

Contents

Introduction — 1

Rafael Ball

1 History and Institutionalization of Bibliometrics

1.1 A Historical Overview of Bibliometrics — 7

Farshid Danesh and Ali Mardani-Nejad

1.2 Institutionalization and Professionalization of Bibliometrics — 19

Niels Taubert

1.3 Eugene Garfield and the Institute for Scientific Information — 27

David A. Pendlebury

1.4 Derek De Solla Price: The Father of Scientometrics — 41

Farshid Danesh and Ali Mardani-Nejad

1.5 Coevolution of Field and Institute: The Institutionalization of Bibliometric Research Illustrated by the Emergence and Flourishing of the CWTS — 53

Anthony van Raan

1.6 International Conferences of Bibliometrics — 65

Grischa Fraumann, Rogério Mugnaini, and Elías Sanz-Casado

2 Theory, Principles and Methods of Bibliometrics

2.1 Peer Review and Bibliometrics — 77

Bernhard Mittermaier

2.2 Jurisdiction of Bibliometrics — 91

Arlette Jappe and Thomas Heinze

2.3 National Research Evaluation Systems — 99

Michael Ochsner, Emanuel Kulczycki, Aldis Gedutis, and Ginevra Peruginelli

- 2.4 **The Mathematical Embedding of Bibliometrics — 107**
Leo Egghe
- 2.5 **Bibliometrics in the Humanities, Arts and Social Sciences — 117**
Michael Ochsner
- 2.6 **Relationship between Peer Review and Bibliometrics — 125**
Michael Ochsner

3 (Classical) Indicators

- 3.1 **Measuring the Impact of Research – from Scholarly Communication to Broader Impact — 135**
Wolfgang Glänzel, Pei-Shan Chi, and Koenraad Debackere
- 3.2 **From Simple Publication Figures to Complex Indicators: Bibliometrics and the Dilemma of Methodological Correctness, Significance, and Economic Necessity — 149**
Dirk Tunger, Heinz Ahn, Marcel Clermont, Johanna Krolak, and Andreas Meier
- 3.3 **The Journal Impact Factor: A Bibliometric Indicator with a Long Past — 159**
Dirk Tunger
- 3.4 **The *h*-index — 169**
Grischa Fraumann and Rüdiger Mutz

4 Alternative Metrics (Altmetrics)

- 4.1 **The Future Has Already Begun: Origin, Classification, and Applications of Altmetrics in Scholarly Communication — 181**
Dirk Tunger and Andreas Meier
- 4.2 **History, Development and Conceptual Predecessors of Altmetrics — 191**
Clemens Blümel and Stephan Gauch
- 4.3 **Social Media and Altmetrics — 201**
Kaltrina Nuredini, Steffen Lemke, and Isabella Peters

- 4.4 **Altmetric.com: A Brief History — 215**
Ben McLeish
- 4.5 **PlumX Metrics (Plum Analytics) in Practice — 221**
Juan Gorraiz and Christian Gumpenberger
- 4.6 **PLOS Article-Level Metrics — 235**
Steffen Lemke, Kaltrina Nuredini, and Isabella Peters
- 4.7 **Eigenfactor — 245**
Grischa Fraumann, Jennifer D’Souza, and Kim Holmberg
- 4.8 **Academic Social Networks and Bibliometrics — 255**
Clemens Blümel
- 4.9 **ResearchGate and the Academic Social Network Sites: New Environments for New Bibliometrics? — 265**
Enrique Orduña-Malea and Emilio Delgado López-Cózar
- 4.10 **Mendeley — 281**
Robin Haunschild

5 Applications, Practice and Special Issues in Bibliometrics

- 5.1 **An Ecology of Measures and Indicators: Bibliometrics in Resource Allocation — 291**
Björn Hammarfelt and Fredrik Åström
- 5.2 **Benchmarkings and Rankings — 299**
Ronald Rousseau
- 5.3 **Technological Trend Analysis — 311**
Miloš Jovanović
- 5.4 **Research Collaboration and Bibliometric Performance — 319**
Tindaro Cicero and Marco Malgarini
- 5.5 **On the Need for Accessibility, Standardization, Regulation, and Verification in Bibliometrics: The Leiden Manifesto and Beyond — 329**
Dirk Tunger

- 5.6 Gender and Bibliometrics: A Review — 335**
Tahereh Dehdarirad
- 5.7 Visualization of Research Metrics — 365**
Hélène Draux
- 5.8 Regional Distribution of Research: The Spatial Polarization in Question — 377**
Marion Maisonobe
- 5.9 Bibliometrics and Co-Authorship — 397**
Dorte Drongstrup

6 The Data Basis in Bibliometrics

- 6.1 Web of Science, Scopus and Further Citation Databases — 409**
Ingrid Bauer
- 6.2 Expanding Dimensions: A New Source in the Bibliometrician's Toolbox — 421**
Juergen Wastl
- 6.3 The Islamic World Science Citation Center (ISC): The Construction and Application — 431**
Jafar Mehrad and Mohammad Reza Ghane
- 6.4 Institutional Repositories and Bibliometrics — 455**
Valeria Aman

7 Teaching and Training

- 7.1 Institutions for Bibliometric Qualification — 465**
Simone Fühles-Ubach and Miriam Albers
- 7.2 Bibliometrics in the Curriculum — 475**
Simone Fühles-Ubach, Miriam Albers, and Mandy Neumann
- 7.3 The Competent Bibliometrician – A Guided Tour through the Scholarly and Practitioner Literature — 485**
Sabrina Petersohn

8 The Future of Bibliometrics

8.1 The Future of Bibliometrics: Where is Bibliometrics Heading? — 499
Rafael Ball

8.2 Open Science and the Future of Metrics — 507
Tamara Heck

List of Contributors — 517

Index — 527