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Web metrics for library and information professionals. David Stuart. London: Facet Publishing, 2014. 208 pp. $78.00 (paperback) (ISBN 9781856048743)

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From the beginning of time, measurement has been part of the essence of being human, whether consciously or unconsciously. The purposes for which we measure, as summarized by Behn (2003) and duly cited by Stuart in the introduction to his book, are enlightening in themselves: to evaluate, to check, to budget, to motivate, to promote, to celebrate, to learn, and to improve. Humans, whether they are involved in scientific or non-scientific activity, need to measure in order to know.

Advances in instrumentation, coupled with the development of applied statistics, have heralded genuine revolutions in the collection, measurement and analysis of empirical data in different academic disciplines. The development of new instruments of measurement, such as the telescope or microscope, allowed us to observe what we could not see before. They also led to the design of new data collection procedures for new entities and attributes.

Information and communication technologies have enabled instruments of measurement to capture human beings in their social aspect, in an entirely personalized fashion. At the dawn of the Internet age, quantitative analysis – performed through rudimentary tools – only allowed us to sketch out a small part of human activity, reflected through web activity.

In this way, a quantitative analysis of websites allowed us to determine, in a manner that was somewhat elementary but of undoubted public interest, the established relationships between different actors (especially institutions and companies) in different languages and on various subjects, through a set of web indicators that webometric techniques helped design, implement, test and improve by means of countless research works.

Today, however, the connection of the individual to the network has begun to be immersive: both objects and people are networked, and the traceability of our participation is reaching unimaginable heights. Biometrics and domotics, to name just two fields of many, supply us with single-level details as accurate as the number of calories you lose during each minute of exercise or the temperature of the oven in your home. We can obtain these data in real time through the network, and even on a mobile device, wherever we are.

Such an enormous amount of data, its ease of use and accessibility for the middle-class strata of the population, has meant an explosion in measurable activity. This in turn has undoubtedly had a knock-on effect on the quantitative disciplines of information and library sciences, including webometrics, which focuses on the quantification of semi-structured data with specific instruments of measurement, in particular search engines and transaction files.

This explosion in metrics has had a remarkable impact on scholarly activity, but less so on professional activity, which is highly significant if we consider the practical services that information and library sciences provide.

In this regard, David Stuart's recent book, "Web metrics for library and information professionals", published by Facet Publishing, fills an important gap in the literature. As the author himself explains, the main goals of his book are "to demonstrate the contribution web metrics can make to the work of librarians" and "to introduce metrics to the community of librarians". And this task holds great interest because of two different, but complementary, reasons.

First, all metrics-based academic disciplines need to come down from their ivory tower and demonstrate their usefulness in other fields (both academic and professional) in order to grow, spread, and survive. And webometrics, despite its obvious advantages, is virtually unknown, not only in other related academic fields (computer science, sociology), but also among information professionals themselves.

Moreover, the library profession has need of new metrics (metrics for professionals), both to improve its services and products and to demonstrate their impact on others. Correspondingly, the alignment of the three main objectives of business (increase revenue, lower costs and

improve customer satisfaction) with web metrics (Sterne, 2010; cited by Stuart) becomes necessary.

David Stuart, Honorary Research Fellow in the Statistical Cybermetrics Research Group at the University of Wolverhampton and now researcher at the Centre for eResearch, King's College London, tackles two titanic enterprises in his book: the definition of a scientific metric discipline, and its professional application to the library and information science sector.

The introductory chapter focuses on the virtues of web metrics (a new medium for analysis with a greater variety of data at increasingly fine levels of granularity), while also, for the sake of balance, revealing certain limitations, both technical (ephemeral materials, difficult to measure) and human (easily manipulated). The primary focus is on the possibilities and advantages (it is important to see them as weak-benchmarking metrics, with pros and cons), and the fact that terminology is essential and necessary for understanding (metric as a quantifiable standard of measurement, and indicator as the use of a metric as a proxy of something else).

After the introduction, the book is divided into seven chapters dealing with the discipline of web metrics and its possible applications for information and documentation professionals, ending with a forward-looking chapter. These are briefly described below.

Bibliometrics, webometrics and web metrics

This chapter focuses on defining the discipline. It also describes its coverage and relationship with other metric disciplines in a diagram of concentric circles, modeled on Björneborn, in which informetrics predominates and with the addition of both altmetrics and web analytics.

Similarly, different types of indicators are classified and categorized, producing extremely interesting terminology differences, especially that concerning web metrics (quantitative measurement of the creation and use of web content) and webometrics (the study of web content using quantitative methods for research purposes). Practical applications are also looked at (gaining insights that can contribute to the successful trading of products and services), clearly establishing the purpose of the book.

The analysis of the different types of indicators starts with bibliometrics. Then it moves on to web bibliometrics, general webometrics, and finally ends with web analytics. This chapter is

geared more toward web bibliometrics than to web metrics, while the possible applications for librarians appear briefly outlined at the end.

Data collection tools

This is one of the most interesting chapters, in which four distinct periods of webometric research are identified and the problems of data access are further discussed, as well as the limitations of some types of measurement, excessive dependence on the functionality of the search engine, and the rapid obsolescence of information.

Perhaps the evolution of this discipline has focused too much on hyperlink indicators, when indicators of usage (transaction files) are also of great importance. We must not forget that the MESUR Project, besides being a clear precursor of the current altmetric movement, constituted a seminal work for the fields of both bibliometrics and webometrics.

After the analysis of the web data collection tools, the book goes on to address how indicators are obtained in the following four chapters. Indicators related to impact assessment are treated first, divided over chapters 4 (mainly websites, blogs and wikis) and 5 (social networking sites), while network indicators are described in Chapter 6. Chapter 7 is devoted to the application of web indicators to the quantification of both bibliographical and scientific material. Finally, Chapter 8 is dedicated to the exploration of a new set of indicators derived from the semantic web.

Evaluating impact on the web

This chapter begins with the collection of indicators from the various measurable web units (websites, blogs, wikis). It then looks at how to distinguish and describe external metrics, classified as Behavior user (visits), Google trends (query keywords) and User tracer (link metrics), and internal metrics (especially web analytics).

Evaluating social media impact

This second chapter on impact assessment metrics starts with a classification of social network sites (socializing, networking and content sharing). Then the types of indicators associated with them are discussed: profiles (descriptive information), connections (network indicators) and navigation (page views). This is followed by an introduction to the main social sites, providing a

description of their operation, key metrics and internal and external tools, ending with a brief section on the sentiment analysis method. The chapter concludes with a thoughtful case study on the sentiment analysis of comments received on videos posted on YouTube by a set of libraries.

Investigating relationships between actors

This chapter centers its attention on network relationship metrics between elements through the techniques derived from social network analysis (SNA).

Despite being, along with the chapter on the semantic web, probably the most complex part of the book, the author gives us a well-structured, simple and easy-to-read chapter, making the subject more accessible and useful for a wider audience. Unlike the previous chapters, extensive descriptions of the most commonly used network indicators are provided.

The chapter finishes with two more case studies. The first focuses on Local Government (interesting but perhaps of less practical use to librarians). The second examines the relationships between UK library Twitter accounts; it shows the relationship of these indicators with the social networking site functionality called "connections", previously discussed in Chapter 4.

Exploring traditional publications in a new environment

Considering the title of the book, and the objectives stated in the introduction, this is the chapter that best meets expectations. It breaks down into two parts: the analysis of academic production on the web (web bibliometrics), and the use of different tools for tracking general-purpose bibliographic works (web metrics for libraries).

In my opinion, in his analysis of the first part (centered on Google Scholar and other academic search engines), the author focuses too much on the characteristics of the academic search engines as information search tools. Perhaps incorporating these tools into the chapters on impact assessment metrics, i.e. Chapters 4 (possible web bibliometrics section) and 5 (possible altmetrics section), would have created a better structure.

The second part deals with the analysis of reading material, of great interest for the book's potential audience, as it provides library professionals with a more direct application for web

indicators. As with the first part, it would have been desirable to incorporate this part into the previous chapters (3 to 5), to avoid repetition of examples of tools like Google Trends or wikimetrics.

Web metrics and the web of data

The future of the discipline depends on the future of the web, which celebrated its 25th anniversary in 2014. And it is moving – with slow but steady steps – towards a more diverse web with more interoperable open data and semantic markup, which will introduce new metrics, applications and services.

Nevertheless, few studies of the semantic web have been conducted from a metrics perspective, the author's own previous publication being a notable exception (Stuart, 2011).

One possible reason for this is the difficulty in achieving widespread implementation of semantic markup (not only in specific silos of information), as it depends heavily on Content Management Systems (CMS) to insert it automatically and in a way that is transparent to users. Search engines have also failed to adopt it widely.

This, therefore, is a more complex chapter, as it explains semantic markup techniques, semantic search engines (Sindice) and complex queries using Sparql language, clearly moving away from the philosophy of the previous chapters. These issues must surely be seen as essential to understanding the future of metrics disciplines, a fact that emerges in the last chapter of the book.

The future of web metrics and the library and information professional

The author identifies three major fronts in the future of the discipline (more data, more open, more web metrics) that will determine the available data sources, such as indicators and measurement procedures. In my opinion, even though I fully agree with this prognosis, I think that, paradoxically, although there will be more data and indicators, we will have less access to them.

Today, the major search engines limit metric options. In late 2014, both Google and Bing, currently the search engines with the widest global coverage, were permitting increasingly less metric functionality. Valuable commands have been disabled ("filetype" on Google Scholar has

recently stopped working in combination with other search commands) or have ceased to operate accurately (the "-site" command does not work on Bing). APIs are either nonexistent (Google Scholar) or very limited (Bing only allows 5,000 free queries per month, and does not provide reliable results for queries above 1,000 hits). In addition, personalization and geolocation both influence results.

Moreover, mobile versions of the search engines do not provide hit count estimates, and semantic search engines are geared more to natural question answering than to providing the number of documents where the answer may be found. It would therefore seem that they are not very interested in providing classic evaluation impact metrics.

New tools (like Topsy, Majestic or Open Site Explorer), with metrics and exciting new features, are primarily aimed at marketing and, most importantly, are premium model (except for a few features offered for free). Biometrics, data mining, web of data, and web of things keep developing but unfortunately mostly outside the webometric field, at least for now. My feeling is this: more data, more tools, more indicators, but less precise results.

For the future of web metrics as applied to library professionals, I believe that its evolution should not be directed at the proper use of existing tools, but at introducing changes to the profession itself. It should address how they will make use of web metrics, both to provide new services to their users (increasingly remote from the physical space of the library), and to generate self-assessment and decision-making activities, all coupled to the new forthcoming services, to which they must readjust in order to survive.

In general terms, the book perhaps gives excessive weight to web bibliometrics. Similarly, many of the practical examples used (such as the unit of measurement) are related to universities (of less interest to librarians). Likewise, when libraries are being measured, with a few exceptions, they are generally located in the UK, perhaps of less interest to an international reader.

Furthermore, the structure of the book, in some cases, becomes complex, especially in the case of impact evaluation indicators. The distinction between internal and external metrics is perhaps not suitable, as this separates indicators of a similar nature (such as visits).

Similarly, content analysis and sentiment analysis are separated by differentiating between general indicators and indicators from social networking sites, although this distinction is not real, because a sentiment analysis can also be performed on websites, blogs and wikis. A good choice would possibly have been to devote a separate and longer chapter to content analysis, including sentiment analysis.

In any case, apart from the possible appropriateness of the examples (which do not detract from its undoubted value), and the structure of the book (a subjective view), this is a work of inestimable value.

The author has been able, in fewer than 200 pages, to summarize the most important aspects of the discipline and has done so with simple but rigorous language; he has described a vast set of tools, information resources, indicators and measurement procedures, and given them real context and professional application; he has also given critical and constructive meaning to the accuracy of these metrics.

The author's extensive and well-structured knowledge of the discipline, both academic and professional, enables him to tackle chapters of a different nature (methodological, descriptive, applied, and predictive), so that the reader may learn in an educational and pleasant way. The analysis is astute, and provides a wide range of uses in this field as well as original data and interesting case studies.

The book begins and ends with two very appropriate famous quotations. The introduction opens with the quote "Not everything that can be counted counts, and not everything counts that can be counted", by William Bruce Cameron (though usually wrongly attributed to Einstein), and the closing chapter ends with another quote: "Whenever you can, count" (Sir Francis Galton).

These quotations reflect, respectively, *apocalyptic* and *integrated* viewpoints (cf. Umberto Eco's division between *apocalittici e integrati*). They illustrate the critical yet positive spirit that pervades the work of David Stuart. As the author himself indicates, "Metrics should not be the end of a conversation, but rather the beginning". This quote is an excellent bridge between the opening and closing quotations of this work and a resounding endorsement, both for the

researcher interested in learning about the discipline and the professional who desires to explore certain techniques and metrics to improve their daily professional activity.

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