

This Week's Citation Classic

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Price D J D. *Little science, big science*.
New York: Columbia University Press, 1963. 119 p.
[Yale University, New Haven, CT]

This book contains four introductory lectures on quantitative methods in the analysis of historical and modern science: 1. Prologue to the science of science (exponential and logistical growth of scientific publication and manpower); 2. Galton revisited (productivity distributions, laws of Lotka and Zipf); 3. invisible colleges and the affluent scientific commuter (multiple discovery and authorship, Bradford's law, half-lives of papers); 4. political strategy for big scientists (saturation, language distribution, emergence of Japanese science, big science phenomena). [The *Science Citation Index*® (SCI®) and the *Social Sciences Citation Index*® (SSCI®) indicate that this book has been cited in over 690 publications since 1963.]

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"In 1949, I was at Raffles College (now the University of Singapore) when their new library, not yet built, received a complete set (1662-1930s) of the *Philosophical Transactions of the Royal Society of London*. I took the beautiful calf-bound volumes into protective custody and set them in ten-year piles on the bedside bookshelves. For a year I read them cover to cover, thereby getting my initial education as a historian of science. As a side product, noting that the piles made a fine exponential curve against the wall, I counted all the other sets of journals I could find and discovered that exponential growth, at an amazingly fast rate, was apparently universal and remarkably long-lived. In 1950, to mark my transition from physics and mathematics to the history of science, and from Asia back to Europe, I gave a paper on this topic to the International Congress for the History of Science in Amsterdam.^{1,2} It passed totally unnoticed, and was very ill-received when I entered Cambridge for a second PhD in the new field. It went over like a lead balloon on a couple

more trials, but I included it as the last lecture in an inaugural lecture series when I finally got a chair and a department at Yale University, and it was published in *Science since Babylon* in 1961.³

"Although most of my time was then given to straight history of science, mainly in ancient astronomy and scientific instrumentation, the exponential growth business needed me a lot, and I began to pursue other quantitative researches about science, stimulated much by Robert Merton's writings in the sociology of science, by Eugene Garfield's new book on citation indexing, and by rereading Desmond Bernal's books which had prepared my mind for the initial sensitivity that led me to this field in the first place. A few months after *Science since Babylon* hit the bookstores, I was asked if I would like to expand that last lecture into a new series for the Pegasus lectures at Brookhaven. The series met with an enthusiastic reception from the physicists who were very interactive while I lived there working out the weekly lectures and writing them up for publication as I went along as I had done for the Yale lectures before. I laded into those lectures all the half-baked results I had collected together in this non-field over the past several years, and tried to give the whole thing some measure of coherence. It was, apparently, an immediate success, and sold quite well among the scientists, remaining totally alien to the historians and historians of science. *Little Science, Big Science* became a success and a *Citation Classic*, I think, because just at that time there were two new fields emerging as part of the academic explosion of the 1960s, the sociology of science and library science (as distinct from library trade schools). Those two fields seemed to react almost alchemically with my offbeat development of quantitative methods in what was to become science of science or scientometrics; my book was accepted as one of the prime sources for the techniques and results.

"For recent reports of work in this field the reader should refer to the journal *Scientometrics* and *Essays of an Information Scientist*.⁴ Also, a major book has appeared in Russian, but is not yet available in an English edition."⁵

1. Price D J D. Quantitative measures of the development of science. *Arch. Int. Hist. Sci.* 14:85-93, 1951.
2. Quantitative measures of the development of science. *Actes du VI Congrès International d'Histoire des Sciences*, 1950, Amsterdam. Paris: Herman & Cie, 1951. p. 413-21.
3. *Science since Babylon*. New Haven, CT: Yale University Press, 1961. 149 p.
[The SCI and the SSCI indicate that this book has been cited in over 200 publications since 1961.]
4. Garfield E. *Essays of an information scientist*. Philadelphia: ISI Press, 1983. 5 vols.
5. Haltun S D. *Naukometriya*. Moscow: Akademiya Nauk, 1983. 344 p.