

# In Search of Outstanding Research Advances – Exploring Editorial Recommendations

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**Abstract.** Over the last decades, several channels of scientific recognition have developed to highlight outstanding scholarly contributions within the research system. From the widespread use of bibliometric measures to alternative metrics in social media, one well respected, but still widely neglected, source of recognition for scientific work is the judgement of scientific experts as for example in awarding prizes. In a similar vein, major science journals have created special sections of recommended articles, usually curated by scientific editors, to feature outstanding research advances from the vast pool of scholarly publications. In the present article, we compare editorial recommendations to concurrent ways of identifying outstanding research, and describe this source of valuable information in more detail. We highlight advantages and present several examples of editorial recommendations depending on their scope, regularity of occurrence, and target audience. Our ongoing work in progress shows the promising potential of editorial recommendations for analysis of scientific advances and we propose the idea of creating open datasets to make their maintenance and curation community-based. As next steps, we aim at evaluating editorial recommendations in the light of currently established measures of research impact.

**Keywords:** Scientometrics · Outstanding research · Editorial recommendations.

## 1 Introduction

Publishing research results in academic journals is a fundamental part for the advancement of science, and over the last decades, the number of scholarly articles published every year has grown steadily [1]. It is obvious that not all of these articles are of equal importance for the progress of science, and only a small portion represent outstanding landmarks (see [2] for an estimation of 0.02%). A crucial question with respect to the vast amount of published articles is how to identify the most outstanding contributions in this large pool.

The scientific community has developed several channels of recognition to filter through the immense collection of scientific knowledge. For identifying outstanding scholarly articles, the most common way refers to bibliometric indicators. Up to now, this has been the most common way to assess the influence of a certain scientific article. However, measures of citation performance have

also attracted a lot of criticism, since motivations behind citing are less clear [3]. Another concern in using bibliometrics is that articles need to be at least three years old to be included in the calculations of a citation index. This means that for the assessment of recent research no such citation indicator is available. To remedy the problems encountered with bibliometric measures, the scientific community has come up with several alternative ways to detect influential research work.

First, with the rise of the internet, scientific evaluators have started to consider quicker ways of assessing research impact, called alternative article-metrics [4]. They refer to an article’s web attention such as mentions on the news, in a blog, in tweets or on Facebook, but can also incorporate longer-term markers like download statistics and article comments. Alternative metrics reflect the visibility and influence of a scholar’s research in the public domain. The clear advantage of alternative metrics is their immediate availability, while lacking thorough scientific evaluation.

A more traditional way of scientific recognition comes from evaluations by scientific committees that award prizes for outstanding research contributions. Scientific journals that for example try to identify their most outstanding publication of the past year usually consider recommendations of well-respected experts, judging the potential impact of a publication in a reasonable period according to high scientific standards. Similarly, many scientific editors have restructured their journals to provide a better selection of outstanding research to their readers due to steadily increasing article submission rates. The major science journals strive to inform on pioneering and innovative science, providing a weekly selection about especially outstanding contributions from among all of their publications (e.g., Nature’s “News & Views” or “This Week in Science”) or outside of their journal (e.g., Nature’s “Research Highlights” or Science’s “Editor’s Choice”). These highlighted sections curated by experts, usually the scientific editor, refer to scholarly articles as being especially influential and promising for future research developments. In this sense, scientific editors act as the guardians of science who guide the attention of the scientific community. In sum, such editorial recommendations are readily available, and, in addition, carry a precious expert judgement of scientific quality that is missing in the previously mentioned metrics.

To the best of our knowledge, this type of scientific recognition has not been sufficiently exploited in past quests for identifying outstanding research advances (but see [5]). Thus, in this ongoing project, we propose to explore and collect this valuable information in a more comprehensive way.

## 2 Method

For the present purpose, we defined editorial recommendations as an overarching term regrouping scholarly articles that have attracted special attention from a scientific committee or editor and that have been judged as outstanding new piece of knowledge. For our definition, there must be a clear human judgement

made by a respected scientific authority regarding the excellence of a scholarly article. This kind of judgement is based on scientific merit and the authority's knowledge of the community.

Before evaluating research impact, it is important to distinguish between several types of editorial recommendations that each draw their selection of highlights from a different pool of scholarly articles. We can distinguish editorial recommendations according to their scope, regularity and target community. In the present work in progress, we collected current examples for each of these categories. Our established dataset takes into account the underlying restrictions for editorial recommendations to have a better characterization of expert judgments. Pointing out the various constraints of such selections is important, especially when claims and measures about research impact shall be compared or generalized.

The collection of editorial recommendations of scholarly articles is in most cases a manual task, although some of the data acquisition can be automated. However, automated procedures were always followed by a substantial effort in data cleaning and curation, since many DOIs were missing or unstructured.

### 3 Outlook

We collected example datasets of DOIs for various editorial recommendations such as Nature's "Research Highlights", Science's "Breakthroughs of the Year", and La Recherche's "Prix La Recherche". Overall, preliminary results of our data collection are encouraging and our motivation is to make this valuable information readily available for the community. Wikipedia/Wikidata are possible options, as they would make the curation of this dataset a collective and collaborative effort. Another possibility is to integrate this data in existing research information graphs such as Springer Nature SciGraph. Next steps entail the comparison of editorial recommendations with concurrent measures of research impact.

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