

Intermediacy of publications

Uncovering important publications for the development of a field

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Citation networks of scientific publications offer fundamental insights into the structure and development of scientific knowledge. We propose a new measure, called intermediacy, for tracing the historical development of scientific knowledge. Given two publications, an older and a more recent one, intermediacy identifies publications that seem to play a major role in the historical development from the older to the more recent publication. The identified publications are important in connecting the older and the more recent publication in the citation network. After providing a formal definition of intermediacy, we study its mathematical properties. We then present two empirical case studies, one tracing historical developments at the interface between the community detection literature and the scientometric literature and one examining the development of the literature on peer review. We show both conceptually and empirically how intermediacy differs from main path analysis, which is the most popular approach for tracing historical developments in citation networks. Main path analysis tends to favor longer paths over shorter ones, whereas intermediacy has the opposite tendency. Compared to main path analysis, we conclude that intermediacy offers a more principled approach for tracing the historical development of scientific knowledge.

- Šubelj L., Waltman L., Traag V. & Van Eck N.J. (2020) "Intermediacy of publications", *Royal Society Open Science* 7(1), 190207, doi: [10.1098/rsos.190207](https://doi.org/10.1098/rsos.190207)