# Hierarchical organisation of scientific journals

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Academic journals are the repositories of mankind's gradually accumulating knowledge of the surrounding world. Just as knowledge is organized into classes ranging from major disciplines, subjects and fields, to increasingly specific topics, journals can also be categorized into groups using various metric. In addition, they can be ranked according to their overall influence. However, according to recent studies, the impact, prestige and novelty of journals cannot be characterized by a single parameter such as, for example, the impact factor. To increase understanding of journal impact, we study the evaluation of journal relevance using complex multi-dimensional measures. Thus, our objective is to organize journals into multiple hierarchies based on citation data. The two approaches we use are designed to address this problem from different perspectives. We use a measure related to the notion of m-reaching centrality and find a network that shows a journal's level of influence in terms of the direction and efficiency with which information spreads through the network. We find we can also obtain an alterna- tive network using a suitably modified nested hierarchy extraction method applied to the same data. In this case, in a self-organized way, the journals become branches according to the major scientific fields, where the local structure of the branches reflect the hierarchy within the given field, with usually the most prominent journal (according to other measures) in the field chosen by the algorithm as the local root, and more specialized journals positioned deeper in the branch. This can make the navigation within different scientific fields and sub- fields very simple, and equivalent to navigating in the different branches of the nested hierarchy. We expect this to be particularly helpful, for example, when choosing the most appropriate journal for a given manuscript. According to our results, the two alternative hierarchies show a somewhat different, but also consistent, picture of the intricate relations between scientific journals, and, as such, they also provide a new perspective on how scientific knowledge is organized into networks.