How to rank if you must: two useful guiding books

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Stefanie Haustein, Multidimensional Journal Evaluation. Analyzing scientific periodicals beyond the impact factor. Knowledge & Information Series, Berlin: De Gruyter/Saur, 2012. Hardcover: 408 pages, ISBN-10: 3110254948, ISBN-13: 978-3110254945.

There might be several reasons for someone to write a book. One of the possible motivations is the frustration caused by the desperate attempts to find a comprehensive overview of a topic, where one feels there should be one. I have no specific reason to think that this was the main motivation of the author of this book (or even that it played any role), but one thing is sure: she certainly spared the trouble for the next academic generation (i.e., for the next 4–5 years) perforce writing one.

The book gives a thorough yet readable account of the past, present and probable future of journal evaluation, this very complex and multipurpose endeavor, which is all too often reduced to one single linear dimension: that of the impact factor.

What the book offers is something what in human resource management is called a 360° assessment: a multidimensional evaluation from all possible angles. The author distinguishes five main dimensions: journal output, journal content, journal perception and use, journal citations and journal management. These five dimensions span the basic framework of the book. After the introductory chapter 1, chapters 2 through 6 bear as titles the name of the dimensions.

A shadow of doubt may be cast upon the separation of journal citations from other forms of perception and use. The general overemphasis laid upon citation-based evaluation, however, seems to justify the independent analysis of this subtle topic.

In the concluding chapter 7, as if to underline the 360° assessment analogy, the author also distinguishes four user groups with their specific perspectives: the author's perspective, the reader's perspective, the librarian's perspective and the editor's and publisher's perspective. In the spirit of the whole book, all these perspectives are multidimensional, and the contribution of each dimension to each perspective is nicely presented. Obviously,

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each perspective has dominant dimensions: content and citations for the authors, content and management (price!) for the readers, perception and use for the librarians, output and management for the editors and publishers. The reviewer (as practicing editor) may add that the perspectives of the editors and publishers do not always coincide, and that the main concern of an editor is actually to make happy the other four user groups for which sometimes fractal or even imaginary dimensions seem to be insufficient.

The book is grounded on the widest possible literature base. The reviewer could not find any relevant piece of literature not properly incorporated into the reference list. The literature reviews are exemplary in lucidity and objectiveness. The author never tries to put her preferences or prejudices into limelight. Her own research findings, namely those on social tagging as a tool for evaluation, are organically built into the texture of the book. This kind of objectivity is leaving sometimes the reader unadvised, but at the same time constrains her/him to make independent judgment. This feature, with proper tutorial guidance, may contribute to making book an excellent educational material. The very instructive running example of 45 physics journal is another extremely useful educational aid.

The book is warmly recommended to anybody interested in the world of scientific journals from the beginners to the highly trained specialists.

Amy N. Langville and Carl D. Meyer: Who's #1? The Science of Rating and Ranking. Princeton and Oxford: Princeton University Press, 2012. 266 p. Cloth ISBN: 9780691154220, eBook ISBN: 9781400841677ISBN 978-0-691-15422-0.

Very aptly, the authors did not give the book the title: "All You Always Wanted to Know about Rating and Ranking…". It was solely the reviewer's reverie that made him to expect a comprehensive response to all common incomprehension surrounding rating and ranking whether in scientometrics or anywhere else. Who's #1 is not an oracle, it is a good book that raises more questions than it answers. And a lot of these questions are more interesting than those one expected to be answered.

The authors are renowned experts in the field of algebraic ranking theory; their previous book on "Google's PageRank and Beyond" (Princeton University Press, 2006) was cited almost 200 times in the Web of Science. Among Amazon Best Sellers it is ranked #254,349. This may look at first disappointing, but considering that Derek de Solla Price's Little Science, Big Science…and Beyond is ranked #4,025,308, a six-digit rank seems to be remarkable. Who's #1, within the few months after its publication reached #282,234, so it may soon supersede the authors' earlier success. Anybody want to bet?

Actually, Amazon ratings and rankings, as well as betting strategies are recurrent topics of the book indicating that the formal mathematical treatment of algorithms may be cleverly diluted with examples taken from popular culture and, above all, sports. The reviewer is a notorious advocate of analogies between science and sports but, regretfully, is rather unversed in the world of American football, which is the main training ground in the book. The running example used throughout the book is a set of games played among a group of Atlantic Coast Conference teams in the 2005 NCAA football season. By the time I reached the end of the book, I really began to get accustomed to it.

In the first part of the book, several ranking algorithms are introduced. Massey's method, Colley's method and Keener's method are actually used in live ranking and prediction exercises. The authors' own research topic, Markov chains and the offense–defense rating method is exposed in due extent and with justifiable devotion. For those of us, who are more absorbed in chess than in American football, it is rather instructive to see how the Élő rating system fits into the framework of methods listed in the book. As a

countryman of Árpád Élő, I found it exceptionally laudable that the authors attempted to spell his name correctly at least in the introductory lines of the chapter devoted to his method—and they succeeded almost completely! Of course even this method could not escape to have been tested on an American football example, but its remarkable potentials (also as a prediction tool) raised not only my national pride but also a keen interest in the possibilities of applying this congenial method to rating and ranking tasks in science.

After the specific chapters on handling ties and incorporating weights, two extensive chapters are dealing with rank aggregation. Here, again, algebraic methods are considered only clearly distinguishing heuristic and optimum seeking methods. A chapter on comparison of rankings (measuring consensus) concludes the technical part of the book. A concise but exciting list of available data sources and an overview of non-algebraic (mainly statistical) rating and ranking methods completes the volume.

The style of the book is amazing. Exact mathematics is smoothly blended with clear explanations and illustrative examples. As an extra feature, amusing asides provide supplementary information, sometimes only loosely, but always fittingly, connected to the main topic.

With all this rapture and delight, I won't say that scientometrists could make much direct profit from this book. The methods presented are admittedly based on pairwise comparisons (results of games between two opponents). In several examples (e.g., in the Amazon example or other user ratings) this is not the case, but the problem can be transformed to "virtual" two-player games. This is a clever trick that may work perfectly in some cases, but for most of the practical rating and ranking problems in scientometrics it is a rather unnatural and unjustifiable, in some cases simply unfeasible, procedure.

Another point, which is not satisfactorily stressed by the authors even in their sports examples, is that a rating or ranking exercise can be interpreted only in the context of a specific purpose. Quite different qualities are required from a rating/ranking method if the question is really "Who's #1?" than if, say, a seeding system of a competition is to be designed. In my experiences, the greatest problem in real-life scientometric rating/ranking exercises is the lack of a well-defined purpose. Indicators are proposed without a definite aim what is to be indicated, rankings are published without knowing anything about the purposes these rankings will be used. This is a practice that cannot be condemned enough, and that cannot be remedied by even the most perfect and accurate rating and ranking algorithm.

The profit the scientometrics community can gain from this book is an indirect one: an attitude how to compile a systematic collection of potential methods, how to select carefully using theoretical tests and empirical examples and how to combine methods to get a comprehensive, multidimensional rating and ranking system. In this sense, it is a highly recommended reading for all readers of the journal Scientometrics.