Do we need a bibliometrician to know which way the wind is blowing?

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Disclosures: Authors has nothing to disclose with regard to commercial support.

Received for publication Sept 28, 2015; accepted for publication Sept 28, 2015; available ahead of print Oct 26, 2015.

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J Thorac Cardiovasc Surg 2016;151:23-4

0022-5223/\$36.00

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<http://dx.doi.org/10.1016/j.jtcvs.2015.09.115>

As surgeons, we are increasingly aware of how we are being measured, and it seems clear that knowledge of ongoing assessment does influence our behavior. In some instances, that behavior change is the correct response. If we know that the outcomes of a certain surgical case will have an influence on our individual surgeon's statistics or on our hospital or program's rank in a publicly accessible database, we will likely be more thoughtful about taking on that case. Presumably, this transparency works in both ways, with the rankings informing the consumer and the threat of future metrics exerting influence on the practitioner. The expectation, and for the most part, the reality is that such metrics will lead to better decisions and possibly better and more efficient health care. Although this is generally a positive trend, most surgeons can describe unanticipated consequences in which the awareness of metrics leads to decisions about patient selection and procedure specifics that go beyond the plain medical facts of the case.

The increasing availability of data about everything has led to a dramatic growth in measurement tools used to describe the performance of a journal, too. These are rapidly expanding, and they are not easy to track unless you are in the publishing business or work closely enough with publishers that you need this knowledge to do business. It used to be easy: For decades there has been a measure called the Impact Factor, and this metric looked at all articles that a journal had published in the previous 2 years, counted how many times these articles were cited, and then divided the number of citations by the total number of articles to get the Impact Factor. The relative reach and importance of a journal could be summarized by this number, potentially allowing authors, promotions committees, publishers, and advertisers to compare and contrast journals as they made important decisions.

It has become much more complex, and now there are several different iterations on the so-called "prestige metrics." The Eigenfactor, the SCImago Journal Rank, and the Google PageRank are all indices that crop up during this discussion. Some enhancements eliminate the effect

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Central Message

In an era with infinite ability to capture and analyze journal data, the challenge with metrics might be choosing what we value.

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of self-citation by not counting the citations that a journal makes of its own work. Other enhancements give weight to the quality of the articles citing another article: A citation of your work by an important article counts more than citation by an article that nobody reads or cites. A visit to *The Journal of Thoracic and Cardiovascular Surgery* page of the publisher's Web site (<http://www.journals.elsevier.com/journal-of-thoracic-and-cardiovascular-surgery/>) reveals additional metrics that the publisher offers to the public for the purposes of transparency and comparison: The 5-year Impact Factor and the Source Normalized Impact per Paper are added to the previously mentioned SCImago Journal Rank and Impact Factor indices to round out the array of publicly offered metrics. The values in isolation mean nothing; they only offer the ability to compare, but questions arise. What do we do with the outcome of the comparisons, and how vigorously should we defend a given metric?

If citations are the criterion standard for all the metrics mentioned here, then we need to consider also the more immediate and practical metrics of downloads and page views. These attributes were barely on our radar 10 years ago, but now there is an increasing body of observations about the linkage between early downloads of an article and eventual citation in the bibliographies of future publications. Nick Anthis addressed this well in his blog, "The Scientific Activist" (<http://scienceblogs.com/scientificactivist/2009/04/11/download-counts-predict/>) a few years ago. In the blog, he related published findings about important and

significant correlations between the number of downloads in the first 6 months or first 1000 days after publication of an article and the subsequent citations of that article in the first 5 years after publication. Some have suggested that although citations might be a reflection of the scholarly influence of an article on future work, downloads and page views might reflect the usefulness in everyday practice or the actual impact to the end users of the article. Clearly, downloads belong in the pantheon of metrics that journals must showcase and offer up for comparison.

There are other goals of a journal, however, that may not align with the notion of maximizing citations and downloads. Many scientific investigators in the field of cardiothoracic surgery will get their own personal bibliography started by publishing work in a specialty-specific journal such as *The Journal of Thoracic and Cardiovascular Surgery*. As these investigators grow in stature, and the work gathers momentum, they might move on to increasingly specific and possibly more “impactful” journals, but the specialty-specific journals can take some pride in the role that they play in the launch of that surgeon-scientist. What obligation do we shoulder as a journal, or as a specialty society, to support the early works of those submitters who are “the future of our specialty,” even when we are confident that most of these articles will not be cited and will thus be a drag on our publication metrics?

A similar dilemma exists with the lowly “case report.” The typical case report could be viewed as a public service message that, in most metrics, will count against the journal that prints it because it is a “denominator” paper that will not yield any predictable “numerator” citations. If the message is truly a public service, however, and if the act of

sharing an unexpected good or poor result can increase the potential outcomes for future patients, might that token of community service be worth the small hit that it could have on the Impact Factor?

The standard metrics are meaningless alone, and they only carry weight when one journal is compared to another, or when our journal today is compared with the same journal in a previous period. As we strive to improve, we are inevitably burdened with the weight of these comparisons. It becomes too easy to summarize an editor or an entire editorial board or a bundle of implemented strategies by the small positive or negative deflection that they have had on a metric, without looking at the much more complex big picture. Maximizing “Impact Factor” or “downloads” could probably be best done dispassionately by an algorithm, but the growth and development of a community around a journal is far more complex and valuable. Do we value surgical education? If so, we need to publish the unsophisticated early attempts by members of our own specialty to lead other members into that field. Is professionalism important to us? If so, then articles that highlight professionalism in our field must be published, even when they stand little chance of being broadly cited. The challenge of doing what is “good” at the expense of what is “measured” can be summarized quite elegantly by a small fragment from David Ignatow’s collection, *Shadowing the Ground*, in 1991. He wrote: “I live with my contradictions intact, seeking transcendence but loving bread.” We, too, must admit our contradictions and seek balance between publishing for the metrics and publishing for the positive growth of our members and our specialty.