

The illusion of scientific authority: from misleading propaganda to dormant realities

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This critique examines perception of the scientific authority, driven by the misuse of citation metrics. It identifies how individuals produce low-quality papers in predatory journals and increase their citations by forming self-made cliques. This culture of quantitativeness exerts an adverse influence on the ecosystem of science and technology. Authentic scientific authority is established through original, impactful contributions recognized by global peers under rigorous qualitative criteria.

1 The illusion of scientific authority

For some time, the concept of “scientific authority” has garnered attention in certain countries, primarily through the use of scientometric indicators. However, in some cases, incomplete and superficial interpretations of these metrics have led to the creation of questionable rankings, such as the designation of “top one or two percent highly cited scientists.” While some reputable scholars may be included in these rankings, a significant number are not even recognized nationally as authoritative figures or experts in their respective fields.

In articles [3–5], a comprehensive analysis has been conducted on the misuse of quantitative indicators based on citation counts; see also [1, 2, 6]. These works emphasize that on the periphery of science, certain domains exist where, due to the simplicity of topics and methodologies, groups of researchers, either individually or within self-formed rings, engage in mass production of low-quality papers (predominantly in predatory journals) and the development of artificial topics, the so-called pseudoscience. While benefiting from advantages such as grant funding and academic promotions, these individuals harbor the illusion of participating in genuine fields of knowledge through repeated intra-ring citations, unaware that they are far from the scientific mainstream. This is akin to someone releasing an arrow into the darkness to strike a wall, then drawing a circle around it and proclaiming a bullseye.

This situation seems to be rooted in a specific arrogance, intellectual isolation, and a lack of scientific collaboration with leading scholars from developed countries.

This focus on quantitative measures has had a negative impact on the science and technology community, dissuading those dedicated to qualitative research and guiding university faculty and research institute members towards unscientific and at times unethical paths. Undoubtedly, the quantitative regulations from the ministries of science, particularly those governing faculty promotion and institutional rankings, play a largely negative role. They foster an environment that resembles a pointless competition to maximize publication and citation counts.

Nevertheless, it should not be overlooked that citations and references to scientific works serve as fundamental bridges for scientific communication and the integrated structure of knowledge. While scientometrics provides valuable insights, in particular, when we are dealing with big data, its application should be limited so as to preserve the importance of human judgment in final scholarly evaluation. Our critiques should never become tools in the hands of the indolent or knowledge-deficient to suppress genuine scientific endeavor, often highly productive, under the pretext of criticizing quantitativeness, thereby considering the important contributions of true scholars as worthless.

A high volume of publications or citations is not necessarily indicative of poor-quality research. In fact, several Fields medalists, as can be seen by using zbMATH, have authored hundreds of papers and received significant citation counts. On the other hand, over a long period—let’s say a decade—a researcher with consistently few publications and citations (by mathematical standards) cannot be reasonably considered a scientific authority.

In reputable universities, quantitative metrics are not highly favored; the main criteria for evaluation are the quality of works and scientific achievements. This assessment is primarily conducted by distinguished scholars and specialists from various parts of the world, drawing on collective wisdom. While this method is not completely free from human biases and prejudices, the use of precise mechanisms and the establishment of peer-review panels consisting of acknowledged experts within strict academic standards significantly reduce these possible drawbacks.

It is evident that leading universities, institutions, and scientific societies base their decisions, such as awarding prizes, allocating grants, and selecting top researchers, not solely on quantitative

scientometric indicators, but also on rigorous qualitative evaluation. These processes adhere to principles of professional ethics and meritocracy, as seen in the award systems of the American Mathematical Society and the National Science Foundation in the USA, as well as in the grant mechanisms of European science foundations.

2 Key indicators for assessing scientific authority

Scientific authority refers to the esteemed position attained by an individual through the production of original and influential knowledge that impacts scientific trends or the development of cutting-edge technologies, such that top-tier specialists at the international level consistently refer to their works.

Examining the achievements of Fields medalists and winners of highly prestigious awards highlights the following criteria for assessing scientific authority:

- *Quality of publications*: Demonstrating a consistent record of publishing original and high-impact research in reputable journals.
- *Qualitative citation impact*: Receiving citations (commensurate with the subfield) from renowned international specialists in top-tier journals.
- *Scientific reputation and credibility*: Gaining recognition and credibility within the international specialist community.
- *Tangible and broad effectiveness*: Having a track record of playing a significant role in advancing the global frontiers of knowledge or technological development.

In conclusion, recalling the adage that “ignorance is a scourge more powerful than evil,” I would like to emphasize that these arguments and discussions should be continually articulated and clarified. It is only through this persistent engagement that scientific policymakers in developing countries can be influenced to establish

regulations founded upon quality rather than quantity. This will enable the gradual reform of the scientific culture.

References

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