

Excellence and Emergence
A New Challenge for the Combination of
Quantitative and Qualitative Approaches

Book of Abstracts

10th International Conference on
Science and Technology Indicators

Vienna, Austria
17-20 September 2008

Edited by the Local Organising Committee

Edited by

The Local Organising Committee

Representatives:

Dr. Juan Gorraiz

Vienna University
Library and Archive Services
Austrian Central Library for Physics
Boltzmannngasse 5
1090 Vienna
Austria

Dr. Edgar Schiebel

Austrian Research Centers GmbH – ARC
Technology Management
Donau City Straße 1
1220 Vienna
Austria

Sponsors of the Conference:

- Austrian Science Fund (FWF), Vienna
- Elsevier B.V. - Scopus
- Federal Ministry for Science and Research, Austria
- Federal Ministry for Transport, Innovation and Technology (BMVIT), Austria
- Information Assistant, Verein für Informationsmanagement, Vienna
- Science-Metrix/R&D Reports
- Thomson Reuters

This work is copyright protected: all rights reserved, no part of the book may be reproduced or cited without the written permission of the publisher.

© Austrian Research Centers GmbH – ARC Vienna 2008

printed by C. ANGERER & GÖSCHL, Austria

ISBN 978-3-200-01310-0 Austrian Research Centers GmbH – ARC
www.arcs.ac.at

PREFACE

The 10th International Conference on Science and Technology Indicators takes place at the University of Vienna 17-20 September. It is jointly organised by the Austrian Research Centers GmbH – ARC and the University of Vienna and is dedicated to “Excellence and Emergence - A new Challenge for the Combination of Quantitative and Qualitative Approaches”.

International competition in research and technology development has intensified remarkably during the last decade. Performance of the science producing system has to be surveyed and should become measurable. Research grants and programmes are allocated according to performance indicators. Excellence clusters are required to transfer inventions into innovation and emerging technologies have to be identified to ensure the international competitiveness of the industrial societies. The adequate application of indicators, their content specific development as well as the introduction and discussion of new indicators, are of vital importance in scientometrics.

Scientometric methods are well established in natural sciences and technology, however, their application to other fields such as Social Sciences and Humanities is obviously not clear defined. New data sources and different approaches have to be introduced to measure the quality and impact of research in these disciplines. At the same time, the availability of Open Access resources becomes more important and requires its own metric measurement.

The conference in Vienna raises the issues of excellence and emergence in science and opens the floor for the discussion about the topics mentioned above.

Additionally, two pre-conference workshops will focus on specific themes. One will discuss the quality and impact of Social Sciences, and the other one gives some detailed introduction into the BibTechMon methodology as powerful tool for science mapping.

Furthermore, we defined seven topics for the conference:

- Theme 1: Quantitative and qualitative approaches: a special focus in evaluation of the academic performance;
- Theme 2: S&T indicators for the identification of emerging fields;
- Theme 3: Disciplinary relevance of bibliometric indicators: Science and Technology, Social Sciences and Humanities;
- Theme 4: Interactions between Open Access initiatives and scientometrics;
- Theme 5: Visualisation and Science Mapping: tools, methods and applications;
- Theme 6: Accuracy and reliability of data sources for scientometric studies;
- Theme 7: Management and measurement of bibliometric data within scientific organisations.

Over 160 contributions were received after the call for papers. Following the tradition of the conference, the authors sent extended abstracts with up to 800 words. All contributions were evaluated by three reviewers of the International and Local Committees. Exactly 24 contributions were withdrawn by the authors or rejected during the review process. Finally 137 contributions were selected to be presented in the conference.

We used text mining, co-word analysis and science mapping to assign the reviewers' competences to the topics of the contributions. The same method was used to cluster accepted papers and posters to the respective sessions.

The programme includes 3 keynote speakers, 9 oral presentations in 3 plenary sessions and 63 other oral presentations distributed into 18 parallel sessions. In addition 62 posters will be shown in 2 consecutive sessions.

The book of abstracts comprises all extended abstracts of oral presentations and posters grouped according to their thematic sessions.

By organising the 10th International Conference on Science and Technology Indicators in Vienna we hope to promote scientometric and bibliometric activities in Austria and to recall their importance and indispensability in measuring science and technology.

On behalf of the Local Organising Committee and Organisers we want to thank Anthony van Raan for bringing the conference to Vienna, Henk Moed for his cooperation and support compiling the conference programme, all the contributors for their submissions, the members of the International Committee for reviewing as well as the sponsors for their generous financial support.

Edgar Schiebel
Conference Chair

Juan Gorraiz
Programme Co-Chair

ORGANISATION AND COMMITTEES

Programme Chair: Anthony van Raan

Programme Co-Chair: Juan Gorraiz

Programme Co-Chair: Henk Moed

Conference Chair: Edgar Schiebel

Workshop Chair: Dorothea Sturn

Workshop Chair: Edgar Schiebel

Local Organising Committee:

Marianne Hörlesberger, Michael Barber, Bernhard Dachs, Martin Fieder, Michael Greil, Barbara Heller-Schuh, Andrea Kasztler, Alexander Kaufmann, Karl-Heinz Leitner, Wolfgang Mayer, Manfred Paier, Ralph Reimann, Dorothea Sturn, Bernard Wallner, Lucas Zinner.

International Committee:

Isidro Aguillo	Spain	Terttu Luukkonen	Finland
Petra Ahrweiler	Ireland	Ben Martin	United Kingdom
Judit Bar-Ilan	Israel	Brij Mohan Gupta	India
Elise Bassecoulard	France	Stefan Hornbostel	Germany
Aparna Basu	India	Henk Moed	Netherlands
Serge Bauin	France	Francis Narin	USA
Maria Bordons	Spain	Ton Nederhof	Netherlands
Tibor Braun	Hungary	Ed Noyons	Netherlands
Linda Butler	Australia	Ravichandra Rao	India
Koenraad Debackere	Belgium	Ed Rinia	Netherlands
Leo Egghe	Belgium	Ronald Rousseau	Belgium
Martin Fieder	Austria	Jane Russell	Mexico
Aldo Geuna	United Kingdom	Shifappa Sangam	India
Wolfgang Glänzel	Belgium	Edgar Schiebel	Austria
Isabel Gomez	Spain	Christian Schlögl	Austria
Juan Gorraiz	Austria	Ulrich Schmoch	Germany
Hariolf Grupp	Germany	András Schubert	Hungary
Sybille Hinze	Germany	Eric Spruyt	Belgium
Marianne Hörlesberger	Austria	Robert Tijssen	Netherlands
Peter Ingwersen	Denmark	Peter van den Besselaar	Netherlands
Bihui Jin	Canada	Anthony van Raan	Netherlands
Sylvan Katz	United Kingdom	Liwen Vaughan	Canada
Francoise Laville	France	Peter Vinkler	Hungary
Theod van Leeuwen	Netherlands	Roland Wagner-Döbler	Germany
Loet Leydesdorff	Netherlands	Concepcion S. Wilson	Australia
Sofía Liberman	Mexico	Michel Zitt	France

INDEX

KEYNOTES.....	15
Measuring Technology and Innovation	
<i>Grupp, Hariolf</i>	17
The Gatekeeping Indicator for Evaluation of Science and Scientists	
<i>Braun, Tibor</i>	18
SELECTED TOPICS	21
Comparing Web of Science and Scopus on a Paper-By-Paper Basis	
<i>Visser, Martijn; Moed, Henk F</i>	23
Animations of Journal Maps: Visualizations of Interdisciplinary Developments and Structural Change	
<i>Leydesdorff, Loet</i>	26
INSTITUTIONAL PERFORMANCE.....	29
Exploiting the Potential of Micro-Based Indicators on European Universities	
<i>Daraio, Cinzia; Bonaccorsi, Andrea</i>	31
Performance-based Indicators for Austrian Universities: Intended and Unintended Effects	
<i>Leitner, Karl-Heinz; Schartinger, Doris</i>	35
Israeli Research Institutes: a Dynamic Perspective	
<i>Thijs, Bart; Zimmerman, Eric; Bar-Ilan, Judit; Glänzel, Wolfgang</i>	38
MAPPING SCIENCE	43
An Experimental Comparison of Bibliometric Mapping Techniques	
<i>Van Eck, Nees J; Waltman, Ludo; Dekker, Rommert; Van den Berg, Jan</i>	45
Automatic Term Identification for Bibliometric Mapping	
<i>Waltman, Ludo; Van Eck, Nees J; Noyons, Ed CM; Buter, Reindert K</i>	49
Hybrid Maps of Scientific Fields (Terms and Citations): an Application to Nanosciences	
<i>Zitt, Michel; Lelu, Alain; Bassecouard, Elise</i>	53
FACTORS INFLUENCING EXCELLENCE	57
Gender-based Method for Measuring Activities in Science and Technology	
<i>Vrohings, Melanie; Frietsch, Rainer; Haller, Inna; Grupp, Hariolf</i>	59
Quantitative and Qualitative Approaches to the Study of Mobility and Scientific Production. The Case of a Spanish University	
<i>De Filippo, Daniela; Sanz Casado, Elias; Gómez, Isabel</i>	62
Effects of Civil War: Scientific Cooperation in the Republics of the Former Yugoslavia and the Province of Kosovo	
<i>Jovanović, Miloš; John, Marcus; Reschke, Stefan</i>	65
(SUPRA) NATIONAL PERFORMANCE	71
Breast Cancer Research in Europe: Subject Areas, Citations and the Burden of Disease	
<i>Lewison, Grant; Blamey, Roger</i>	73
National Efficiencies in Publishing Scientific Papers	
<i>Shelton, Robert; Foland, Patricia</i>	78
Does a Country's Scientific 'Productivity' Depend Critically on the Number of Country Journals Indexed?	
<i>Basu, Aparna</i>	82
U.S. Vulnerabilities in Science and Engineering	
<i>Klavans, Richard; Boyack, Kevin W</i>	86

NEW DATABASES AND THEIR INDICATORS	89
Differences among Thomson Scientific's Web of Science and Elsevier's Scopus in the Coverage and Citation Impact of Oncological Journals <i>López-Illescas, Carmen; De Moya-Anegón, Felix; Moed, Henk F</i>	91
WOS vs. SCOPUS: on the Reliability of Scientometrics <i>Archambault, Éric; Campbell, David; Gingras, Yves; Larivière, Vincent</i>	94
Comparison of Citation and Usage Indicators: The Case of Oncology Journals <i>Schlögl, Christian; Gorraiz, Juan</i>	98
The Download Immediacy Index: Experiences Using a Large Full-text Database <i>Rousseau, Ronald; Wan, Jin-Kun; Hua, Ping-Huan; Sun, Xiu-Kun</i>	103
METHODOLOGICAL ASPECTS OF FIELD STUDIES.....	107
Boom or Bust in Space Exploration Research: A Methodological Study of Bibliometric Monitoring and Policy Implications <i>Nederhof, Anton; Van Leeuwen, Thed N; Clancy, Paul</i>	109
Mutual Information as an Indicator of Cognitive Development in Research Specialties <i>Lucio-Arias, Diana; Leydesdorff, Loet</i>	112
The Identification of Converging Research Fields using Peer-Reviewed Publications <i>Buter, Reindert K; Noyons, Ed CM</i>	115
Citation Analysis in the Emerging Field: a Case of Carbon Nanotubes <i>Hung, Wen-Chi; Tsai, Min-Hua; Lee, Ling-Chu; Lee, Chun-Hsiang</i>	118
SCIENCE POLICY	121
Evidence-Based Bibliometrics: A Decade of Bibliometrics-based Science Policy in Flanders <i>Debackere, Koenraad; Glänzel, Wolfgang</i>	123
Experiences with a Bibliometric Model for Performance Based Funding of Research Institutions <i>Sivertsen, Gunnar</i>	126
Modelling the Outcomes of the 2001 UK Research Assessment Exercise with Metrics: Diverse Results for Chemistry and Political Science <i>Butler, Linda; McAllister, Ian</i>	129
INTERDISCIPLINARY & TRANSLATIONAL RESEARCH	133
Translational Research: a New Research Discipline? <i>Luwel, Marc</i>	135
Breakthroughs and Interdisciplinary Research. The Case of Research Behaviour in Translational Medical Science <i>Valentin, Finn; Larsen, Maria T; Alkærsig, Lars</i>	138
Locating the Sites of Knowledge Integration in Nanotechnology, Using Diversity and Coherence as Indicators of Interdisciplinarity <i>Rafols, Ismael; Meyer, Martin; Porter, Alan L</i>	141
SCIENCE POLICY AND FUNDING	145
Connections between University Research Funding, Publication Performance and Impact of Research. Comparison of Five Countries <i>Auranen, Otto; Himanen, Laura; Nieminen, Mika; Pasanen, Hanna-Mari</i>	147
Thirty Years of Public Research Funding in the Netherlands, 1975-2005 <i>Van Steen, Jan</i>	152
Effects of Funding on Status and Career of Postdocs in Germany <i>Böhmer, Susan; Von Ins, Markus</i>	155

UNIVERSITY-INDUSTRY COOPERATION	161
University-industry Research Cooperation within the World's Largest Universities: International Comparative Indicators of Intensity, Proximity and Preferences <i>Tijssen, Robert; Van Leeuwen, Thed N.....</i>	163
The Relationship between Research Quality and Collaboration with Industry at the Departmental Level: A Bibliometric Analysis of the UK Research Assessment Exercise <i>Mahdi, Surya; D'Este, Pablo; Neely, Andy.....</i>	166
Measuring the Relationships among University, Industry and the Other Sectors in Japan's National Innovation System <i>Sun, Yuan; Negishi, Masamitsu</i>	169
OPEN ACCESS & BIBLIOMETRICS	173
Indicators for Open Access Repositories: Empirical Data from the Webometrics Ranking <i>Aguillo, Isidro F; Ortega, José L; Fernández, Mario; Utrilla, Ana M.....</i>	175
Fractional Counting of Multi-Authored Publications and its Functionality for the National Distribution of the Financing Costs in World Licences: Austrian Strategies for SCOAP ³ <i>Gorraiz, Juan; Wieland, Martin</i>	179
Citation Research of Open Access (OA) Journals in English Papers of Universities of Iran <i>Asemi, Asefeh.....</i>	184
THEORETICAL REFLECTIONS ON BIBLIOMETRIC METHODOLOGIES ..	187
Understanding Knowledge Dynamics <i>Van den Besselaar, Peter.....</i>	189
Appropriateness of Bibliometrics for Assessing Scientific Performance <i>Schubert, Torben; Schmoch, Ulrich.....</i>	192
Using Concordance Tables to Disentangle Performance Dynamics of HT Manufacturing Industries: An Empirical Assessment of National Innovation Systems <i>Van Looy, Bart; Hansen, Wendy; Hollanders, Hugo; Tijssen, Robert</i>	196
NEW S&T INDICATORS	203
The Field Factor: Towards A Metric for Academic Institutions <i>Sandström, Ulf; Sandström, Erik.....</i>	205
A New Indicator for Appraisal of R&D Expenditures on Sectoral Level <i>Steindl, Claudia; Klerx, Joachim.....</i>	209
Impact Vitality - A Measure for Excellent Scientists <i>Rons, Nadine; Amez, Lucy.....</i>	211
NEW DATA SOURCES.....	215
Exploring New Web Data Sources for the Evaluation of Academic Performance <i>Vaughan, Liwen.....</i>	217
Localisation of Innovative Activities: Myths and Facts of Methodologies to Assign Patents to Spatial Areas <i>Landoni, Paolo; Leten, Bart; Van Looy, Bart.....</i>	219
Citations to the "Introduction to Informetrics" Indexed by WOS, Scopus and Google Scholar <i>Bar-Ilan, Judit</i>	223
Automatic Analysis of Online Syllabuses: A new e-Research Method to Investigate the Educational Impact of Research <i>Kousha, Kayvan.....</i>	226
SOCIAL SCIENCES AND HUMANITIES	231
An Analysis of Knowledge Exchange between Social Science Disciplines via Citational Linkages and Researcher Migrations: Two Sides of the Same Coin? <i>Brandl, Bernd</i>	233

International Publication Output and Research Impact in Social Sciences: Comparison of the Universities of Vienna, Zurich and Oslo <i>Schiebel, Edgar; Gorraiz, Juan; Greil, Michael; Mayer, Wolfgang; Reimann, Ralph; Sturn, Dorothea</i>	236
The Impact of Spanish Social Sciences as Seen through the Spanish Research Journals <i>Jiménez-Contreras, Evaristo; López-Cózar, Emilio D; De la Moneda Corrochano, Mercedes; Ruiz Pérez, Rafael</i>	241
Library Catalog Analysis is a Useful Tool in Studies of Social Sciences and Humanities <i>Torres-Salinas, Daniel; Moed, Henk F</i>	246
H-INDEX AND RELATED INDICES	251
Use of <i>h</i> -like Indicators based on Journal Impact Factors for Evaluating Scientific Performance: Australian Cancer Research Case Study <i>Boell, Sebastian; Wilson, Concepción S</i>	253
Are there Really Two Types of H Index Variants? A Validation Study by Using Molecular Life Sciences Data <i>Bornmann, Lutz; Mutz, Rüdiger; Daniel, Hans-Dieter; Wallon, Gerlind; Ledin, Anna</i>	256
Mathematical Properties of some H-index Sequences and Extensions to the G-index and the R-index <i>Egghe, Leo</i>	259
New Correlations between the H-Index, Citation Rate (CPP) and Number of Papers (Np) in Neuroscience and Quantum Physics: The New S-Index <i>Ball, Rafael; Ruch, Sarah</i>	262
NEW SCIENCE INDICATORS	265
Field Normalization of Impact Factors: a Citing Side Approach <i>Zitt, Michel; Small, Henry</i>	267
Methodological Foundations of Subfield-specific Normalised Relative Indicators and a New Generation of Relational Charts <i>Glänzel, Wolfgang; Thijs, Bart; Schubert, András; Debackere, Koenraad</i>	270
The π -index. A new Indicator for Characterizing Impact of Journals <i>Vinkler, Peter</i>	274
METHODOLOGICAL ASPECTS OF INDICATORS	277
The Fall of Uncitedness <i>Larivière, Vincent; Archambault, Éric; Gingras, Yves; Wallace, Matthew</i>	279
Determining Critical Thresholds for Co-citation Clusters <i>Small, Henry; Brennan, Patricia A</i>	283
Considering Self-citations: Different Methodologies of Calculation and their Effect at Micro-level <i>Costas, Rodrigo; Bordons, María; Van Leeuwen, Thed N</i>	286
Statistical Indicators Benchmarking the Use of Internet in R&D: Empirical Evidence from Seven European Countries <i>Harabi, Najib</i>	290
COLLABORATIONS & NETWORKS	293
Reorganizing Research Using Bibliometric Collaboration Networks: A Case Study in an Academic Hospital <i>Calero Medina, Clara; Van Leeuwen, Thed N; Ellenbroek, Stéfan PH</i>	295
Emerging Partnerships within European R&D Networks: Empirical Evidence from a Multinomial Choice Model Perspective <i>Paier, Manfred; Scherngell, Thomas</i>	299

In-depth Analysis on China's International Cooperation in Science <i>Zhou, Ping; Glänzel, Wolfgang</i>	301
Network Collaboration in Life Sciences 6 th Framework Programme: a Visual Approach <i>Ortega, José L; Aguillo, Isidro F</i>	305
FIELD DELIMITATION	309
Journal Cross-citation Analysis for Validation and Improvement of Journal-based Subject Classification in Bibliometric Research <i>Lin, Zhang; Glänzel, Wolfgang; Janssens, Frizo</i>	311
Indicators for the Effectiveness of the Web of Science Subject Categories: A Case Study of Library and Information Science <i>Levitt, Jonathan; Thelwall, Mike</i>	316
Identification and Characterisation of Technological Topics in the Field of Molecular Biology <i>Roche, Ivana; Besagni, Dominique; François, Claire; Hörlesberger, Marianne; Schiebel, Edgar</i>	320
Delineation of the Field of Genomics by Hybrid Bibliometric Method: Interaction with Experts and Validation Process <i>Laurens, Patricia; Zitt, Michel; Bassecoulard, Elise</i>	323
POSTERS: RESEARCH PERFORMANCE, POLICY AND NEW INDICES	327
Framework of Science and Technology Indicators in Saudi Arabia <i>Al-Khashlan, Abdulrahman</i>	329
Ranking of Universities Based on H-index: Does it Comply with Other Ranking Systems? <i>Aminpour, Farzaneh; Kabiri, Payam</i>	330
Bibliometric Analysis of Astronomy Related Research Output of Madrid. Arxiv and Science Citation Index (2000-2005) <i>Bonilla-Calero, Anabel; Gómez, Isabel</i>	333
Measuring the Variety in R&D Activities Based on the Entropy <i>Cheng, Bangwen; Shi, Linfen; Yang, Hongjin; He, Rong</i>	337
Measuring the Innovative Performance of Regional Systems of SMEs <i>Compagno, Cristiana; Pittino, Daniel; Visintin, Francesca</i>	340
Indicators measuring Effectiveness of Research Capacity Building in Biomedical Research in India <i>Diwakar, Sandhya; Singh, Keshari K</i>	344
A Preliminary Analysis of Publication and Impact Analysis of Research Capacity building Program in Biomedical Research in India <i>Diwakar, Sandhya; Singh, Keshari K; Srivastava, Divya</i>	349
Study on Evaluation of R&D Performance of Institutions Based on Patent Indicators <i>Fang, Shu; Zhang, Xian</i>	354
Technological Convergence and the Absorptive Capacity of Standardisation <i>Gauch, Stephan; Blind, Knut</i>	357
A Multidimensional Approach to Design Performance Management Systems for Academic Research and Innovation <i>Gehlen de Leão, Álvaro; Luciano, Edimara M; Audy, Jorge LN</i>	360
Peer Review and In-Depth Interviews with Publishers as a Means of Assessing Quality of Research Monographs <i>Giménez-Toledo, Elea; Román-Román, Adelaida</i>	363
Some Indicators on Portuguese Science <i>Gomes, José A N F; Vieira, Elisabete Simões; Nouws, Henri; Albergaria, José T; Delerue Matos, Cristina</i>	369

Status of S&T in India: An Analysis of India's Publication Output, 1996-2006 <i>Gupta, Brij Mohan; Dhawan, Satish M</i>	371
Citation Structural Modeling and some Bibliometric Indicators <i>Harik, Hakim; Kouici, Salima; Dahmane, Madjid</i>	373
The Evaluation of Academic Productivity: An International Comparison <i>Lee, Ling-Chu; Hung, Wen-Chi; Tsai, Min-Hua</i>	377
Percentage of Reviews in a Group of Papers: a Simple Indicator of Research Esteem <i>Lewison, Grant</i>	381
Identifying Complementarities in Patent Portfolios: A New Software Solution for Improved Decomposition and Characterisation <i>Lund Jensen, Rasmus; Hieranda, Vikram; Valentin, Finn</i>	387
ICT-specific Technological Change and Productivity Growth in the US 1980-2004 <i>Martinez, Diego; Rodriguez, Jesus; Torres, Jose L</i>	391
Performance of the Public Higher Education Institutions (HEI) in Indonesia on Science and Technology (S&T): a Three Year Evaluation <i>Meiningsih, Siti; Grace, Nani</i>	393
Towards a Research University: a Case with Bandung Institute of Technology (ITB), Indonesian State-owned, Legal Entity, University <i>Meiningsih, Siti; Grace, Nani</i>	395
Hybrid Indicators Based on Scientific Collaboration to Quantify and Qualify Individual Research Outputs <i>Perianes-Rodríguez, Antonio; Olmeda-Gómez, Carlos; Moya-Anegón, Félix</i>	397
Assessing the Relative Standing of Russian Science through a set of Citation and Publication Indicators <i>Pislyakov, Vladimir; Gokhberg, Leonid</i>	400
New Public Management and Indicator-based Resource Allocation: Quantitative Performance Measurement in Science does not need to be Naïve <i>Schubert, Torben; Schmoch, Ulrich</i>	404
Forecasting National Scientific Publications: China May Lead the World in Less than Ten Years <i>Shelton, Robert</i>	407
BRIC-Countries as a Source of International Knowledge Flows - A Patent Citation Analysis <i>Tran, Chung Anh</i>	410
The J Factor: A New Methodology for Interdisciplinary Comparison in Scientific Evaluation using Journal-Based Publication Profiles <i>Tunger, Dirk; Mittermaier, Bernhard; Ball, Rafael</i>	412
Are Journals Becoming Less Important as Means of Communication in the Web Era? <i>Van den Besselaar, Peter</i>	416
Deciphering Generic Technological Models from Patents Datas <i>Viola, Jean-Michel</i>	419
Scientometrics: a Possible Tool to Predict Future Academic Performance in Scientists? <i>Wallner, Bernard; Fieder, Martin; Gorraiz, Juan; Machatschke, Ivo H; Reimann, Ralph</i>	422
Investigation of the Correlation between Researchers' Properties and Productivity through Analyzing Co-authorship Networks <i>Yoshikane, Fuyuki; Suzuki, Takafumi; Tsuji, Keita</i>	425
Evaluating for Institutional Academic Activities: Classification Scheme for R&D Indicators <i>Zatsman, Igor; Kozhunova, Olga S</i>	428

POSTERS: FIELD STUDIES, DATA SOURCES AND VISUALISATION 433

Composing a Publication List for Individual Researcher Assessment by Merging Information from Different Sources <i>Amez, Lucy; Rons, Nadine</i>	435
A Gender Study of Scientific Productivity in Spain <i>Barrios, Maite; Villarroya, Anna; Borrego, Ángel; Frías, Amparo; Ollé, Candela</i>	438
Assessing Competency in Biotechnology: A Case Study of India <i>Bhattacharya, Sujit; Patra, Swapan</i>	441
Map Dynamics and Mapping Dynamics: Tools to Analyse Converged Research Fields <i>Buter, Reindert K; Noyons, Ed CM</i>	445
Systematic Retrieval and Strategic Analysis of Information in Research and Development: a Practical Case in Biotechnology <i>Cavaller i Reyes, Victor</i>	449
Evolution of Research Trends in Biotechnology at European Level <i>García-Carpintero, Esther; Plaza, Luis M</i>	456
Measuring Diversity of Latent Themes in Networks of Papers and References: a Methodological Study <i>Havemann, Frank; Heinz, Michael; Mitesser, Oliver; Gläser, Jochen</i>	460
Science Map 2006, A Japanese Experience on the Mapping of Science <i>Igami, Masatsura; Saka, Ayaka</i>	463
Russian Research in a Novel Field: the Case of the Nanotechnology Subfield <i>Jansz, Margriet; Markusova, Valentina; Libkind, Alexandr; Minin, Vladimir; Libkind, Iliya; Terekhov, Alexander</i>	467
Algorithmic Historiography of Published Papers on Bibliometrics: A Scientometric Study of Scientometry Literature <i>Kabiri, Payam; Aminpour, Farzaneh</i>	473
Effects of Research Organization on Advances in Translational Medical Research <i>Lauto, Giancarlo; Valentin, Finn</i>	475
The Application of Knowledge Mining to the Discovery of Trends in Future Agricultural Technological Development <i>Lee, Yi-Yang; Hung, Wen-Chi; Huang, Michael; Tseng, Yuen-Hsien</i>	481
The Impact of Late Citation on Evaluating Applied Research: A Case Study of the Scopus 'Engineering' Category <i>Levitt, Jonathan; Thelwall, Mike</i>	484
Integer and Fractional Counting and their Effects on National Indicators: Application to AIDS Research <i>Lewison, Grant; Srivastava, Divya</i>	487
A Bibliometric Study on Energy and Economics Journals Publishing Energy Policy and Energy Technology Policy Papers <i>Li, Shan-Shan; Hsu, Chia-Hao</i>	491
Comparative Study of Correlation Indexes: Co-assignee, Reciprocal Citation, Patent Coupling and Co-patent <i>Lo, Szu-Chia</i>	494
Gender Differences in Patenting in the Spanish CSIC <i>Mauleón, Elba; Bordons, María</i>	499
Comparative Scientometric Indicators: the Case of Applications of Geographic Information Systems and Remote Sensing in Public Health <i>Murad, AbdulKader A; Tomov, Dimitar</i>	504
Humanities Indicators and National Research Information Systems <i>Must, Ülle</i>	507

World Class Universities on the Web: a Network Graph View of Webometrics.info <i>Ortega, José Luis; Aguillo, Isidro F</i>	509
Analysing European Framework Programme Networks: Standardisation Matters <i>Paier, Manfred; Heller-Schuh, Barbara; Barber, Michael; Scherngell, Thomas</i>	513
Database of Biomedical Research Articles Cited by International Media Stories (BRACIMS) <i>Roe, Philip</i>	516
Women in Science – High Potential for Increased Academic Performance <i>Røsdal, Trude; Wendt, Kaja</i>	517
Analyzing Asymmetric Proximity Relations in Transaction Matrices: The Case of Journal Cross-reference Matrices <i>Schneider, Jesper</i>	521
Bibliometric Study of R&D Systems under Unsteady GERD: Georgia and Post-soviet Countries <i>Shatberashvili, Oleg</i>	525
Indicators for Websites: Particular Reference to Geriatric Sites <i>Srivastava, Divya; Diwakar, Sandhya</i>	528
Assessment of Papers on Malaria and other Vector Borne Diseases from some Indian Research Institutions <i>Srivastava, Divya; Kant, Rajni</i>	533
Which Trend Metrics Predict Emerging Trends Better? <i>Tseng, Yuen-Hsien; Lin, Yu-I; Lee, Yi-Yang; Hung, Wen-Chi; Lee, Chun-Hsiang</i>	538
Systematic Mapping of Subfields of Immunology for Government Policy Makers <i>Yang, Liying; Morris, Steven A; Jin, Bihui</i>	545
Extraction, Analysis, and Mapping of Institutions from Web of Science Data: A Practical Procedure <i>Yang, Liying; Morris, Steven A; Jin, Bihui</i>	548
Identification of Emerging Research Fields via Combined Author Co-citation and Author Bibliographic Coupling Analysis <i>Zhao, Dangzhi; Strotmann, Andreas</i>	551
AUTHOR INDEX	555
APPENDIX – PROGRAMME OF THE CONFERENCE	559

LIBRARY CATALOG ANALYSIS IS A USEFUL TOOL IN STUDIES OF SOCIAL SCIENCES AND HUMANITIES

Daniel Torres Salinas*

EC3, Evaluación de la Ciencia y la Comunicación Científica, University of
Navarre, Avd Pío XII, 55, 31008 Pamplona, Spain.
E-mail: torressalinas@gmail.com

Henk F. Moed

Center for Science and Technology Studies (CWTS), Leiden University, PO
Box 9555, 2300 RB, Leiden, The Netherlands.
E-mail moed@cwts.leidenuniv.nl

* Corresponding author

Theme: Disciplinary relevance of bibliometric indicators: Science and Technology, Social Sciences and Humanities; Accuracy and reliability of data sources for scientometric studies.

Keywords: Library catalogs; scientific-scholarly books; research performance; social sciences and humanities; bibliometric indicators; economics.

1 Background

Bibliometrics studies confirm the important role of books as scientific media in Social Sciences and Humanities [WOLFE-THOMPSON, 2002; LINDOLHOM-ROMAN, 1996; HICKS, 1999]. However bibliometric studies of books are mainly small scale studies because no databases are readily available that allow a systematic, computerised analysis of large sets of book titles. This paper explores the use of Library Catalog Analysis (LCA), defined as the application of bibliometric techniques to a set of library online catalogs, to describe quantitatively a scientific-scholarly field on the basis of published book titles.

2 Problem

The paper focuses on the value of LCA as a tool in studies of Social Sciences and Humanities, especially their cognitive structures, main publishers of book titles, and the performance of the researchers active in these domains of science and scholarship. The aim was to identify the main technical problems and theoretical issues involved, to provide solutions and answers, and finally to make an inventory of issues that need to be further addressed in future research.

It proposes an analogy model between traditional citation analysis of journal articles and library catalog analysis of book titles (Table 1). The most attractive element is the parallelism between the number of received citations and the number of libraries in which books are included.

Table 1 Analogy between citation analysis of journal articles and library catalog analysis of booktitles

<i>Citation analysis of journal articles</i>		<i>Library catalog analysis of book titles</i>
<i>Main Concepts</i>		
Article Author	↔	Book Author/editor
Research article	↔	Book
Publication database	↔	Library catalog
Publication database coverage	↔	Library catalog coverage
Journal Publisher	↔	Book Publisher
Journal's Prestige	↔	Prestige of book publisher or library's institution
<i>Indicators and methods</i>		
Create a set of papers published by a unit	↔	Create a set of book titles published by a unit
Measure the prestige of a journal	↔	Measure the prestige of a publisher or a library's institution
Numbers of citations received by a paper	↔	Numbers of catalog inclusions of a book title
Number of received citations per paper	↔	Numbers of catalog inclusions per book title
Compare a unit's citations per paper to an overall or world average	↔	Compare a unit's catalog inclusions per book title to an overall or world average
Geographical spread of authors citing the unit's papers	↔	Geographical spread of catalogs containing the unit's book title
Thematic mapping of publication databases (keywords)	↔	Thematic mapping of library catalogs (subject headings)

The first objective of this exploratory study was to develop a general methodology for data collection and analysis. It was decided to collect data for one discipline: Economics. A second objective was to carry out an exploratory performance assessment study of a particular country, Spain, and the research departments in Economics in a particular institution, the University of Navarra.

3 Data and Methodology

The methodology consists of the following steps:

- Selection of Bookwhere Academic 6.0 for download books from libraries. This software uses the Z39.50 protocol.
- Selection of university libraries applying the following criteria: a) The Z39.50 protocol should be implemented. b) The library should be a part of a university with a leading position in Economics. c) The selected set should contain a number of Spanish catalogs.

- Download of bibliographic records and creation of an off-line database. The search was carried out for the string ECONOM* in the subject headings of book titles; the chronological period was 1995-2005.

The following indicators were constructed

- Number of Titles (NT).
- Catalog Inclusions (CI)
- Catalog Inclusion Rate: CIR= (CI/NT)
- Relative Catalog Inclusion Rate: RCIR = (CIRa/ CIRb)
Where:
CIRa= Catalog Inclusion Rate of the aggregate to be assessed
CIRb= Catalog Inclusion Rate of the 'benchmark' aggregate used for comparison
- Dispersion Rate: DR= (CIs/CIm)
Where:
CIs= Catalog Inclusions for a given set of titles
CIm= Maximum number of possible inclusions that the set of titles can reach

4 Results

The total number of catalogs included was 42; they were located in 7 countries and belonging mostly to the Anglo-Saxon world. The number of titles collected was 121,147 accounting for a total of 417,033 inclusions; hence the *Catalog Inclusion Rate* is 3.4. 45 per cent of the titles appear in one catalog only.

Books have been published in a total of 89 different languages with a dominant position of English. The average number of authors per book title amounts to 1.63; 62 per cent of the titles were written by one author.

22,000 publishers have published at least one book title related to Economics. 61 per cent of these have published only one book title and only 133 published more than 10 titles per year. Table 2 shows indicators for the main publishers.

The number of books produced by Spain amounts to 6,704. The Relative Inclusion Rate of Spanish book title is below 1.0 in each geographical area outside Spain. The University of Navarra have published a total of 211 titles, 44 of which were found in at least one library. The total number of inclusions is 142 and the worldwide Relative Inclusion Rate amounts to 0.9. Figure 1 compares national and institutional indicators.

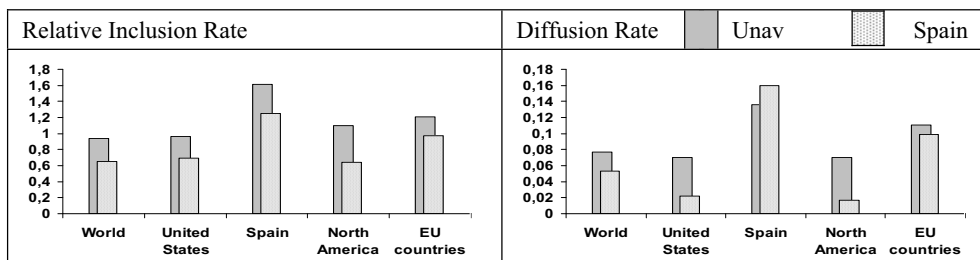
Table 2 The 25 most productive publishers in Economics

Publisher name	Nr Titles	Titles per year	Nr Inclusions	Inclusion Rate	Relative Inclusion Rate	Diffusion Rates		
						All countries DR	European Countries DR	United States DR
Routledge	3,589	326	19,985	5.6	1.6	0.13	0.10	0.24
Edward Elgar	2,102	191	13,922	6.6	1.9	0.16	0.13	0.22

Library Catalog Analysis is a useful tool in studies of social sciences and humanities

Oxford University Press	2,092	190	14,576	7.0	2.0	0.17	0.14	0.29
Cambridge University Press	2,040	185	14,710	7.2	2.1	0.17	0.15	0.29
Macmillan Press	1,827	166	10,054	5.5	1.6	0.13	0.09	0.25
World Bank	1,509	137	8,612	5.7	1.7	0.14	0.07	0.30
Official Publications of the EC	1,344	122	6,528	4.9	1.4	0.12	0.12	0.17
United States GPO	1,281	116	8,613	6.7	2.0	0.16	0.00	0.67
OECD	1,260	115	6,308	5.0	1.5	0.12	0.09	0.19
Her Majesty's Stationery Office	1,209	110	2,315	1.9	0.6	0.05	0.08	0.02
Palgrave	1,188	108	8,905	7.5	2.2	0.18	0.11	0.37
United Nations	1,109	101	4,993	4.5	1.3	0.11	0.05	0.25
Springer	1,078	98	3,995	3.7	1.1	0.09	0.06	0.12
Ashgate	966	88	5,992	6.2	1.8	0.15	0.10	0.24
Kluwer	944	86	4,133	4.4	1.3	0.10	0.08	0.17
St Martin's Press	894	81	6,904	7.7	2.2	0.18	0.09	0.45
Harmatan	727	66	1,506	2.1	0.6	0.05	0.02	0.15
International Monetary Fund	646	59	2,856	4.4	1.3	0.11	0.09	0.15
McGraw Hill	645	59	2,111	3.3	1.0	0.08	0.10	0.07
Wiley	633	58	2,380	3.8	1.1	0.09	0.08	0.13
MIT Press	632	57	3,984	6.3	1.8	0.15	0.13	0.22
Sage	606	55	2,995	4.9	1.4	0.12	0.09	0.21
Blackwell	574	52	3,318	5.8	1.7	0.14	0.13	0.19
Prentice Hall	518	47	2,060	4.0	1.2	0.10	0.11	0.10
Earthscan	416	38	2,352	5.7	1.6	0.14	0.14	0.19

Figure 1 Relative Inclusion Rates and Diffusion Rates of the University of Navarra (Nava) and Spain



5 Conclusions

Within the framework of the analogy model between citation analysis and library catalog analysis a series of useful indicators was proposed. It was illustrated how LCA can be used to assess book production and research performance at the level of universities, countries and publishers. However there are at least three limitations that must be taken into account. Firstly, the set of libraries selected has a rather strong Anglo-Saxon bias. Secondly, the felid delimitation method based on the string ECONOM* in subject headings may not cover the entire discipline sufficiently well. Thirdly, no categorization is currently available of books into types, such as books primarily for teaching versus those primarily for research, and for a specialized versus a broad scientific-scholarly audience,

References

- HICKS, D. (1999), The difficulty of achieving full coverage of international social science literature and the bibliometric consequences, *Scientometrics*, 44 (2): 193-295.
- LINDHOM-ROMANTSCHUK, Y.; WARNER, J. (2002), The role of monographs in scholarly communication: and empirical study of philosophy, sociology and economics, *Journal of Documentation*, 52 (4): 389-404.
- WOLFE THOMPSON, J. (2002), The death of the scholarly monograph in the Humanities? Citation patterns in literary scholarship, *Libri*, 52 (3): 121-136