

Altmetrics and the interface between science and society

Quantitative indicators may be used to support decisions, but we should never underestimate the power of qualitative analysis. However, in a society full of data sources and in hurry to provide answers, the research management and funding areas increasingly seek out numbers that can qualify a researcher, a research project or a scientific journal.

We know that the impact factor is a beacon pointing backward: It shows what the past was, but does not guarantee a future. And one should not thoughtlessly compare these values between journals. The perception that different fields of science have different citation dynamics, and that the indicators derived from them are subject to these influences, comes from its origins and reaches J.E. Hirsch (2005) with his h-index. Similarly, researchers of Bibliometrics and Scientometrics, in their events, have been expressing concern with the uses made of these metrics.

Create an indicator and say goodbye to naivety. Those who seek academic success learn to follow the new rules and formats in order to adjust themselves to the new model, and mechanisms, ethical or not, will start being used. So it was at first, when the number of articles published was simply counted, leading to the so-called *Salami Science* – the outcome of research being fractioned into various articles – and progressed with other practices when the number of citations of an article or the impact factors went on to be taken into account.

Regardless of the criticism, traditional metrics and their indicators have contributed in some measure to assessments, such as of graduate programs, productivity grants, and journals within a same field. Researchers have used them to select the journals they are interested in submitting their articles to, but they definitely should not be used as a way to pre-assess work published in such journals.

However, while traditional factors and indices can serve those with extensive scientific careers, despite the slowness at which their data accumulate, how to evaluate the scientific merit of those with careers still being shaped? How to recognize, early on, and foster a new generation of professionals engaged in research? How to dialogue more quickly and effectively with the various social actors who are interested in science? Are we ready for this? Perhaps, but only because of the revolution in data and social interactions that have consolidated in the past twenty years.

Thus comes Altmetrics into the picture, a field whose terminology was effectively born with the altmetrics manifesto of Priem and colleagues (2010). Among the many definitions there are for the field, I use the one that altmetrics is using cybermetric data for scientometric analysis. However, from a more pragmatic point of view, Altmetric – a premier provider of an

altmetric indicator – sees it as the use of any trace or indicator of online behavior acting on results, within the research life cycle expressed by all kinds of audiences (scientists, journalists, the public at large, etc.) on a digital platform. To the company, altmetrics has to do with attention, not quality, which may be positive or negative, and it is not by chance that it recently changed the name of its indicator from *Altmetric Score* to *Altmetric Attention Score*.

Thus, just like a large number of citations, a lot of tweets could be a sign of dialogue or interest in a work, but this would not attest to the quality of what is being said. However, analyzing the remarks made would be an opportunity to detect early interest or controversy with regard to the results presented. This practice would be strategic for communication actions by the researcher or institution in the debate that will follow with the media and society as a whole.

Agility and embracing different actors will appeal to a growing interest, among the development agencies, in data with broader impact, which includes awareness of the importance of science communication as a way to establish a closer relationship between funded science and science done in a laboratory, and the society that expects returns on investments in this field as well.

But converting thumbs up (Facebook likes) and hearts (Twitter likes) into indicators without carefully analyzing results will be no easy task. Converting these data into citations has been a constant object of study, however, for a merely academic interpretation, we would need a way to separate the ‘science communication’ and ‘scientific communication’ components, which, non-essentially, should be the focus of the understanding of these metrics.

Instead, we should consider them together with the peculiarities of each source of data, and with their influences in the production of attention and interaction among their players. They should not be seen merely as alternative, rather as additional metrics, because they do not have to replace or be an option against the traditional ones. It is necessary to understand that, because of their social nature, in topics more related to the interest of a large audience, and/or of science journalists, the potential for growth will be matching.

While on one hand the current number 2 in the ranking of the *Altmetric Attention Score* is an article written by Barack Obama, in an incredibly fast rising trend, demonstrating the potential of an author of great influence in the world press, on the other the number 1 remains a 2014 article that questions the scientists’ interpretations and uses of the statistical p – the probability of significance. Controversy or the celebrity effect will always have strong appeal in the social world, but even so one should not disregard the academic value of these data.

Finally, these are metrics with possible positive influences – scientists worrying more about communicating their research results to the public – and perhaps negative ones – a mediatization of science leading to changes in experimental models, focus on research on trending topics, or with false controversy, and even exaggerations of the results obtained in press releases.

For this reason, our challenge with regard to altmetrics is perhaps to establish an even clearer dialogue with society to convey something essential to science: Conclusions that take into account the limits of the observations and experiments, an eternal openness to review and the right to healthy, serious controversy. This is how we make progresses in human knowledge in a current and renewed way.

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References

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