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Inspired by bibliometrics

Research Trends Editorial Board

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Rounding out President Obama's "Dream Team" are two biologists, Eric Lander and Harold Varmus, co-chairs of the President's Council of Advisers on Science and Technology (PCAST) with Holdren. PCAST is a panel of private sector and academic representatives established in 2001 to advise on issues related to technology, research priorities and science education.

Lander, founding Director of the Broad Institute of Massachusetts Institute of Technology and Harvard, was instrumental in the Human Genome Project; his more than 350 journal publications have collectively been cited more than 75,000 times since 1996.

Varmus, former director of the National Institutes of Health and President and CEO of Memorial Sloan-Kettering Cancer Center since 2000, is the second Nobel Prize winner (Physiology or Medicine, 1989) appointed to Obama's team. His prize-winning research on the cellular origin of retroviral oncogenes published in *Nature* in 1976 (3) continues to be cited (21 times in 2007).

Towards a well-informed future

President Obama has collected some of the finest scientific talent in the US to advise him, with a particular focus on environmental issues. In fact, the team has also been dubbed

the "Green Team". These five individuals were together cited more than 12,000 times in 2007 and their experience spans the breadth of the physical sciences.

Incidentally, Obama himself is a published author, with a dozen journal publications: his 2006 article (4) with erstwhile presidential rival and now Secretary of State Hillary Clinton on health-care reform has been cited 28 times to date.

President Obama outlined the key role that science policy will play in the US's economic recovery in his inauguration speech in January: "The state of the economy calls for action, bold and swift, and we will act [...] We will restore science to its rightful place".

References

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Expert opinion

Inspired by bibliometrics

Brian Fath

Brian Fath is an Associate Professor in the Department of Biological Sciences at Towson University, USA, and Editor-in-Chief for the journal, *Ecological Modelling*. Like all journal editors, he wants his journal to continue improving. However, unlike many editors, he has a passion for network analysis, giving him a unique insight into the way ranking metrics are calculated and an enhanced understanding of how scholarly literature is cited within communities.

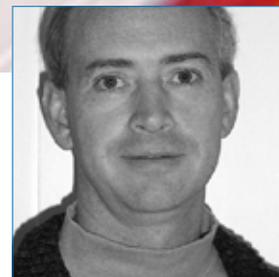
Fath uses ecological network analysis to identify relationships between non-connected elements in food webs. He says: "Network analysis is a very powerful tool to identify hidden relationships. We can now integrate the networks of different systems and identify indirect pathways, making it possible for us to see the unexpected consequences of our actions. For example, CFCs looked good in the lab, but it took 40 years to understand their effect on the planet. Through

network analysis, we can potentially gauge those effects before we cause them."

In October 2007, he was invited to give a presentation on "Assessing Journal Quality Using Bibliometrics" at the Elsevier Editors' Conference in Miami. While carrying out background research, he came across Derek de Solla Price. "His 1965 paper (1) was a revelation, and I literally just stumbled upon it," he recalls.

Eye opener

"I thought this paper was fascinating. For instance, de Solla Price identifies research fronts, marked by review papers. This is important, because he also shows that the frequency of review papers is not linked to time, but to the number of papers published in the field. Hot topics, where a lot of papers are published, prompt review papers more frequently than slower-paced areas. This changed my mind on the



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frequency of publishing review papers,” says Fath.

He was also interested in de Solla Price’s discussion of non-cited papers. Around 35% of papers are never cited. Editors obviously want to publish the best research, but how can they recognize the outliers? “Our journal is quite avant-garde. We publish some novel papers, and naturally some don’t get cited. But on the other hand, if we could find a way to reduce the number of non-cited papers, our Impact Factor would go up,” he remarks.

Improving quality

Fath believes that bibliometrics can help editors improve the quality of their journals. “We can improve the field by knowing when to call for a review paper and by promoting timely special issues, and these actions are reflected in our bibliometrics,” he says. For instance, he recently discovered that special issues of his journal were actually less frequently cited than regular issues. “We’ve decided to try doing themed issues next year to see if that serves the community better than traditional conference-based special issues,” he says.

He is also paying more attention to keywords in papers, and

especially in abstracts. He believes that, “people are really starting to use search engines to find papers, and it seems logical to use keywords. Abstracts are also very important: well-written, clear English is very attractive.”

He does have one concern, however. “We are going through a period of rapid journal growth, which I don’t think is sustainable. It’s possible to get almost anything published somewhere these days – in fact, it can get quite hard to follow the literature. And all these papers are citing other papers, which means everyone’s Impact Factor is increasing. But I wonder if it’s sustainable; can all these new journals also expect their Impact Factors to rise?”

Yet overall, despite some resistance, Fath is convinced that citation analysis is very valuable: “Communities should be citing each other – this is what marks them out as a community; and if you’re not being cited by your own community, you should want to know this and do something about it.”

References

[1] de Solla Price, D.J. (1965) “Networks of scientific papers”, *Science*, Vol. 149, pp. 510–15.

Why did you cite...?



...a Top-Cited marketing paper?

In the subject area Economics, Econometrics and Finance, the paper “Evolving to a new dominant logic for marketing”, published by Stephen Vargo and Robert Lusch in the *Journal of Marketing*, was the **TopCited** article between 2004 and 2008. This article has been cited 282 times.

Relevance and timing count

Professor Vargo from the Shidler College of Business at the University of Hawaii, US, explains: “While we did not fully anticipate the impact the article would have, I think there several reasons for it. First, it was intended to capture and extend a general evolution in thought about economic exchange, both within and outside of marketing. The most common comment we receive is something like ‘you said what I have been trying to say’ in part or in whole. Thus, although it was published in a marketing journal, it seems to have resonated with a much larger audience.

“We have also said from the outset that what has now become known as service-dominant (S-D) logic is a work in

process and have tried to make its development inclusive. As we have interacted with other scholars, we have modified our original views – and the original foundational premises – and expanded the scope of S-D logic. This approach seems to have been well received.”

Professor Vargo also acknowledges an element of “fortuitous timing” in the article’s success: “The role of service in the economy is becoming increasingly recognized and firms such as IBM and GE – and many others – are shifting from thinking about themselves as manufacturing firms to primarily service firms. Similar shifts are taking place in academic and governmental thinking. S-D logic provides a service-based, conceptual foundation for these changes.”

Busting paradigms

Professor Eric Arnould from the Department of Management and Marketing at the University of Wyoming, US, has cited this paper. He explains: “this article is a paradigm buster; it is as simple as that. The paper took under-systematized currents of thought that have been circulating in the marketing discipline

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