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Altmetrics for the Information Professional: A Primer

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Introduction

With the exponentially increasing amount and variety of venues for publishing scholarship, it has become more and more difficult to find and select the most relevant resources. Researchers need powerful and successful filters to help them stay abreast of literature in their field, as well as methods to track the impact of their own research in often very specialized areas of interest. Traditional mechanisms such as peer review and citation searching using bibliometrics are no longer sufficient tools to aid researchers. With increasing opportunities to bypass traditional publishing mechanisms and take advantage of social media, there is a paradigm shift occurring in tracking scholarly research output. Is there a way to selectively evaluate and track literature and other scholarship relevant to one's area of interest? How can librarians become leaders and powerful allies in this new landscape? Enter the world of altmetrics.

Altmetrics, or alternative citation metrics, provides researchers and scholars with new ways to track influence across a wide range of media and platforms. Jason Priem, one of the leaders in this area, defines altmetrics as "the study of scholarly impact measures based on activity in online tools and environments" (Priem, Groth, and Taraborelli 2012). Altmetrics goes beyond the research article to help track influence of other forms of scholarship, recently defined by the National Science Foundation (NSF) as citable and accessible products not limited to publications, data sets, software, patents, and copyrights (Grant Proposal Guide, Chapter II 2013).

Traditional methods of measuring a scholar's impact rely on citation counting and have been the standard by which research impact is measured. They are still important, including for promotion and tenure purposes, but they do not provide the full picture. The data are slow to accumulate and are often contained within proprietary systems. They also fail to take into account the diversity of publication mechanisms now available nor the forms that scholarship takes beyond formal journal articles. In addition to the research products mentioned by the NSF, grey literature, such as technical reports, working papers, and white papers, is also not well represented in traditional bibliometric systems. As grey literature is increasingly or natively

published on the web, this scholarly output is now more readily found and cited, making it a good candidate for inclusion in a scholar's body of work using altmetric tools.

In addition, altmetrics are used by engaged scholars as a type of readers' advisory service by providing research support and suggestions. Using the social media components of tools such as those described below, it is possible to follow other experts in the field, join interest groups, and share both references and actual research output. In a sense, some of these nearly real-time interactions allow anyone to take part in the conversations that advance knowledge. And since librarians have always been in the knowledge business, it is very important that we understand and find a role for ourselves in the conversation as well (Lankes 2011).

Description of Tools

There are a number of tools to track a scholar's influence and relevance beyond traditional citation metrics. As mentioned above, traditional methods of measurement take a long time to accumulate, some of them are available only via subscription resources, and they very often measure influence only on a specific scientific community. Perhaps a more accurate assessment of influence is the number of readers of an article, the discussions surrounding the article and the other ideas, research or innovation the publication sparks. In some disciplines, engaging with a community of scholars via PowerPoint presentations, academic blog posts, and invited lectures may be significant.   Altmetrics can help by quantifying this relative importance.

However, like traditional citation metrics, altmetrics data is dependent upon accurate attribution of research products. Much of this information is contained within proprietary databases and other closed systems. A new initiative, the Open Researcher and Contributor ID (ORCID) project, aims to disambiguate authors by assigning a unique identifier to each individual author. This system is supported by many publishers and research universities and provides communication tools between identifier systems such as Thomson Reuters' ResearcherID and Scopus' Author Identifier. The ORCID registry, available free to individuals, is used to unify data from diverse platforms to help correctly link together research activities. Organizational members and funders can explicitly link their records and data to individuals. ORCID is intended to integrate unique identifiers seamlessly throughout the research ecosystem (ORCID Inc. 2012).

The most mature and promising altmetric tools to track readership and influence are described below:

CiteULike permits users to store, organize and share scholarly papers (CiteULike: Frequently Asked Questions 2013). Participants can post articles of interest to their libraries and organize their research by tags. This tool is less popular in most disciplines than Mendeley and the groups this author checked contain many fewer participants and papers than similar Mendeley libraries.

F1000 is a subscription-based recommendation service for curated articles in biology and medicine. This publisher offers four different services that include an open access journal,

F1000Research; and an open access poster and presentation repository, F1000Posters. (Faculty of 1000 2013)

Google Scholar Citations is a service that allows authors to track their publications and influence using Google Scholar metrics. Once authors claim their profile and link up their professional personas, Google Scholar populates the individual's profile with citation indices and metrics (Google 2012). This free tool is extremely useful, user friendly and well regarded. As with any citation analysis tool, caution should be exercised when comparing one tool to another.

Mendeley is a free reference manager and social network that was recently acquired by Elsevier. Mendeley is described as "one of the world's largest crowd-sourced research catalogs" (Mendeley Ltd. 2012). Users create an account to store and annotate articles, join interest groups to share references, and browse papers. Among the readership tools available are "Popular" papers that shows the number of readers as measured by saves in a Mendeley library. There are also discipline and sub-discipline groups; for example, the sub-discipline Biochemistry has about 32,000 papers and the most popular paper has 4,000 readers. Functioning as a type of readers' advisory service, one can join a Group that is essentially a loosely curated bibliography of articles.

Zotero is a robust and growing citation management and sharing resource. It is likely that in the near future it will begin incorporating more of the readership tools that Mendeley and F1000 offer. Zotero is a free, open source, and open access citation management tool. (Center for History and New Media).

Altmetric aggregators attempt to make sense of the diverse metrics and tools that provide data to gauge influence and relevance. The most well developed aggregators are described below.

Altmetric.com "identifies, tracks, and collects article-level metrics on behalf of publishers" (Adie and Roe 2013). This platform is a paid business solution that collects data about an individual article and supplies this data to publishers. The publishers, who can subscribe to various Altmetric products, store and present article-level metrics to their readers and authors. The data Altmetric collects include reference manager counts, Tweets, and discussions in social networking sites such as Facebook, Reddit and blogs. Subscribing publishers can drive traffic to their own websites and publishing platforms by displaying altmetric data alongside traditional article level metrics.

The best aggregator tool for scholarly authors is a free, open source and open access resource. ImpactStory, funded by the Alfred P. Sloan Foundation, aggregates data from research products including articles, datasets, blog posts, PowerPoint presentations and more (Priem and Piwowar 2013). A user creates a collection and adds articles and products from sources including ORCID, Google Scholar, or by inserting DOI's or PubMed IDs. Next, other products are collected including datasets, slides, and other items available via DOI or URL identifiers. A report is generated for an author that details the influence and use of specific research products. It is important to note that the developers of ImpactStory have found that the number of identifiers

for research products and the lack of a unique researcher identification system make the data more difficult to collect.

Plum Analytics is commercial platform that is marketed to libraries. It collects data similar to ImpactStory, but it is a closed source and data system, as is Altmetric.com. This system measures influence using five categories; usage, captures, mentions, social media, and citations (Bushman and Michalek 2013). This system seems both very ambitious and promising for institutional subscribers.

A good aggregator collects relevant data from diverse sources, adds value to the information, and delivers the content in an apposite format. The tools mentioned above are all in their infancy and likely will evolve as collecting and utilizing altmetric data becomes more routine.

Engaging Constituents

Interesting faculty in newer forms of tracking scholarly influence will take more effort than sending a link to ImpactStory.org. It will be necessary to take a multi-pronged approach to generate faculty interest in altmetrics. The easiest population to engage is faculty entering the tenure track. While altmetrics may not be used in promotion and tenure decisions now, the scholarly landscape will be very different in five years time.

Conversations with faculty can begin by describing some of the limitations of traditional, individual scholarly metrics. Citations to published works take several years to appear, measure influence only on a select group of researchers, and are skewed toward the STEM (science, technology, engineering and medicine) fields. In addition, author and institutional naming inconsistencies can lead to incorrect attribution of scholarly works.

Altmetrics, while still developing, can provide a more robust picture of scholarly influence. Altmetrics can measure the buzz surrounding a scientific article – including the discussion in blogs, article views, data or article downloads, and saves to Mendeley libraries. Demonstrating a researcher's profile using an altmetrics aggregator, such as ImpactStory, can impress even the most recalcitrant faculty member. The varied research outputs aggregated by ImpactStory can help faculty recognize the importance of unified profiles across the scholarly landscape and accurate attribution. Finally, altmetrics can help demonstrate the wider impact authors can have by aiding in the discovery, access, and use of a scholar's work.

Conclusion

As a complement to traditional citation metrics, altmetrics can provide a more rapid assessment and arguably a more complete picture of an individual's scholarly influence. Altmetric tools can help illustrate the value of scholarly output beyond publications. These measures can be used to facilitate knowledge sharing and provide evidence of effectiveness.

Tracking the relevance and significance of these research products requires knowledge of the practices within a discipline and the foresight to predict what may be important to track in the future. Altmetrics can help researchers by vetting, organizing and adding value to information products retrieved, a process familiar to information professionals.

EndNotes

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