

Altmetrics: A Modern Way to Assess Research and Journals

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For decades, scholarly publishers have been using Journal Impact Factor (JIF) as a measure of quality of the journals they publish within their respective disciplines. Founded in the print world of the 1960s by Eugene Garfield, the JIF regime is based on the average number of times articles within a journal were cited during the previous two years.

Over the years, the use of the JIF expanded as a proxy for researcher impact and is still one of the main metrics used for tenure and promotion. When research was conducted in an analog world and journals were published only on paper, this metric stood alone. Now the way research is conducted has changed dramatically. There is a huge amount of scholarly communication happening online, research output is no longer confined to articles in a journal, and many more metrics are available. The notion of the journal container as proxy for impact appears less and less tenable.

Old processes die hard of course. Why is the JIF still so entrenched? From a publishing point of view, having an agreed way to measure the “quality” of journals is appealing. Journals, after all, are still the packaging in which articles are sold for the most part—even if they are bundled as part of larger packages or aggregations. And tenure and promotion committees are loathe to be the first to change established ways of measuring researchers. Over the years, researchers themselves have become socialized to the process as well. This cycle between scholarly publishers, researchers, and tenure boards has been remarkably resistant to

new measures—presumably each waiting for one of the other three legs of the stool to fall before they change. However, there are many cracks in this system.

The biggest crack is the Open Access publishing model. According to the Registry of Open Access Repositories Mandatory Archiving Policies (ROARMAP), by the end of 2013, over 240 universities and over 90 research funders had adopted open publishing mandates. Even the most profitable scholarly publishers have publicly stated that Open Access publishing is inevitable. This publishing model changes a lot of the way we think about traditional publishing, especially the notion that the journal is the most important measure of impact. The reality is that Open Access demands the need to provide authors with article-level usage metrics. Historically, librarians were the biggest customers for scholarly publishing. They did not need article-level usage statistics to make collection decisions so publishers were not pushed to provide them. However, for Open Access publishers, the “customer” is the author who often pays (usually through institutions or grant funders) the Open Access article processing fee. New usage metrics, or altmetrics, provide new insights for authors and are direct measures of the article rather than the journal. While this is important in Open Access publishing, where “mega-journals” have done away with the notion of a journal brand, it is also increasingly important to authors for all articles in all journals. This further puts the article in the

forefront and reduces the need to measure journals as a proxy.

Increasingly, researchers are seeing that publishing their findings as a scholarly article is merely one type of output. Datasets, including graphs, photographs, source code, and many, many other types, are now being hosted and interacted with by other researchers. Researchers are using blogs to quickly show results of their work or to report negative results that otherwise would not be published. Born-digital books with open review are creating new types of scholarship that include baked-in elements of peer review.

More importantly, the fact that scholarly communication as a whole is taking place online allows us to measure the “data exhaust” that simply did not exist in the analog world. For instance, many researchers save articles that are important to their work in bibliographic management systems like Mendeley or Zotero. Much communication between researchers now happens on social media in places like Facebook or Twitter. Comments and reviews are now online and harvestable.

Finally, researchers are beginning to demand that they not be measured by a journal score. A year ago more than 100 researchers published a joint statement (available at <http://am.ascb.org/dora/>) called DORA, or the San Francisco Declaration on Research Assessment, which calls for journal-level metrics to be phased out in favor of article-level measures.

Plum Analytics was founded in 2012 with the vision of bringing modern ways of measuring research impact to individuals and organizations that use and analyze research. In 2013, Plum Analytics released their first product, PlumX. PlumX is an impact dashboard that processes metrics, including altmetrics, to provide information of how research output is being utilized, interacted with, and talked about around the world. In January 2014, EBSCO Information Services acquired Plum Analytics, which operates as a wholly owned subsidiary.

Using altmetrics can provide an objective way of understanding the reach of research. PlumX tracks over a dozen different types of metrics from over 30 sources. Examples of sources of



metrics include PLOS, PubMed, WorldCat, SlideShare, figshare, Twitter, Google+, CrossRef, and Reddit, to name a few. The metrics captured are items like number of times downloaded and viewed, library holdings, bookmarked articles, social media interactions like tweets and +1s, as well as many more.

To make sense out of this fire hose of data it takes careful design and deliberate collection of the data. One thing discovered in the process of working with altmetrics is that not all metrics are created equal. For example, when someone takes the time to bookmark an article for later, known as a “capture,” that is more indicative of someone actually using this research than a tweet about the same article. In fact, according to a recent article published by Tony Haile in *Time*, there is no relationship between how much content is shared via social media and the attention an average reader gives that content.¹ Haile looks further at social media and also finds that people who use content usually do not share it. This is not to say that social media metrics are not important—they are very important in understanding the promotion model for articles. Nevertheless, it does indicate that just analyzing social media falls far short of the altmetrics promise.

Therefore, PlumX classifies metrics into five categories to give authors and others meaningful

1 Haile, T. (2014, March 9). What you think you know about the web is wrong. Retrieved March 20, 2014 from <http://time.com/12933/what-you-think-you-know-about-the-web-is-wrong/>.

information in which to analyze impact. These categories are:

- Usage, *e.g.*, downloads
- Captures, *e.g.*, bookmarks
- Mentions, *e.g.*, blog posts
- Social Media, *e.g.*, tweets
- Citations, *e.g.*, Scopus

In this way, authors and others using these data can see usage and captures versus the social media buzz, and make interesting observations and wise decisions. Both of these measures are important, but they are different and evaluators need the opportunity to view them differently.

While altmetrics help authors understand the reach and impact of their own research, they are also helpful in understanding the research they should notice. This is especially true as researchers venture increasingly into cross-disciplinary work. According to a recent *STM Report*, “There were about 25,400 active scholarly peer-reviewed journals in early 2009, collectively publishing about 1.5 million articles a year.”² With this much work, researchers need tools to help determine what is important. The old ways of finding important work involved looking primarily at journals deemed as high impact. However, this method will not find the current articles that are getting

attention and may be important, or research that is important but is not published yet. Altmetrics helps fill this need.

There is good news here for publishers. Altmetrics do not have to be just for authors. Since a metric dashboard such as PlumX consolidates metrics at any level, including journal or issue, publishers have unprecedented information to help manage their publications. They can now answer a series of questions including:

- How are issues performing over time?
- Are we recruiting the right authors?
- Can we tell if a discipline, journal, or author is “on the rise”?
- Are our competitors promoting their articles and authors better than we are?
- How do we provide more value to our authors?

A dawning of a new age of technology always brings new ideas that provoke debate, resistance, and angst. Yet, once embraced, a new age can also bring better ways of doing things. Altmetrics is a new way of doing things that is challenging entrenched ideas about research and scholarship. Yet, altmetrics can also be used to discover new ideas about research and help publishers with new insight about their publications.

2 Ware, M., Mabe, M. (2009, September). The STM report: An overview of scientific and scholarly journal publishing. Retrieved March 20, 2014 from http://www.stm-assoc.org/2009_10_13_MWC_STM_Report.pdf.