : The International Journal of Scientometrics and Informetrics
In association with the International Society for Scientometrics and Informetics (ISSI)

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JISSI provides a forum for dissemination and exchange of ideas and scholarship in Informetrics and Scientometrics

JISSI is a refereed international journal devoted to the quantitative aspects including mathematical, statistical and computational analyses and modelling of :

- Science of science and technology including technometrics
- Studies on social sciences, arts and humanities
- All informational processes e.g., generation, growth, diffusion, dynamics, use etc of information
- Management of information systems and services including libraries, archives, databases, information centres and any other type of document collections

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International Society for Scientometrics and Informetrics (ISSI) has been officially founded on 5 October 1994 in Utrecht, The Netherlands, with Dr. Hildrun Kretschmer (Berlin) as the President and Dr. C. le Pair (Utrecht) as the Secretary-treasurer.

Membership information of ISSI is included in the ISSI Newsletter in this issue of JISSI.

FOURTH INTERNATIONAL CONFERENCE ON BIBLIOMETRICS, INFORMETRICS AND SCIENTOMETRICS, BERLIN, 1993
In memory of Derek John de Solla Price (1922-1983)

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JISSI : The International Journal of Scientometrics and Informetrics

Volume 1 Number 1 March 1995

CONTENTS

Preface	Hildrun Kretschmer	1-2
Introduction	Subir K. Sen	3-5
Conferences, Journals, a Society : Scientometrics & Informetrics Come of Age	Leo Egghe & Ronald Rousseau	7-13
Librametry and Its Scope (Reprinted)	S. R. Ranganathan	15-21
ISSI Newsletter (Spring 1995)		23-32
The Fifth International Conference on Bibliometrics, Informetrics and Scientometrics, 1995 : Announcement		24
Concentration of Forces : Foundation of the International Society for Scientometrics and Informetrics (ISSI)		25
ISSI Membership Information		25
ISSI Membership Application Form		26
Information on the proceedings of the Fourth International Conference on Bibliometrics, Informetrics, and Scientrometrics, Berlin, 11-15 September, 1993		27-32
Guidlines to Contributors		33-34
JISSI Subscription Information		35
JISSI Business Reply Form		36
International Program Committee (Berlin Conference)		3rd Cover

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Preface

Dear Colleagues :

In my function as the chairperson to the "Fourth International Conference on Bibliometrics, Informetrics and Scientometrics, Berlin,1993" I will take this opportunity of thanking you very heartily for the great number of your excellent contributions of high quality to our meeting.

The success of our Berlin Conference has to be attributed to your forthright commitment and pioneering spirit towards the emergence of a burgeoning discipline in science. I took particular delight in realizing that scientists from all continents, i.e., from virtually all over the world, had taken an active part in this Conference. The international nature of the Conference is also expressed by the fact that the Proceedings are being published from various parts of the world. Starting with the organization of the Conference three years ago, we did not expect such a great number of contributions to be recommended for publication by the International Programming Committee due to their excellence. For this reason, after the conclusion of the Conference it was necessary within a relatively short period to find possibilities for the edition of six volumes.

At present it might appear as an inconvenience that the proceedings cannot be published by one publishing house. Yet it should be taken as a positive signal that assistances were offered from several countries. Thus,four volumes of the six volumes of Proceedings have already been published in TheNetherlands (in connection with Hungary), in the Ukraine and in the United Kingdom(two volumes).The other two volumes will be published in this journal (JISSI) from India. Therefore,from this place, let me thank allthe editors of the corresponding four international Journals:

SCIENTOMETRICS

SCIENCE AND SCIENCE OF SCIENCE

RESEARCH EVALUATION

JISSI:THE INTERNATIONAL JOURNAL OF SCIENTOMETRICS AND INFORMETRICS

In pursuit of the preparation for the Conference the major task was to bring the previously rather diverging subfields of our science discipline closer together and, accordingly, to open the gates for isolated scholars to a scientific community. With a view to facilitating the ways of communication, you will be informed in this issue of JISSI of all the papers in the six volumes of the Proceedings. The authors' addresses indicated for this purpose shall give you the chance to contact them. We trust that this shall be a first move for an increased exchange of information that is to be aspired in our community in future.

Wolfgang Glänzel and I myself, as the editors of the six volumes of Proceedings, have written a Preface for each volume, which will be found with the corresponding issues of the above mentioned journals.

In my function as the first President of the International Society for Scientometrics and Informetrics (I.S.S.I) founded at the Berlin Conference I would like to invite you to develop further the idea of the formation of our scientific community and to let us know the ideas you are harbouring.

Following this line of thought it appears to be also appropriate to take on the possibilities of creating our own publication as the mouthpiece of our Society. I feel very strongly about the successful chances that would be provided for the proceedings of future international conferences and for the general exchange of scientific information between the biennial highlights.

Fully independent of my above-indicated dual function I am personally very glad about the offer made by this journal to fill the currently

existing gap. Additionally, I perceive this function as a chance for scientists from developing countries to facilitate their active participation in international communication.

Science has an international character that encompasses the entire world and I personally feel happy at the idea of accomplishing the development of our scientific community, a young discipline of science.

Hildrun Kretschmer

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Introduction

Subir K. Sen
Honorary Executive Editor, JISSI

Introducing this new journal (JISSI) has been an experience. JISSI is here for breaking new grounds. Many difficulties were to be overcome before the start. But JISSI is fulfilling a felt need by many around the world. JISSI is born out of superb international co-operation. Its success as a truly international journal of the highest possible standard now seems to be guaranteed.

There are too many journals in different fields, it is said. A new journal is always viewed with some reservation. Yet there is always need for a new journal in an emerging and growing field of research. No one would know, however, when exactly should a journal be started, what should be its size and frequency. Indeed, there is scope for bibliometric vis a vis informetric studies to understand and predict when should a journal change its name and its subject matter or when should it cease publication or when should a new journal be started (a series of articles by Guha et al. on change of titles of periodicals parts 1 -5. Annals of Library Science and Documentation 22 (2), 22(3), 1975 ,23(2),1976, 24 (3-4) 1977 was published). Without having any analysis with our field,the present journal is being started on the basis of some intuitive feeling, heuristic observation and discussion among colleagues from different countries.

Background

By a number of encouraging incidences and coincidences JISSI has taken shape.

In 1986 when Leo Egghe and Ronald Rousseau conceived the idea of an international conference on bibliometrics, no one was sure of the outcome including Egghe and Rousseau. So the theoretical aspects of information retrieval was also added. But the conference in 1987 was a success. Within eight years there have been four conferences and others are already scheduled. An international society has been formed. The first newsletter of this society forms the major part of this issue. There are now more than thousand persons on record interested in this field. There are certainly many more throughout the world. A journal is therefore a necessity. This history of development has been told by Egghe and Rousseau in this issue.

How It Happened

In December 1993 Sen met the publisher (Dr. Pandey) of this journal in a conference. In course of a discussion Sen opined that an international journal on informetrics may be a viable business project. After a few months Dr. Pandey met Sen and was ready for launching the project. Plans were chalked out. Letters were written to colleagues in the field and the matter was discussed in India among friends. All those friends encouraged the idea. An immediate response came from Dr. Hildrun Kretschmer who suggested that the new journal may start by publishing the fourth installment of refereed and selected papers from the fourth international conference held in Berlin. This would give a definite international character to the journal from the very beginning. As president of the International society for Scientometrics and Informetrics (ISSI) she suggested that the new journal may have collaboration from ISSI. The ISSI board decided to publish ISSI newsletter as part of this journal.

When we conceived the journal we thought that only the word informetrics would suffice to designate the new field and would include Bibliometrics,Librametrics and Scientometrics. It was Kretschmer who pointed out that scientometrics should not be considered as covered by informetrics and both the words are important. Many of the informetricians may not like to be scientometricians and many of the scientometricians may not be informetricians. Ultimately we have decided upon the present name - JISSI: The International Journal of Scientometrics and Informetrics, following her suggestion.

All These -Metrics

The measurement of land on the surface of the earth was called geometry. Fortunately or unfortunately geometry became a discipline in its own right dealing with all sorts of shapes and sizes. There followed many more -metry's or in the recent past the -metrics. (I wonder exactly when the suffix -metrics started to be favoured rather than -metry). In 1948 when Ranganathan thought of a term to designate the activities of application of "statistical calculus" to library management, he coined the term librametry. The term was not known outside India for a long time. Interestingly, Indian library science workers now call it librametrics.

Prichard in 1969 wanting to replace the name statistical bibliography by a more suitable one for the growing field of quantitative analysis of bibliographies coined the term bibliometrics. For some years, however, both bibliometry and bibliometrics were used in the literature.

Scientometrics was an independent development. The name was coined apparently in the late sixties in Russia. This applied to quantitative aspects of studies in Science of Science. But one point is usually missed by workers in the countries other than the East European countries. The word science refers to all knowledge, not just to a part of it. In English, (may be in some other languages) however, scientometrics apparently refers to the studies about natural science and not about humanities.

Now we have a host of metrics referring to related and neighbouring fields of studies with overlapping connotations. The journal Scientometrics recently devoted a whole issue to discuss the scopes and coverages of these metrics, although Tibor Braun, the illustrious editor of Scientometrics and himself a pioneering scientometrician, cautioned that there cannot be any agreement of views.For the sake of this journal,however, we shall prefer the following outlines of these -metrics.

Scientometrics should mean studies of quantitative aspects of science of science and technology and would include technometrics as well. Science should be taken in a wide sense of its meaning.

Informetrics should be considered as quantitative aspects of all informational processes. This would include bibliometrics and librametrics. Bibliometrics may be considered as a means of quantitative studies of socio-cultural evolution through bibliographic records. In this a part of scientometrics depends on bibliometrics. Librametrics would mean all the quantitative aspects of library ,information centre and database services and management,but would not include information retrieval.

Informetrics and scientometrics will have many overlapping areas.

Status of Sciento- & Infor- metrics

Information science of which informetrics is still a component is an applied social science. Science of science (or humanities of science as Derek Price once argued ?) is a basic social science. The duo of scientometrics and informetrics is then a new branch in social science with far reaching possibilities and prospects. We may recall the recent work of Wouters and Leydesdorf on scientometrics through the publications in Scientometrics (P.Wouters and L.Leydesdorf. Has Price's dream come true : is scientometrics a field of science ? Presented at the fourth International Conference on Bibliometrics,Scientometrics and Informetrics,Berlin,1993). We may expect a fusion of the two and development of a brave new discipline.

We hope, JISSI will be able to record and represent effectively the future trends of this field.

Terminology

Terminology is the first and foremost indicator of identity of a subject field. If sciento-informetrics is going to be a discipline on its own account it must have a vocabulary of its own. The same should apply to informetrics and scientometrics separately, if we considered their individual and separate identities. Indeed, lots of new terms are being coined, borrowed and used in these disciplines. So far, however, only two collections of terms of bibliometrics have come to our notice.

To support the standardization and quick dissemination of terms and concepts, JISSI will publish Glossary of scientometric and informetric terms.

The Forth-coming Issues

For the present JISSI will be published quarterly, the first issue appearing in March 1995. A

usual issue will have about eighty pages in A4 size. Members of its editorial board and the referees are derived from all over the world. Names of the editors will appear from the next issue. The second issue of JISSI will be a special issue with an installment of selected papers from the Fourth International Conference held in 1993 in Berlin. The other issues of this year will also publish the rest of the selected papers from the Berlin conference. Papers for these issues were primarily edited by Wolfgang Glänzel and Hildrun Kretschmer.

JISSI will publish articles of highest standards only, filtered through strict refereeing and necessary editing. JISSI has its objective international character. It is hoped JISSI will become a forum of dissemination and exchange of ideas and scholarship in scientometrics and informetrics along with ISSI and its conferences.

Conferences, Journals, a Society: Scientometrics and Informetrics Come of Age

Leo Egghe

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This note briefly reviews the history of the international Conferences on Scientometrics and Informetrics, including an account of the history of the names scientometrics, informetrics, bibliometrics; and the foundation of the ISSI, the International Society for Scientometrics and Informetrics. It also presents some personal views on future developments in the field and on the scope of the newly founded International Journal of Scientometrics and Informetrics.

1.Introduction

With this issue we celebrate the birth of a new journal, an event we are very pleased with. From our point of view, it is very encouraging to see that the title of this journal contains the names of the disciplines 'scientometrics'and 'informetrics'. Why precisely these words were chosen, requires some explanation which will be given in the sequel of this article. Anyway, we congratulate the founders of the journal and are particularly happy to see that the initiative originates from our Indian friends and colleagues who, in recent years, have shown a lot of interest in these research areas. We hope that the launch of this new journal will be a milestone in our domain and that it will stimulate mathematically oriented basic research in the information sciences in India, Asia and the rest of the world.

In the sequel of the article we will discuss the following topics, all of which are directly or indirectly linked to the foundation of the present journal:

- conferences in our field;
- the proceedings of the International Conferences on Scientometrics and Informetrics;
- the International Society for Scientometrics and Informetrics (ISSI);
- journals in our domain and their scopes.

2. Conferences in the Field of Bibliometrics, Scientometrics and Informetrics

It is not easy to track the history of the early conferences that were held more than ten years ago. So, we leave it to others to write the history of these initiatives. Here we just mention those that came to our attention. We are aware of these conferences on scientometrics and linguistics in Bulgaria organized by Dr. Tomov (in Varna), some meetings in the German Democratic Republic, organized by Dr. Glänzel and some smaller events in Eastern Europe. Mainly due to the Iron Curtain and its political consequences, these initiatives could not reach an international audience. Further, due to the important tradition in scientometrics in Eastern Europe, they where mainly devoted to this part of our field.

*Permanent address

We do not know of any similar conferences in the West before 1980 (since 1988 (Leiden), we have the Science and Technology Indicators Conferences), but the annual conferences of the ASIS (American Society for Information Science) and of the Canadian Association for Information Science often include important contributions in bibliometrics. Also in France, many active researchers participate in local meetings. We further mention the annual conferences on Research and Development in Information Retrieval (ACM SIGIR), alternating between North America and Europe. These conferences are partly devoted to mathematical models of documentary systems and their evaluation. Finally, the International Research Forum in Information Science (IRFIS) was founded in 1976 and six meetings were held between 1976 and 1985. These meetings covered, among other topics, scientometric themes. (Bibliometrics was the theme of an All India Conference of the Indian Association of Special Libraries and Information Centres (IASLIC). IASLIC has a special interest group (SIG) on Informetrics since 1992).

The authors of this article organized the 'First International Conference on Bibliometrics and Theoretical Aspects of Information Retrieval'in Diepenbeek, Belgium, in August 1987. 'First' conferences are not possible without a broad screening of the necessities for such an initiative, and of the willingness of potentially interested researchers (from all over the world) to participate. To save what has been presented at this conference, we also had to find a publisher of the conference proceedings. This story will be told in the next chapter. As mentioned in the preface of (Egghe & Rousseau, 1990),we both entered the field of bibliometrics (the common name of the field at that time)in 1983,after working for more than 10 years as pure mathematicians. For Egghe, this was a consequence of his appointment as university librarian (since 1979), while Rousseau entered that year the Master's program in Library and Documentation Science at the Antwerp University (UIA). As in the field of mathematics, which is clearly linked to bibliometrics, we intended to study books, read papers, go to conferences and become members of some professional associations. To our surprise we found out that the number of journals regularly publishing articles on bibliometrics or scientometrics was very limited, no book covered all important aspects of the field, no dedicated international conferences were held, and no bibliometrics societies existed.

Since it is quite meaningless to have a society without conferences or journals, we focussed on the organisation of an international conference. What we had in mind was a broad conference on bibliometrics. First, we wrote many letters to those colleagues we knew (at least by name) informing them of our intentions. Almost all reactions were positive, but with a cautionary note on the financial aspect. Still, we did not understand one problem. Organising a conference where you can rely on the staff of a university, where lecture rooms are free of charge, with speakers you do not have to pay, and with participants paying a modest fee, there could not be any real financial danger. Moreover, the Belgian National Science Foundation sponsored the initiative and so did our universities (LUC and UIA). One of the supportive reactions came from Jean Tague (University of Western Ontario, London, Canada) who informed us that she also had the intention to organize such a conference, but that she was not yet ready. Hence, she proposed that we should go ahead and that she would then organize the second conference in Canada. The international conferences on bibliometrics (scientometrics, informetrics,...) were born !

Because we took a broad stand on the topic of such a conference, we chose the name 'First International Conference on Bibliometrics and Theoretical Aspects of Information Retrieval'. There were 80 participants from 22 countries and 48 lectures.The information Retrieval' part was well represented (by Gerard Salton, among others). Although it is still part of the conferences' topics (cf. Call for Papers and Announcement of the Fifth International Conference on Scientometrics & Informetrics), the expression 'Information Retrieval' was dropped from the title of the second conference. Instead, its name was ' Second International Conference on Bibliometrics, Scientometrics and Informetrics'. It was held in London, Canada in July 1989.

At the time of the first conference in Belgium, I.K. Ravichandra Rao from DRTC(Documentation Research Training Centre) in Bangalore (India) contacted us, asking to organize the third conference. As it was our hope that the conference would alternate between different parts of the world, and as, in those days, there were no meetings of a scientific committee, we accepted his offer. Hence, the third conference took place in Bangalore (August 1991) and was attended by 200 participants.

So since that moment we looked ahead, planning two conferences in advance. During the Canada conference, Wolfgang Glänzel's proposal for a conference in Eastern Europe (East Berlin) was accepted by the scientific committee. It turned out that at the time the conference was held, East Berlin was not really 'Eastern Europe' anymore. In London (Canada) M. Koenig had already proposed to organize a conference at Rosary College (River Forest, Illinois, USA) and this proposal was formally accepted during the Bangalore conference. Finally, it was decided - in Berlin - that the sixth conference (1997) would be organized by Bluma Peritz at the Hebrew University, Jerusalem (Israel). The seventh conference will probably be held in Mexico or in the Netherlands, but that will be decided in River Forest. So, a time interval of two years, set by Jean Tague, has become the (unwritten) rule, but nothing excludes future annual organizations, at least if there is sufficient interest.

Clearly, with the passing of years, the International Conferences on Scientometrics and Informetrics (nowadays the official name) have gained increasing interest. Future organizers present themselves easily, guaranteeing its continuation. We note that, especially since the Berlin conference, a lot of interest comes from the field of scientometrics. There is nothing to worry about this,as long as the informetrics part is still present. We plead here for an increased participation of informetricians(in particular, those people interested in mathematical modelling). The future of the conferences seems bright, but there is the problem of the proceedings, an issue we will consider in the next section.

3. The Proceedings of the Conferences on Scientometrics and Informetrics

As soon as we had decided to organize the first conference we looked for a publisher of the conference proceedings. As a consequence of a local one-day symposium at the Antwerp University (1986), we had good contacts with Dr. Hunsucker who worked at Elsevier's (Amsterdam) at that time. He wanted to promote this new and promising field and asked us to write an introductory book on informetrics (but going beyond elementary statistics!). Moreover, he agreed to publish the first conference proceedings. The results were 'Informetrics 87/88' (Egghe & Rousseau.1988) and 'Introduction to Informetrics. Quantitative methods in library, documentation and information science' (Egghe & Rousseau,1990a). It was also Dr. Hunsucker who later suggested to use parts of Bradford's original milestone article (Bradford, 1934) for the cover of the proceedings. Informetrics 87/88 contains the selected proceedings of the Belgian conference, a total of 25 research articles. It also contains pictures of a number of important speakers. We can inform the interested reader that this book is out of print, but we could avoid the destructing of the remaining copies by buying them at a cheap rate. We are happy to sell them for a moderate price or exchange them for other books.

At first, plans were made to publish the proceedings of the second conference as a special issue of a regular journal (there were candidates) but it was felt that then the selection would have to be to severe. As Elsevier's offer still stood a decision was made in favour of this publisher. For practical reasons we (i.e. Egghe & Rousseau) again were the editors, but we made it clear that it was not our intention to be involved in editing further conference proceedings. The proceedings of the London conference (Egghe & Rousseau, 1990b) contains 23 research articles. Its title 'Informetrics 89/90' as well as its cover are similar to those of the first conference.A series was born,at least so we thought.

Long before the Bangalore conference, during a research visit of Rao to Belgium,a gentleman's agreement was made at Elsevier's (Amsterdam) to publish the third proceedings in this series. However, due to an internal reorganization, the Elsevier people changed their mind and stopped the publication of the conference proceedings. Their main argument was that the first two proceedings did not sell well: by the end of 1993(the latest figures we have) 370 copies of the first proceeding and 230 of the second one were sold at full price. We think this is reasonably well for proceedings of a newly established conference series. Another argument was the decline or the number of participants: about 80 in Diepenbeek and about 60 in London, yet the number of participants at the Bangalore and the Berlin conferences (about 200 each time) proved them wrong. Anyway,Rao had to look for another publisher. He did an excellent job in persuading the Ranganathan Endowment for Library Science to publish the third proceedings (Rao,1992). It contains 22 research articles and some comments.

It is clear that at every occasion a serious selection took place, a procedure we fully endorse. It was, however, at this point that some-

thing went wrong during the Berlin conference. Although refereeing took place, too many papers were selected. This, combined with the political changes in Germany (involving severe cuts in budgets and scientific positions) caused a number of financial problems during the editorial phase. As things stands now - thanks to the extreme efforts of H. Kretschmer - the following journals contain parts of the conference proceedings: Scientometrics (1994), Science and Science of Science(1994), Research Evaluation (1992, 1993 - these dates are no misprints!) and the present journal. This scattering of articles over journals makes it very hard to trace all contributions to the conference. (Note that even the articles published in Informetrics 87/88 and Informetrics 89/90 were never abstracted in LISA). Such situations must be avoided in the future: one should come to a clear contract with a publisher before the conference takes place. The best option is to make the proceedings available at the conference itself. This is the way ACM SIGIR operates and it is exactly what Mike Koenig intends to do (with Learned Information as publisher). Let us hope that finally some stability will be found. An element to help this stabilization process is the establishment of a scientific society.

4. The International Society for Scientometrics and Informetrics (ISSI)

Already during the meetings of the program committee of the India conference the founding of a society was discussed, mainly advocated by Kretschmer. During the Berlin conference the founding of a scientific society was approved and officially announced. Based on a discussion of the name of the international conference (and advised by the past, present and future chairpersons) the program committee decided to name this society the International Society for Scientometrics and Informetrics, abbreviated as ISSI. The order in which the two fields are mentioned does not express any preference. It was simply chosen because the word ISIS is known - as an abbreviation or in full - in other contexts. From the end of 1993 until now (beginning of 1995) there have been three meetings of the ISSI board which consists (temporarily) of the past and future chairpersons of conferences,incl. le Pair who is responsible for the secretariat (Utrecht, the Netherlands).

During the USA conference in June 1995 the advices formulated during these board meetings will be proposed to the program committee and, if accepted; announced officially. ISSI intends to have individual as well as institutional memberships, will have a newsletter (also on the Internet), and intends to inform its members on ongoing research activities and conferences worldwide.

5. Terminology

'Our field' is known under several names: bibliometrics, informetrics, scientometrics, librametrics, statistical bibliography, etc. We refer to (Hertzel, 1987; Egghe, 1988; Sen & Chatterjee, 1990) for an historical account on the introduction and definition of these terms and for a bibliography of relevant articles on terminology. Here we will briefly describe what happened since 1988.

Already at the Belgian conference in 1987, the late professor B.C. Brookes advocated the overall use of the term ' informetrics' to replace all existing ones. Argumenting that, in the same way as the fields of biology, economics, chemistry have a 'metrics' subfield (biometrics, econometrics, chemometrics), the ' metrics of the information science' , i.e. informetrics covers everything. Consequently, the title of the first conference proceedings was 'Informetrics 87/88' and the word 'informetrics' appeared in the title of the second conference. A renewed plea by Brookes during the Canada conference led to naming the Bangalore conference as. Third International Conference on Informetrics'. Many researchers, including the authors, were convinced that with this, terminology was definitely settled. But, during the preparations of the Berlin conference the name ' scientometrics' popped up again. Discussions in the program committee revealed that, for Eastern European researchers, the term informetrics does not completely covers the term ' scientometrics'. Note that only using the term ' Informetrics' in the name of the conference (as was done in India) or in the name of the society does not mean that the term 'scientometrics' must disappear! The only thing implied is that scientometrics is a part of informetrics. Yet, a large number of colleagues clearly find this unacceptable. Consequently, it was proposed to use the terms 'scientometrics' and 'informetrics' in the name of the conferences as well as for the society.

6. Journals in Our Domain and Their Scope

From a pure ' sciento-informetrics' point of view the journals

- Scientometrics
- Journal of the American Society for Information Science (JASIS)
- Information Processing and Management
- Research Policy
- Science and Public Policy

are certainly among the most important ones. Also the following journals regularly publish articles in our field:

- Journal of Information Science
- Journal of Documentation
- College and Research Libraries
- International Forum on Information and Documentation
- Library and Information Science Research
- Canadian Journal of Library and Information Science
- Libri
- Serials Librarian
- Bulletin of the Medical Library Association
- Library Quarterly.

Further, journals such as

- Mathematical and Computer Modelling
- Social Studies of Science
- Technological Forecasting and Social Change
- Communication Research
- Journal of Scholarly Publishing
- Journal of Scientific and Industrial Research
- The Scientist

are sometimes devoted to problems in scientometrics or informetrics. Moreover, letters in Nature often discuss problems related to citation analysis and the use of the Science Citation Index® for science evaluation purposes.

Scientometrics is an important journal, not exclusively devoted to scientometrics: an interesting minority of papers studies informetrics and typical library issues. The most complete information science journal is probably JASIS: it covers every subfield, including Informetrics and Scientometrics, and has high standards. This is reflected by the fact that its 1993 impact factor is 1.866. Information Processing and Management mainly covers theoretical aspects of information management and retrieval, but it also accepts papers on scientometrics and informetrics. As such it comes close to the ideas we had about the first conference. At times we used Mathematical and Computer Modelling as an outlet for every mathematical papers, which would otherwise not have been accepted.

Finally, we mention some ' local' journals (this list is very incomplete).

- Revue Française de Bibliométrie (France)
- Library Science with a Slant to Documentation and Information Studies (India)
- Journal of Library and Information Science (India)
- Annals of Library Science and Documentation (India)
- IASLIC Bulletin (India)
- Nauchno-Tekhnicheskaya Informatsiya, Serya I and II (Russia)

Unlike the above mentioned Indian journals, we sincerely hope that the present journal will be fully international. This should be guaranteed by an international editorial board, its title, and the fact that its first issues publish a part of the Berlin conference. We will try to convince our colleagues to subscribe to this journal and to use it as an outlet for their scientific work. Moreover, we hope that the journal will satisfy the requirements for inclusion in Current Contents and in the ISI list of source journals.

7. The Future

In this section we express our hopes and views concerning journals in the field, ISSI and the international conferences.

Journals

We hope that the international readership of informetrics and scientometrics journals will increase. We certainly welcome the advent of the present journal. Still, we think there is room for at least two other journals. A journal that we would like to call 'Inforsynopsis' and should play the role of a current awareness journal on large projects. It should publish articles of maximally 4 pages within three months of acceptance. These articles are extended summaries of (much) longer versions which can be published elsewhere. It is clear that only the best work can be considered for this double visibility. This journal should be compared with the *Comptes Rendues de l'Académie des Sciences de Paris*, a fully international journal offering this service in a number of scientific fields such as mathematics. Further, the authors hope that in the future there will be enough interest for yet another journal, one devoted entirely to model-theoretic aspects of informetrics and related fields. Perhaps this journal could take the form of an electronic journal on the Internet.

ISSI

We hope that ISSI will become an international society(not only in name, but because scientists of the whole world participate in it) offering several services to its members for a reasonably low fee (to make sure that really all scientists can become a member). The society could use its power to obtain more grants for third world scientists from international donors. One of the services could be the publication of an - inexpensively made - ' Notices' journal, possibly also offered in electronic form. Perhaps ISSI could endorse our ' Inforsynopsis' idea. Finally, ISSI could give assistance and advice to future conference organizers.

Conferences

We hope that members of the field will continue to organize international conferences on scientometrics and informetrics, and that more and more scientists will be attracted (if possible also from related fields such as econometrics, biometrics etc.). Hopefully, the name of these conferences is now fixed (the name of the society ISSI will have a stabilizing effect on this). The availability of proceedings during the conference would be very practical for participants and authors. Moreover this would guarantee a minimum number of sold copies. An established publisher for these proceedings would be most welcome. We plead for a high class refereeing system for the proceedings, but for a mild judgement for allowing participants to give a talk or present a poster. This, together with a reasonably low registration fee, will attract a large audience. Finally, in order to ensure that colleagues from all over the world can attend, we should try to find donors to pay for travel and accomodation expenses.

The Field Itself

For a discussion of the future of our field and its relation to other fields, we refer the reader to e.g. (Glanzel & Schoepflin, 1994; Egghe, 1994a,b; Rousseau, 1994)

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Librametry and Its Scope.

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The term 'Librametry' was coined in 1948 at the Aslib Conference of the year in Leamington Spa. Illustrations of the use of the elements of statistical calculus are given in the determination of the strength of the library staff in the disposition of the circulation and the reference staff during the different hours of the day, in the organisation and development of national and state library systems, in the distinction between service libraries and dormitory libraries, and in the design of library buildings. Illustrations are also given in the use of operations research in the transfer of a big library from one building to another without closing the library to the public, and in the periodical changes in the sequence of the subjects in the stackroom to help the fulfilment of Law 3 of Library Science. Some illustrative areas are given for the application of librametry in library techniques such as book selection, classification, cataloguing, and in the use of electronic Doc-Finder. Lastly, the inclusion of the Elements of Statistical Calculus in the curiculum for library science is considered.

1 Genesis of the Term ' Librametry'

In September 1948, I was working in Manchester as a member of the Faculty of the International Summer School on Public Libraries, conducted by Ifla and Unesco. During that period, I received an invitation from the Aslib to attend its Annual Conference on 18 September 1948 at Leamington Spa. On account of delay of the train, I reached the Conference rather late. Mr Henri LeMeister, the President of the Aslib, was in the chair and somebody was in the middle of his speech. It referred to library statistics now and then. LeMeister asked me to sit by his side on the platform and also to give my views on that speech. Unfortunately, I did not know the name of the speaker, nor the theme of his address in full. LeMeister furnished me with the necessary information. To my great delight and surprise, the speaker was Dr Bernal, with whose work I was familiar. The term 'Librametry' came out for the first time in my remarks on Professfor Bernal's speech [2]. I said that many of the matters connected with library work and service involved " large numbers".

Therefore, as the saying goes, the wood could not be seen on account of the trees. However a calculus had been developed to deal with phenomena involving " large numbers" , in an incipient form in the nineteenth century and in full vigour in the twentieth century. That is Statistical Calculus. It had been already in use in diverse disciplines. Karl Pearson had introduced the term ' Biometry' early in the present century. The study of economics with the aid of statistical calculus had given rise to the term ' Econometry'. So also we have the term 'Psychometry'. It is necessary for us librarians to develop 'Librametry'. The Chairman and many of the members of the audience welcomed this suggestion. At the end of the meeting, Professor Bernal and myself rested for an hour on the sunny lawn of the Conference House, discussing the potentiality of Librametry.

11 Earlier Practice of Librametry though without that Name

Though the term ' Librametry' was coined by me only in 1948, I had been practising the application of the elements of statistical calculus to library problems since 1925. This was because I learnt statistical calculus when I was a student of mathemtics during 1914 to 1916, and I had been continuing its study since then. After I began to teach mathematics, the erratic vicissitude in the percentage of successful candidates in the examination from year to year was the first to engage my thought. Professor P V Seshu Ayyar and myself collaborated in 1921 in going into this problem, on the basis of the marks-registers for

the Intermediate examinations from 1911 to 1921, maintained by the University of Madras. We arrived at a formula for removing the annual idiosyncracies, in terms of standard deviation and average [13]. It was later considered by the Hartog Committee on Examinations. After I became librarian in 1924, I saw many possible uses of the elements of statistical calculus in the day- to-day working of libraries, in the organisation of a library system, and in the development of library techniques. I also began to practise it.

2 Librametry in the Day-to-Day Work of a Library

21 Strength of Staff

From 1925, the number of volumes added and the number of visitors to the Madras University Library, and the number of volumes used in a year went on rising steadily. The curve of growth was fairly steep [5]. The steepness began to slacken only after 1936. The procurement of sanction for the additional staff necessary to cope with the increase of work, was a difficult affair. It was a matter of annual fight with the authorities. However, I was keeping detailed statistical data about the man- hours needed in a year for each item of work in the library. In 1947 when I was invited by the Indian Institute of Science (Bangalore) for advice on staff requirements, these statistical data enabled me to evolve a detailed staff-formula based on work-load and not on mere guess or sentiment [8]. This staff formula based on statistical data was found to be of help in several other libraries. The Library of the International Labour Office and the Library of the Swedish Railways were among them. In 1958, the University Grants Commission of India adopted this formula [16]. This has given relief to many libraries in the country. With the help of the modern facilities for time and motion study, the constants of the staff formula can be verified and fixed with precision.

22. Disposition of Staff

Another problem encountered in the Madras University Library in the earlier years was providing just the adequate staff- neither in excess nor in defect - in the Circulation and the Reference Sections, during different periods of the day. For this purpose, hourly statistics were maintained, from 1925 to 1930. An analysis of these figures brought out unerringly the pattern of the distribution of the density of work during the different periods of the day. This helped us to organise the hours of duty of the members of the Circulation and the Reference Sections in an efficient and equitable way. For example, from 7 to 10 am, one person was sufficient in each Section; form 10 am to 7 pm, two persons were necessary in the Circulation Section; from 10 am to 4 pm, two persons were necessary in the Reference Section; from 4 pm to 7 pm, three persons were necessary in it; and from 7 pm to 8 pm, one was sufficient in each Section. This disposition of the staff increased their productivity.

3 Librametry in the Organisation of National or State Library System

31 Viability of Independent Library Authority and of Rural Library

While writing my *Library development plan for India* [7] in 1950,I had to press into service the demographic and the financial statistical data to formulate a plan about population clusters and areas that would be viable to be made independent library units.A norm was also established for the viability of the minimum population of a locality to have a branch library.In the light of the increase in the cost of books and in staff salary during the last twenty years,the size of the viable units had to be increased.But in the establishment of branch libraries in the rural area ,political and sentimental considerations often lead to uneconomical decisions.For example,under its Public Libraries Act(1948),the Tamil Nadu (Madras State) had 1057 rural branch libraries at the end of the year 1966 [1].By now,it has increased still further.But statistical considerations would limit the number of such branch libraries to 802 [15].If only the concerned people had a statistical sense and used it to arrive at decisions objectively,this would have been avoided.

32 Librametry in Relation to Service Libraries and Dormitory Libraries

In the past,each library was actuated by a hoarding sentiment.It often prided itself in the number of volumes it had.Law 1 of Library Science --"Books are for use"-- was not acted upon [4].Nor were the authorities guided by the wise advice of our National Poet Rabindranath Tagore that "What makes a library big is not its size but its use" [3].Hardly any library kept statistical data about the number of years for which a book continued to be of use.I kept such data in the Madras University Library for about twenty

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years.A good percentage of books went out of use in five years; a smaller percentage in ten years; and most of the books in twenty years. In the case of works of lasting value,new editions were brought out from time to time. Copies of such books in a library are usually worn out by legitimate use in about ten to twenty years; and they have to be replaced by new editions. If each library holds on to all the books that once got into it,it increases the cost of building and of maintenance without any real advantage. On the other hand,librametry would suggest that libraries should be grouped into service libraries and dormitory libraries. On the recommendation of its Documentation Committee,of which I was Chairman,the Indian Standards Institution,recommended in 1960 an upper limit for service libraries. For example,for a university library,according to its size,the upper limit recommended was 100,000 to 300,000. When the University of Calcutta applied for grant of a few millions of rupees to erect a new library building,so as to hold nearly a million volumes,a delegation of the Library Committee of the University Grants Commission, of which I was Chairman, went to the University for local enquiry. The Vice-Chancellor,Professor Siddhantha,and the University Architect (an Englishman) readily saw the wisdom in the indication of librametry and agreed that the volumes with a low and vanishing frequency of use -- not used even once in three years – should be accommodated in a dormitory library in an easily accessible place well outside the city area,so that any of its books occasionally wanted may be brought over for use. But a professor insisted that all its 300,000 or 400,000 volumes were in active use; and that none of the books could be sent out to the dormitory collection. Thereupon,the members walked through the stackroom. The British architect put his little finger on the tops of the books in several places. The dust was a few millimeters' deep! This proved how unhelpful sentiments thrive,when a librametric sense is not developed.

33 Librametry and the Design of Library Building

Apart from the stackroom,the size of the reading room requires attention in the design of a library building. Each room -- be it a general reading room or a periodicals reading room or research reading room or a set of cubicles -- has to be designed so as to accommodate readers during peak hours. In this,I got some ideas from the Probability and its engineering uses (1928) by Thornton C Fry. To decide the accommodation needed during peak hours,careful hourly data of the number of occupants should be kept and the trend should be determined. We kept such data in the Madras University Library from 1925 to 1933. By a forecast on the basis of these data, the size of the general reading room and of the periodicals reading room needed for about ten years was determined. Provision was also made for the other rooms to be brought into use in due course. The other rooms, that were not needed for immediate use by the library, were occupied by the University Office. By 1939, the two reading rooms in actual use by the Library were getting full on Sundays and other holidays. But, thereafter, the unexpected World War II reduced the number of readers. If the library had the anticipated normal growth in its readers, the other rooms occupied by the University Office should have been taken over by the Library for its use.

4 Operations Research in Library Work

41 Transfer of Library from One Building to Another

In 1936, the Madras University Library had to be transferred from its temporary place in the Senate House to its buildings. It was the ambition of the staff not to close the Library to effect the transfer, except perhaps on the day of formal opening. To carry out this ambition, the method of Operations Research was adopted. The books were all bundled in units 1.5 feet high. Each bundle had a slip on its top. On it were entered the inclusive call numbers of the books in the bundle, the exact shelf plank into which the bundle will go in the new building, and also the number of books in the bundle likely to be in demand during the interim period, and,therefore, withdrawn from it. These withdrawn books were in open book-racks, as usual, in the old building, for use by readers. About a month before the opening of the new building, about 5,000 bundles had been gradually transferred to the new building in the sequence of the decreasing probability for the use of any book in that bundle. In the last three days, many of the books in current use also were transferred to the new building. With a band of volunteers brought by Sri S Chandrasekharan, then an honours undergraduate and now Union Minister for Public Health and Family Planning, all the 1,200 bays in the new stackroom had been fitted with bay guides in advance. Thus, it was possible to keep the Library closed only for ten hours on the opening

day. Even on that day, the Library functioned for three hours after the opening.

42 Periodical Rearrangement of the Subjects in the Stackroom

It was found that Law 3 of Library Science - " Every Book its Reader" - could be better satisfied by a periodical reshuffling of the subjects in the stackroom. This reshuffling had to be done when the library was working in full swing and without any extra place for the temporary housing of the books in any subject. Here again, the paper work done on Operations Research was of help in the rearrangement of the subjects without any difficulty or confusion or inconvenience to readers.

5 Librametry and Book Selection

The subject-scatter of book selection and the subject allotment of book-fund are important factors in book selection. With the help of the histograms showing these two factors for each of a few years of the past and of what can be conjectured about the changes likely to disturb in the immediate future, the proportion suggested by these histograms, the problem is solved objectively, and with greater reliability than if it is done with unaided conjecture [6]. This was of much help in the Madras University Library. In the use of the histograms, some weightage or correction may have to be applied to some of them with circumspection. Two instances of this precaution are worth mentioning. It was found that psychology and education showed the highest frequency of use. This raised some doubt and to the detailed examination of the kind of books that were issued in these two subjects. It was found that the Psychology of sex by Havlock Ellis and the bound volumes of university question papers swelled the frequency of use in the two respective subjects. Therefore the frequencies, in these two subjects had to be modified.

6 Librametry and Classification

61 Absolute Syntex and Facet Syntax

One of the vital problems in library classification is the decision of the most helpful sequence of the Personality, Matter, Energy, Space, and Time facets in a compound subject. On the basis of flair and experience, I had formulated certain postulates in this matter. One of the postulates will arrange the facets in the sequence mentioned above. It is worth verifying the validity of the helpfulness of this postulate objectively. In my Valedictory Address to the Symposium on the " Foundation of Syntactic Relations in Classification" held in the University of Maryland in June 1966, I had suggested a statistical method of determining the Absolute Syntax, if any, governing the sequence of facets of the subject inherent in the human intellect-in- action as it is today. Then the helpfulness or otherwise of the facet syntax given by my postulate can be decided upon. This investigation should be made by a team of specialists in Episemology, Psychology, Linguistics, Reference Service, Design of Classification, and Statistical Calculus [11]. I had also suggested the precaution that should be taken in carrying out this investigation. The final findings by statistical calculus will enable the classificationist to base the design of classification scheme on a fairly firm foundation. The present wastage in discussing the problem based on opinions and sentiments can be avoided. I even suggested that this piece of work and statistical investigation should be provided for by a Foundation.

62 " Long and Short" of Class Number

621 Book Level

A trivial amusing opinion was rampant for a few years after the publication of Colon Classification in 1933. It was generated and believed by naive "arm-chair" librarians that the Colon Class Number was much longer than the Decimal Class Number at the book level. In 1935, the question was statistically examined [14]. The finding was as follows [9]:

SN	Statistical Constants	CCN	DCN
1	Mode (most frequently occuring number of digits)	3.00	5.00
2	Medium (number of digits which is not exceeded by half of the class number)	4.00	5.00
3	Mean (the average number of digits in the class numbers)	4.80	5.80
4	Standard deviation (a measure of the spread of the range of the length of notation)	2.40	1.70
5	Correlation co-efficient between CC and DC.	0.56	

The above figures speak for themselves about the great risk or grave mistake of more opinion while dealing with large numbers. Further, the difference in the standard deviations of the Colon Class Numbers and of the Decimal Class Numbers carried a message.

The Colon frequency curve is much more spread out and graduated than the Decimal Frequency curve. In other words, the Colon Class Number imitates more closely the variation of the "intension" of the subjects than the Decimal Class Numbers. The latter leans towards artificiality. The steepness and the narrowness of the Decimal Frequency Curve showed that the Decimal Class Numbers are unnaturally crowded within a narrow range of five digits.

622 Article Level

Again, in 1967 a similar statistical comparison was made of Colon Class Numbers and the Universal Decimal Class Numbers at the level of articles - that is, depth classification. The finding was as follows [10]

SN	Statistical Constant	CC	UDC
1	Mode	12	18
2	Median	12	17
3	Mean	12	18

The above table shows that the average number of digits in UDC Numbers is fifty per cent more than that in the CC Numbers.

7 Librametry and Cataloguing

A library catalogue is a permanent record. Its value depends upon the consistent sequence of the entries. This depends upon the headings of entries being consistently chosen and rendered. This, in its turn, depends upon rigorous cataloguing rules. On the other hand, when I learnt cataloguing in 1924, in the University College (London), the Cataloguing Code used was the Anglo-American Code of 1908, which was far from being rigorous. The students would give different choices of heading and even for the same heading different renderings. The lecturer used to say that any of these different choices and renderings might be used. This was a puzzle to me. By 1934, I had designed a fairly rigorous Catalogue Code - the Classified catalogue code, now in its fourth edition. Some librarians criticised that Code had gone into too many details and had denied freedom to individual cataloguers! I had to meet this critism by having recourse to statistical calculus. I mentioned about per factors which enter into the establishment of the catalogue entries for a book. If the rules allow freedom to every cataloguer to adopt his own style, the number of styles possible was shown to be 1,024. Therefore, the probability for consistency among the catalogue entries would be only one in 1,024, because a succession of cataloguers would contribute the entries in them, each following his own style. It is, therefore, impracticable to maintain uniformity of entries in a library catalogue and the catalogue of a growing library can hardly escape becoming a hotchpotch sooner or latter [12]. This finding of statistical calculus appears to have made some impact on the Anglo-American Code. For, its Edition 3 (1967) has more rigour than its Edition 1. And yet, it is not as rigorous as it should be; I attribute this to the statistical sense not having been brought to bear on the problem.

8 Sampling

Catalogue entries and class numbers have to be tested for their accuracy. The question is whether hundred per cent revision is necessary, or a sample revision would prove sufficient. Here, it should be the former. For, a mistake even in one class number or in one catalogue entry will cause difficulties. On the other hand, hundred per cent inspection will be unnecessary and too expensive and, therefore;sampling of lots will be sufficient in finding out the problems such as the period of active use of books or the opinion of readers about the efficiency of library service. In the cases where sampling is sufficient, how should the lot for sampling unit, the sampling plan, the sampling efficiency, and the sampling error, be determined ? These problems have to be investigated and guiding principles should be established on the basis of a guide such as the Manual on basic principles of lot sampling published by the Indian Standards Institution as its publication IS : 1548-1960, or some similar manual. This problem of sampling arises in many other areas of library work.

91 Librametry and Electronic Doc-Finder

Another new problem has recently arisen. This has been caused by the " Wonder Sense" induced in the majority of librarians by electronic engineering. In the first flush of wonder, there is a tendency in the members of the library profes-

sion to swallow everything claimed by electronic engineering, even to the point of abdicating or minimising their own effort in classification and cataloguing. The problem of the extent to which the work of an electronic doc-finder would depend upon a sound system of classification and cataloguing, the minimum workload necessary to make the electronic doc-finder viable, the amount of noise and leakage should be investigated by statistically controlled experiments. The Cranfield experiment was the first of its kind. But it did not use a good individualising scheme for classification and cataloguing. The experiment should be repeated with a good scheme for classification and cataloguing and in conformity to the principles of sampling.

92 Statistical Calculus in Library Science Curriculum

The above are only examples of areas in library work leading themselves to the use of librametry. I am sure that a careful search will disclose more areas. We should consider from this point of view the desirability of acquainting librarians under training with the basic ideas of statistical calculus, the statistical outlook, and the statistical awareness. In my teaching of library science during the last forty years, I had always given a statistical flavour, as it were, in the exposition of many problems. Is this sufficient or is it desirable or necessary to give a few formal lessons on the Elements of Statistical Calculus biased to library practice and library science ? This can be best done only by a teacher who is proficient in library science and has some knowledge of statistical calculus or by a person proficient in statistical calculus and has the necessary knowledge of library science. Otherwise, the course is likely to become lopsided and forbidding. The time has come to decide this issue.

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ISSI Newsletter
Spring 1995

CONTENTS

The Fifth International Conference on Bibliometrics, Informetrics, and Scientometrics

Concentration of Forces
Foundation of the International Society for Scientometrics and Informetrics (ISSI)

ISSI Membership Information and Application Form

Information on the Proceedings of the Fourth International Conference on Bibliometrics, Informetrics, and Scientometrics - Berlin, 11 to 15 September 1993.

Concise information on ISSI will also be available on Internet's World-Wide Web. The following code gives access to the latest short ISSI Newsletter :
Ruls 23. fsw. leidenuniv. nl

The Fifth International Conference on Bibliometrics, Informetrics, and Scientometrics

After four increasingly successful Conferences, held in Belgium, Canada, India and Germany respectively, the fifth Conference will take place from 7 to 10 June, 1995. The Conference will be hosted by and held at the Graduate School of Library and Information Science (GSLIS) of Rosary College in River Forest, Illinois. The River Forest and Oak Park area is a particularly handsome suburb of Chicago located roughly halfway between 'the Loop' (Chicago's downtown) and O'Hare Airport.

Both economical dormitory space and hotel accomodations will be available for participants.

Conference proceedings will be available at the conference, containing the abstracts of contributed papers, as well as the full text of a number of selected presentations. The deadline for contributed papers is already past. However, there is still the possibility to apply for a poster presentation. Such an application in the form of an extended abstract should be sent to the appropriate program committee chair, as indicated below:

For the Americas, Africa and Otherwise Unclassified :
Prof. Abraham Bookstein, Regenstein Library, 1100 East 57th Street, Chicago, Illinois 60637, USA.
Phone: (312) 702-8268. Fax: (312) 702-0775.
E-mail Internet: a-bookstein@uchicago.edu

For Europe:
Prof. Leo Egghe,
Limburgs Universitair Centrum,
Universitaire Campus, B-3590 Dipenbeek, Belgium.
Phone: +32 11 268121. Fax: +32 11 268126.
E-mail: legghe @luc.ac.be

For Asia:
Prof. Ravichandra Rao.
Indian Statistical Institute, 8th Mile,
Mysore Road, Bangalore 560 059,
India.
Phone: +91 80 604 648/485
E-mail: drtc @isibang.ernet.in

If you wish to receive further announcements, please contact the Conference chairman:

Michael Koenig, Dean,
Graduate School of Library and Information Science (GSLIS),
Rosary College, River Forest, Illinois 60305, USA.
Phone: +1 708 524-6849.
Fax: +1 708 524-6657 or 366-5360.
E-mail: roskoenigm @ crf.cuis.edu

Concentration of Forces

Foundation of the
INTERNATIONAL SOCIETY FOR SCIENTOMETRICS AND INFORMETRICS (ISSI)

From 11 to 15 September 1993, the 'Fourth International Conference on Bibliometrics,Informetrics and Scientometrics' was held in Berlin, Germany. The meeting, which was dedicated to the memory of Derek de Solla Price, the founding father of our field of research, has been a great success. The fact that it was attended by 189 participants from 33 countries shows that this emerging scientific field is gaining importance and worldwide recognition. In order to further stimulate this development, the program committee has decided to found the International Society for Scientometrics and Informetrics (ISSI).

After a period of preparations, the new Society was officially founded on 5 October 1994 in Utrecht, The Netherlands.

ISSI's goals are the advancement of theory, method and explanation of the following areas :

1. Quantitative studies of :
   - scientific, technological and other scholarly and substantive information;
   - the science of science and technology, social sciences, arts and humanities;
   - generation, diffusion and use of information;
   - information systems, including libraries, archives and databases.
2. Mathematical, statistical and computational modelling and analysis of information processes.

In order to achieve this, the organization directs its activities at :

1. Communication and exchange of professional information;
2. Improving standards, theory and practice in all areas of the discipline;
3. Education and training;
4. Enhancing the public perception of the discipline.

In recognition of her expertise and dedication, Dr. Hildrun Kretschmer, organizer of the Berlin conference, has been chosen to be the first president of ISSI.

Secretary-treasurer is Dr. C. le Pair, Technology Foundation (STW),P.O. Box 3021, 3502 GA Utrecht, The Netherlands.

Meanwhile, plans for the Fifth International Conference are taking shape. From 7 to 10 June 1995, the Graduate School of Library and Information Science (GSLIS) of Rosary College in River Forest (Suburban Chicago), Illinois, 60305, USA, will host the next biennial meeting.

In the following pages you will find an ISSI-membership application form, as well as more information on the upcoming conference.

ISSI Membership Information

If you are active in the field of Scientometrics or Informetrics, you can become a member of the newly-founded Society. For a membership fee of $ 20.-, you will recieve early information on activities in the field through regularly appearing newsletters.

In view of the fact that many researchers in our field live in developing countries, the ISSI Board has decided on a special, reduced fee of $ 5.- for people from those countries.

ISSI Membership Application Form

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ADDRESS: ....

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Please return the completed form to : ISSI Administration
c/o Technology Foundation(STW)
PO Box 3021
3502 GA UTRECHT
Netherlands

Proceedings of the Fourth International Conference on Bibliometrics, Informetrics, and Scientometrics Berlin, 11 to 15 September 1993.

The conference in Berlin was very well attended with large number of contributions (162). Of these, only 86 (53%) were selected for publication after thorough refereeing by the members of the International Program Committee and other experts. According to subject matter, the selected papers are being published in different journals. Below is a complete overview. You will find included address of one of the authors - of the first author in most cases.

Papers published in *Scientometrics* Volume 30 (1994), Number1 - Selected Papers presented at the Fourth International Conference on Bibliometrics, Informetrics and Scientometrics:

S.Arunachalam,R.Srinivasan and V. Raman: International Collaboration in Science: Participation by the Asian Giants.
(Prof.dr. S. Arunachalam, Central Electrochemical Research Institute, Karaikudi 623 006, Tamilnadu, India)

M. -A. de Looze:
The Application of Scientometric Tools to the Analysis of a Sector in Plant Biotechnologies: Nitrogen Fixation.
(Dr. M. -A. de Looze, Universite Pierre Mendes-France, INRA, Dept.d'Economies et Sociologies Rurales,Laboratoire de Grenoble, BP 47, 38040 Grenoble Cedex 9, France)

L. Egghe.
Bridging the Gaps: Conceptual Discussions on Informetrics.
(Prof.dr.L.Egghe, LUC, Universitaire Campus,Gebouw D, 3590 Diepenbeek, Belgium)

W. Glanzel, and U. Schoepflin:
A Stochastic Model for the Ageing of Scientific Literature.
(Dr. W. Glanzel, Library of the Hungarian Academy of Sciences, Information Science and Scientometric Research Unit, POB 7, 1361 Budapest, Hungary)

G. van Hooydonk, R. Gevaert, G. Mills-Proost, and H. van de Sompel:
A Bibliotheconomic Analysis of the Impact Factors of Scientific Disciplines.
(Mrs.dr. G. Mills-Proost, Centrale Bibliotheek RUG, Rozier 9, 9000 Gent, Belgium)

P. Jeannin,and J. Devillard:
Towards a Demographic Approach to Scientific. Journals.
(Dr. P. Jeannin, IUT, Universite de Toulouse III, 11, Rue Denfert-Rochereau, 31000 Toulouse, France)

C.A. Macias-Chapula:
Non-SCI Subject Visibility of the Latin American Scientific Production in the Health Field.
(Dr. C.A. Macias-Chapula, Universidad National, Dept.de Ciencia de la Inf. Centro de Informacion cientifica y Humanistica (CICH), Autonoma de Mexico (UNAM), Apartado Postal 70-392, 04510 Mexico, D. F., Mexico)

O. Makovetskaya, and V. Bernadsky:
Scientometric Indicators for Identification of Technology System Life Cycle Phase.
(Dr. O. Makovetskaya, Ukrainian Academy of Sciences, E.O. Paton Electric Welding Institute, 11 Bozhenko St., Kiev 252 650, Ukraine)

B. Martens, and T. Saretzki:
Quantitative Analysis of Thematic Structures in the Field of Biotechnology: A Study on the Basis of Conference Data.
(Dr. B. Martens, Eberhard-Karls-Universitat Tubingen, WilhelmstraBe 36, 72074 Tubingen, Germany) E. Matricciani:
Shannon's Entropy as a Measure of the "Life" of the Literature of a Discipline.

(Dr. E. Matricciani, Dipartimento di Elettronica e Informazione, Politecnica di Milano, Piazza L. da Vinci, 20133 Milano, Italy)

F. Narin:
Patent Bibliometrics.
(Dr. F. Narin, CHI Research, Inc., 10 White Horse Pike, Haddon Heights NJ 08035, USA)

E.C.M. Noyons, and A.F.J. van Raan:
Bibliometric Cartography of Scientific and Technological Developments of an R&D Field. The Case of Optomechatronics
(Dr. E.C.M. Noyons, University of Leiden, CWTS, P.O. Box 9555, 2300 RB Leiden, The Netherlands)

B.C. Peritz:
On the Heuristic Value of Scientific Publications and Their Design: A Citation Analysis of Some Clinical Trials. (Mrs.dr. B. Peritz, Hebrew University of Jerusalem, School of Library and Archive Studies, Levy Building Givat Ram, P.O. Box 503, Jerusalem 91904, Israel)

F. Rikken, and R. Vos:
Searching for Adverse Drug Reactions at the Margin of Scientific Fields. The Scientometric Detection of Peripheral but Potentially Innovative Developments in Pharmaceutical Research.
(Mrs.dr. F. Rikken, Universitair Centrum voor Farmacie, Antonius Deusinglaan 2, 9713 AW Groningen, The Netherlands)

A. Román, and A. Méndez:
The Spanish Transition to Democracy Seen through the Spanish Database ISOC.
(Mrs.dr.A.Méndez, Institut d'Estudies Avancats de les Illes Balears, Carretera de Valldemossa, Km. 7'5, 07071 Palma de Mallorca, Spain)

R. Rousseau:
Double Exponential Models for First-Citation Processes.
(Dr. R. Rousseau, Katholieke Industriele Hogeschool West-Vlaanderen, Zeedijk 101, 8400 Oostende, Belgium)

H. Small:
A SCI-Map Case Study: Building a Map of AIDS Research.
(Dr. H. Small ISI, 3501 Market Street, Philadelphia, PA 19104, USA)

T. Soderqvist, and A.M. Silverstein:
Studying Leadership and Subdisciplinary Structure of Scientific Disciplines. Cluster Analysis of Participation in Scientific Meetings.
(Dr. Th. Söderqvist, Roskilde University Department of Live Sciences, P.O. BOX 260, 4000 Roskilde, Denmark)

J. Tague-Sutcliffe:
Modelling and Forecasting Contact Time as a Measure of Item Informetiveness.
(Prof.Dr.J. Tague-Sutcliffe, The University of Western Ontario, School of Library and Information Science, Elborn College, London, Ontario, N6G 1H1, Canada)

W.A. Turner, A. Lelu, and A. Georgel:
GEODE: Optimizing Data Flow Representation Techniques in a Network Information System.
(Dr. W.A. Turner, CERESI/CNRS, 1 Place Artestide Briand, 92195 Meudon Cedex, France)

P. Vinkler:
The Origin and Features of Information Referenced in Pharmaceutical Patents. (Prof.Dr.P. Vinkler, Central Research Institute for Chemistry, Hungarian Academy of Sciences, Pusztaszeri ut 59-67, P.O. Box 17, 1525 Budapest II, Hungary)

R. Wagner-Döbler, and J.Berg:
Regularity and Irregularity in the Development of Scientific Disciplines: The Case of Mathematical Logic.
(Dr. R. Wagner-Döbler, Lehrstuhl und Institut für Philosophie, Technische Universität München, Lothstr. 17, 80335 München, Germany)

M. Yitzhaki:
Relation of Title Length of Journal Articles to Number of Authors.
(Prof.Dr.M.Yitzhaki, Department of Library Science, Bar-Ilan University, 52900 Ramat Gan, Israel)

M. Zitt, and E. Bassecoulard:
Development of a Method for Detection and Trend Analysis of Research Fronts Built by Lexical or Cocitation Analysis.
(Prof Dr. M. Zitt, INRA LERIA -Centre de Recherches de Nantes, Rue de la Geraudiere, B.P. 527, 44026 Nantes Cedex 03, France)

Short Communications

A. Bookstein:
Toward a Multi-Disciplinary Bradford Law.
(Dr. A. Bookstein, University of Chicago, Center for Information and Language Studies, 1100 East 57th Street, Chicago, IL 60637, USA)

H.Kretschmer:
Co-authorship Networks of Invisible College and Institutional Communities.
(Mrs.dr. H. Kretschmer, Borgsdordferstr. 5, D-16540 Hohen Nuendorf, Germany)

Papers published in *Research Evaluation* Volume 2 (1992), Number 3- Special issue on Bibliometrics, Informetrics and Scientometrics, Part I:

C. Viladiu, L. Escribano, J. Bellavista, M. Grabulos, E. Guardiola, C. Iglesias, and C. Serrat: A Research Evaluation Model of a Large, Ancient University.
(Prof.Dr.C. Viladiu, Universtiat de Barcelona, Direccio Tecnica de Recerca, Gran Via de les Corts Catalanes, 585, 08007 Barcelona, Spain)

W. Glänzel, and H.-J. Czerwon:
What are Highly Cited Publications ? A Method Applied to German Scientific Papers, 1980-1989.
(Dr. W. Glanzel, Library of the Hungarian Academy of Sciences, Information Science and Scientometric Research Unit, POB 7,1361 Budapest, Hungary)

P.O. Seglen:
How Representative is the Journal Impact Factor?
(Dr.P.O. Seglen,Institute for Cancer Research, The Norwegian Radium Hospital, Montebello, 0310 Oslo, Norway)

M.V. Palaniyandy, and A. Thirunavaukkarasu:
Analysis of Citations in Post-Graduate Engineering Theses Submitted to South Indian Universities.
(Dr.M.V. Palaniyandy, Aravind Eye Hospital & Postgrad. Inst. of Opthalmology, 1, Anna Nagar, Madurai -625 020, Tamilnadu, India)

I. Ajiferuke, and S.M. Lawani:
Nature and Impact of Publications at the International Institute of Tropical Agriculture.
(Dr.I.Ajiferuke, University of Western Ontario, School of Library & Information Science, Elborn College, London, Ontario N6G 1H1, Canada)

P.G. Cabo, and T.H.A. Bijmolt:
International R&D Networks: The EUREKA Map.
(Dr. P.G. Cabo, Faculty of Management and Organization, University of Groningen, P.O. Box 800, 9700 AV Groningen, The Netherlands)

Liwen Qiu:
A Study of Interdisciplinary Research Collaboration.
(Dr. L. Qiu, Dalhousie University, School of Library and Information Studies, Halifax, Nova Scotia B3H 4H8, Canada)

M. Davis:
Disciplines, Interdisciplinarity and Migration in Family Research.
(Dr.M.Davis, 99 Mount Street, Victoria KEW 3101, Australia)

Papers published in *Research Evaluation* Volume 3 (1993), Number 1-Special Issue on Bibliometrics, Informetrics and Scientometrics, Part 2:

K. Debackere, B. Clarysse, M.A. Rappa, G. van Hooydonk, and R. Gavaert:
Application of Sociometric and Event-History Modelling to Bibliometric Data : The Case of Transgene Plants.
(Dr. K. Debackere, Vlerick School voor Management, University of Gent, Bellevue 6, 9050 Gent, Belgium)

L. Quoniam, P. Hassanaly, P. Baldit, H. Rostaing, and H. Dou :
Bibliometric Analysis of Patent Documents for R&D Management.
(Dr. L. Quoniam, Centre de Recherche Retrospective, Centre Universitaire St.-Jerome, Av. de l'Escadrille Normandie, 13397 Marseille Cedex 13, France)

M. Bordons, F. Garcia-Jover, and S. Barrigon:
Is Collaboration Improving Research Visibility ? Spanish Scientific Output in Pharmacology and Pharmacy.
(Dr. M. Bordons, Consejo Superior de Investigaciones Cientifica, C.I.N.D.O.C., Calle Joaquin Costa 22, 28002 Madrid Espana, Spain)

R.E.de Bruin, A.Kint, M.Luwel, and H. Moed :
A Study of Research Evaluatio and Planning ; The University of Ghent.
(Dr. H.F. Moed, Rijksuniversiteit Leiden, CWTS, P.O. Box 9555, 2300 Leiden, The Netherlands)

R. Dalpé, and E. Gauthier:
Evaluation of the Industrial Relevance of Public Research Institutions.
(Dr. R. Dalpé, Université de Montreal, Dept. of Political Science, CP 6128, A, Montreal H3C 3J7, Canada)

M.R. Fernández, A. Cabrero, M.A. Zulpeta, and I. Gómez:
Constructing a Relational Database for Bibliometric Analysis.
(Mrs.dr. M.T. Fernández, Centro de Informacion y Documentacion Cientifica, Joaquin Costa 22, 28002 Madrid, Spain)

Papers published in Science and Science of Science Volume 3(1994), Number 5 - Berlin Special Issue:

M. Bonitz, E. Bruckner, and A. Scharnhorst:
Country Maps Through Co-Structure Clustering.
(Dr. M. Bonitz, Halbkreisstr. 17, 01187 Dresden, Germany)

J.-P.V.M. Herubel and A.L.Buchanan:
Disciplinary, Interdisciplinary, and Subdisciplinary Linkages in Historical Studies Journals.
(Prof.Dr.J.-P.V.M. Herubel, H.S.S.E. Library, Stewart Center, Purdue University, West Lafayette - IN 47907-1530, USA)

T. Kortelainen:
What is an Internationally Visible Peripheral Periodical Like ?
(Mr. T. Kortelainen, M.Sc., University of Oulu, Department of Library and Information Science, Linnanmaa, 90570 Oulu, Finland)

J. Kristapsons and E. Tjunina:
Quantitative Indicators of Latvian Scientific Production, 1986-1992.
(Dr.-Phys.J.Kristapsons, Tirgenwa ula 19, Riga LV-1524, Latvia)

G. Krober:
Remembering the Epidemic Model.
(Dr. G. Krober, Max-Lingner-Str, 5c, 13189 Berlin, Germany)

M.J. Martin, L.M. Plaza, M.S. Urdin, E. Fernández, and C. Ortega:
Research Performance in Spanish Industries: First Approach at Regional Level, Community of Madrid.
(Mrs.Dr. M.J.Martin, Centro de Inf. y Doc. Cientifica - CSIC, Joaquin Costa 22, 28002 Madrid, Spain)

A. Méndez, A.Insua,I.Gómez, and G. Lopez:
Spanish Research in Materials Science under Bibliometric Scrutiny.
(Mrs.dr.A. Mendez, Institut d'Estudies Avancats de les Illes Balears, Carretera de Valldemossa, Km. 7'5, 07071 Palma de Mallorca, Spain)

P.S. Nagpaul and N.Pant:
Dynamics of Research Priorities in Statistics: A Crossnational Assessment.
(Dr. P.S. Nagpaul, National Institute of Science, Technology and Development Studies, Dr. K.S. Krishnan Marg, New Delhi 110 012, India)

A. Sigogneau, J.-P. Courtial, and W.A. Turner:
Scientific Environment of a Research Unit through Journals.
(Mrs.dr. A. Sigogneau, Ecole Nationale Superieure des Mines, Centre de Sociologie de l'Innovation, 62 Bd. Saint-Michel, 75272 Paris Cedex 06, France)

M. Skalska-Zlat, and A. Zblkowska-Migon :
Derek J. de Solla Price in the Polish Scientific Literature: A Citation Analysis.
(Mrs.dr. M. Skalska-Zlat, Uniwersytetu Wroclawskiego, Instytut Bibliothekoznawstwa, Pl. Uniwersytecki 9/13, 59-137 Wroclaw, Poland)

J,-M. Trouve:
The Measure of Scientific Knowledge: A New Model of Scientific Communication
(Prof.Dr.J.-M. Trouve, Universite de Poitiers, La Rondelle, 86170 Champigny-Le-Sec, Neuville de Poitou, France)

O. Vovierene:
Citation of Lithuanian Scientists in the World of Literature.
(Dr. O. Vovierene, Vinius University, Univesiteto 3, Dep. of Communications, Naugarduco 45-4, 2006 Vilnius, Lithuania)

Short Communications:

H. Eto:
Bradford Law, Diffusion and Spillover.
(Dr. H. Eto, University of Tsukuba, Institute of Socio- Economic Planning, Tsukuba, Ibaraki 305, Japan)

O. Klauber:
The Communication Model of Censorship.
(Prof.Dr. O. Klauber, Uppsala University, Library and Dept. of Slavic Languages, Bellmansgatan 134, 754 26 Uppsala, Sweden)

H. Kretschmer:
Inverse Power Function of Scientific Productivity : Distance in Co-authorship Networks of Invisible Colleges.
(Mrs.dr. H. Kretschmer, Borgsdorferstr. 5, D-16540 Hohen Neuendorf, Germany)

Subir Kumar Sen:
Understanding Zipfian Phenomena.
(S.K.Sen, Indian Association of Special Libraries & Informat. Centres, P291 CIT Scheme No. 6M Kankurgachi, Calcutta 700 054, India)

M.Kunz:
Matrix Theory of Information.

(Dr. M. Kunz, Jurkovicova 13, 63800 Brno, Chechia)

Liang Liming, and Wu Yishan:
Frequency Distribution of China's Scientific Papers in Terms of Ranks.
(Prof.Dr. Wu Yishan,ISTIC,15 Fu Xing Lu Road, P.O.Box 3829, Beijing 100 038, China)

M.P.K. Nagpal, R. Jethi Nistads, and K.S. Krishnan Marg:
Evolution of Basic Research in India: A Case of Organic Chemistry (1907-1951).
(Dr. M.P.K. Nagpal, National Inst. of Science, Technol. a. Develop.Studies, Dr. K.S. Krishnan Marg,New Delhi 110 012, India)

G.A. Nesvetailov: Quantity and Quality:
Social Problems of Postsoviet Science.
(Dr. G.A. Nesvetailov, Institute of Sociology, Academy of Sciences of Belarus, Surganovstr.1, bdg. 2, 220600 Minsk, The Republic of Belarus)

P. Pichappan: Subfields Jornals Relationship:
A Study Using Yielding-Influence.
(Dr. P. Pichappan, Annamalai university, Department of Library and Information Science, Annamalainagar 608 002, Tamil Nadu, India)

J.M. Russel:
A Model for the Evaluation of the Performance of Scientists from the Developing World, Based on Journal Impact Factors.
(Mrs.dr. J.M. Russel de Galina, Universidad Nacional Autonoma de Mexico, Centro de Informacion Cientifica y Humanistica, Ciencia de la Informacion, AP 70-392, 04510 Mexico, D.F., Mexico)

S.L. Sangam, and B.B. Hosmani:
Information Use Pattern of Researchers in the Field of History: A Citation Study.
(Dr. S.L.Sangam, Karnatak University, Dept. of Library & Inf. Science, Dharwad - 580 003, India)

B.A. Sharada:
Word Count in Computational Linguistics : An Experimental Study.
(Dr. B.A. Sharada, Southern Regional Language Centre, Central Institute of Indian Languages, Manasa Gangothr Mysore 570 006, India)

D. Tomov:
Comparative Scientometrics and Dynamic Stratification in Modern Science.
(Prof.Dr.D.M.D. Tomov, Medical University of Varna, The Library and Information Service, 55 Marin Drinov Street, BG-9002 Varna, Bulgaria)

The following papers will appear in the next two issues of this journal:

David Andrich:
Where Linguistics, Physical Measurement, and Social Measurement Converge.
(Dr. D. Andrich, Murdoch University, School of Education, Murdoch, Western Australia 6150, Australia)

Jagdish Arora, and Usha Pawan:
Journals in Immunology: Correlation Analysis: Rank v/s Rank and Rank v/s Impact Factor.
(Dr. J. Arora, Indian Institute of Technology,2. Indra Prasth Apartments IIT Campus, Hauz Khas, New Delhi 110 016, India)

Jagdish Arora, and Usha Pawan:
Journals in Immunology: A Comparative Analysis of Bibliometric Parameters.
(Dr.J.Arora,Indian Institute of Technology, 2. Indra Prasth Apartments IIT Campus, Hauz Khas, New Delhi 110 016, India)

Aparna Basu:
Concentration Measures in Random Hierarchical Distributions.
(Dr. A.Basu, Nat.Inst. of Sc. Techn. and Dev. Studies, Dr. K.S. Krishnan Road, New Delhi 110 012, India)

Quentin L. Burrell, and Michael R. Fenton:
Regression Structure of a Book Circulation Model Indorporating Loan Periods.
(Dr. Q. Burrell, University of Manchester, Department of Mathematics, oxford Road, Manchester M13 9PL, United Kingdom)

Yves F. le Coadic, and Thierry Lafouge:
Information Measures in the Electronic Library.
(Dr. Y. le Coadic, Mission des Musees, 142 Rue de Bac, 75006 Paris, France)

H.-J. Czerwon:
Time Dependencies in Bibliometric Distributions: A Comparative Empirical Study 1f Two Research Specialities.
(Dr. H.-J. Czerwon, KAI e.V., Quantitative Science Studies Schiffbauerdamm 19, 10117 Berlin, Germany)

L. Egghe, and N. Veraverbeke:
Confidence Intervals and Sample Sizes for Multi-

nomial Data.
(Prof.dr.L. Egghe, LUC, Universitaire Campus, Gebouw D, 3590 Diepenbeek, Belgium)

Debal C. Kar, and P. Bhattacharya:
Indian Abstracting and Indexing Services in Science and Technology: An Analysis.
(Dr. D.C. Kar, Tata Energy Research Institute, 102 Jor Bagh, New Delhi 110 003, India)

Karmeshu, and V.P. Jain:
A Dynamic Model of the Growth of Scientific Knowledge.
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