

New International Professional Society Signals The Maturing Of Scientometrics And Informetrics

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In the early 1900s, scientists and librarians were already conscious of the exponential growth of the research literature. Small-scale bibliometric analyses--studies of papers, references, and authors--had been done at the turn of the century. A few classics, like Alfred J. Lotka's 1926 paper on author productivity (*Journal of the Washington Academy of Science*, 16:217-23) and the 1927 citation ranking of chemical journals by P.L.K. Gross and E.M. Gross (*Science*, 66:385-9), come to mind as progenitors of this field of research.

In 1934, Samuel C. Bradford expounded his law of scattering to describe how the literature on a given subject is distributed in journals (*Engineering*, 137:85-6). Simply put, the law states that in comprehensively searching on any subject or discipline, a small group of core journals always accounts for a substantial portion (one-third) of the articles. A second, larger group of journals accounts for another third, and a much larger set of journals comprises the remainder.

In a 1955 *Science* paper (122:108-11) describing the then-new concept of citation indexes, I suggested that citation data may be useful as quantitative indicators of the impact of particular publications on the literature. When I uttered the phrase "impact factor," little did I imagine that a tool designed

primarily to alleviate problems of information retrieval and dissemination would foster the growth of quantitative studies of scientific output on a rather large scale. Indeed, the introduction of the *Science Citation Index* in the early 1960s gave bibliometrics a great methodological push. In the 30 years that have followed, thousands of studies in statistical bibliography have been published in journals such as *Scientometrics*, *Journal of the American Society of Information Science*, *Journal of Information Science*, and so on. *Science* and *Nature* now frequently use the Institute for Scientific Information's *Science Indicators Database* to support news items originally reported in ISI's *Science Watch*. These published studies stand in addition to countless private analyses performed by tenure, promotion, and awards committees, as well as government science policymakers.

A further indication of the growth of quantitative studies of scientific output is the founding this year of the International Society for Scientometrics and Informetrics (ISSI). The purpose of the society is to provide a forum for communication professionals in these fields. In June, ISSI took on the responsibility for organizing the fifth biennial conference on scientometrics and informetrics at Rosary College, River Forest, Ill., where the society is

currently based. About 100 papers and poster sessions were presented by more of Medford, N.J., which is now called Information Today.

Perhaps the most remarkable feature of this meeting was the participation by representatives of Eastern and Western Europe, Australia, India, China, and other nations. This reflects the worldwide preoccupation with "rationalizing" the support for scientific research. Science policymakers are increasingly applying quantitative data to augment traditional peer review of departmental, institutional, and national research performance in order to make informed decisions about setting strategic priorities and allocating science and technology resources.

Many of the conference papers dealt with refinements and adaptations of Bradford and other calculations of publication distributions, co-citation mapping of research specialties, co-author and co-term analyses, modified journal impact factors, and other topics. There is a growing awareness that even more sophisticated methods are needed to organize, assess, and model the 2 million research papers and patents published each year.

than 150 authors. The proceedings are available from Learned Information Inc. The availability of bibliographic data on CD-ROM, diskette, and online databases has further accentuated the interest--and ease--in conducting such activities.

A post-conference session was held to discuss the establishment of professional standards and practices. These subjects will be explored more fully at the sixth biennial conference in Jerusalem in 1997, which will be chaired by Bluma Peretz of Hebrew University. Hopefully, the development and promulgation of these standards by ISSI will ensure the legitimate use of publication and citation data in various analyses and applications, including making informed decisions about complex science-policy matters. I have long advocated the appropriate uses of citation analyses and have consistently warned against their potential abuses. In my mind, one of the most important missions of ISSI will be to define, clarify, and codify the ethical and methodological standards for the maturing profession of scientometrics and informetrics.
