

Moravcsik M J & Murugesan P. Some results on the function and quality of citations. *Soc. Stud. Sci.* 5:86-92, 1975.
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Citations of scientific articles are classified according to whether they are (a) conceptual or operational, (b) organic or perfunctory, (c) evolutionary or juxtapositional, (d) confirmatory or negational. The method is illustrated on a group of papers on high-energy theoretical physics published in the *Physical Review*. [The *Science Citation Index*® (SCI®) and the *Social Sciences Citation Index*® (SSCI®) indicate that this paper has been cited in over 65 publications since 1975, making it the most-cited item published in this journal.]

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The classification of the context of citations was a logical extension of the continually more refined measures of scientific output: number of scientists, number of scientific authors, number of publications, number of citations, and now, the number of "relevant" citations. The importance of this paper was in pioneering this last step, the "weighting" of citations according to their function and context in the citing article. A group at Cornell¹ almost simultaneously devised and applied a somewhat different system of classifying citations by their context.

I like to believe that my work as an active research physicist contributed indispensably to this work on citations and to its success, because it was on the basis of professional use of scientific articles that I could establish the need for context classification and could devise

interesting categories for the classification. This factor was also of considerable help in the case of my coauthor, Murugesan, then a physics graduate student.

Our work continued and produced several other interesting results. A few of the areas of citation classification patterns we explored were those in various journals and subdisciplines;² in the scientific community of a developing country;³ in big and little science;⁴ and in scientific revolutions.⁵ Unfortunately, the National Science Foundation (NSF), which had supported this initial study, had lost interest in our work by 1977. At the same time, I became heavily involved in the activities surrounding the United Nations Conference on Science and Technology for Development (UNCSTD), and thus I decided that fighting NSF was not "cost-effective" under the circumstances. With hindsight, my decision may be debatable since UNCSTD was not successful. In any case, we never resumed work on citation classifications, although many interesting things remain to be done. We would welcome further collaborations.

It is interesting to note that the "perfunctory" versus "relevant" classification can be used in different ways. While "perfunctory" citations may be considered as just "polluting" the data when it comes to evaluating scientific merit, Belver Griffith, whose interest is in tracing the communication patterns in the scientific community,⁶ remarked to me that he was mainly interested in the perfunctory citations because they reveal those documents that are well accepted and must be acknowledged in communication within the specialized scientific community.

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3. Moravcsik M J, Murugesan P & Shearer E. An analysis of citation patterns in Indian physics. *Sci. Culture (India)* 42:295-301, 1976.
4. Shearer E & Moravcsik M J. Citation patterns in little science and big science. *Scientometrics* 1:463-74, 1979.
5. Moravcsik M J & Murugesan P. Citation patterns in scientific revolutions. *Scientometrics* 1:161-9, 1979.
6. Griffith B C, Small H G, Stonehill J A & Dey S. The structure of scientific literature. II: toward a macro- and microstructure for science. *Sci. Stud.* 4:339-65, 1974. (Cited 65 times.)