Derek J. de Solla Price

Derek John de Solla Price (22 January 1922 – 3 September 1983) was a physicist, historian of science, and information scientist, credited as the father of scientometrics.[1][2]

Contents

Biography

Price was born in Leyton, England, to Philip Price, a tailor, and Fanny de Solla, a singer. He began work in 1938 as an assistant in a physics laboratory at the South West Essex Technical College, before studying Physics and Mathematics at the University of London, where he received a Bachelor of Science in 1942. He obtained a Doctor of Philosophy in experimental physics from the University of London in 1946.

In 1948 Price worked as a teacher of applied mathematics at Raffles College, which was to become part of the National University of Singapore. It was there that he formulated his theory on the exponential growth of science, an idea that occurred to him when he noticed the characteristic logarithmic curve of the *Philosophical Transactions of the Royal Society* between 1665 and 1850, which he had stacked against his wall at home while Raffles College had its library built.

After three years, Price returned to England to work on a second Ph.D., in the history of science, this time at the University of Cambridge. During his Ph.D. studies, he accidentally discovered *Equatorie of the Planetis*, a Peterhouse manuscript in Cambridge University Library, written in Middle English, which he attributed to Geoffrey Chaucer. It is now attributed to a St Albans monk called John Westwyk.

Around 1950, Price adopted his mother's Sephardic name, "de Solla", as a middle name. He was a "British Atheist ... from a rather well-known Sephardic Jewish family", and although his Danish wife, Ellen, had been christened as a Lutheran, he did not, according to their son Mark, regard their marriage as "mixed", because they were both atheists.[3]

Derek J. de Solla Price

Derek de Solla Price with a model of the Antikythera mechanism

Born	22 January 1922
Died	3 September 1983 (aged 61)
Known for	Scientometrics Price's model
Awards	John Desmond Bernal Prize (1981)
Scientific career	
Institutions	University of London University of Cambridge Institute for Advanced Study Yale University

After obtaining his second doctorate, Price moved to the United States, where he served as a consultant to the Smithsonian Institution, and as a fellow at the Institute for Advanced Study in Princeton, New Jersey. His next post was at Yale University, where he worked until his death, serving as the Avalon Professor of the History of Science, and as chair of a new department that encompassed the histories of science, technology, and medicine.

In 1984, Price received, posthumously, the ASIS Research Award for outstanding contributions in the field of information science.

Since 1984, the Derek de Solla Price Memorial Medal is awarded by the International Society for Scientometrics and Informetrics to scientists with outstanding contributions to the fields of quantitative studies of science.

Scientific contributions

Price's major scientific contributions include:

- **Price's square root law** or **Price's law** pertains to the relationship between the literature on a subject and the number of authors in the subject area, stating that half of the publications come from the square root of all contributors.[4] Thus, if 100 papers are written by 25 authors, five authors will have contributed 50 papers. Price's law is related to Lotka's law and has been likened to the Matthew Principle.[5][6] It can be modeled using a approximately L-shaped graph, with number of people on the Y-axis, and productivity or resources on the X-axis.[6]
- Studies of the exponential growth of science and the half-life of scientific literature;
- Quantitative studies of the network of citations between scientific papers (Price 1965), including the discovery that both the in- and out-degrees of a citation network have power-law distributions, making this the first published example of a scale-free network;
- Price's model, a mathematical theory of the growth of citation networks, based on what would now be called a preferential attachment process (Price 1976);[7]
- An analysis of the Antikythera mechanism,[8] an ancient Greek analogue computer and astronomical instrument (Price 1959, 1974).[9][10][11][12][13][14]

Notable publications

- "An ancient Greek computer", in *Scientific American* **200** (6):60-67 (1959).
- *Science Since Babylon*[15] see review[16]
- "Mechanical Waterclocks of the 14th Century in Fez, Morocco", in *Proceedings of the Tenth International Congress of the History of Science* (Ithaca, N.Y, 1962), Paris: Hermann, pp. 599–602 (1962)
- *Little Science, Big Science*[17]
- De Solla Price, D. J. (1965). "Networks of Scientific Papers". *Science*. **149** (3683): 510–515. Bibcode:1965Sci...149..510D (https://ui.adsabs.harvard.edu/abs/1965Sci...149..510D). doi:10.1126/science.149.3683.510 (https://doi.org/10.1126%2Fscience.149.3683.510). PMID 14325149 (https://www.ncbi.nlm.nih.gov/pubmed/14325149).
- "Nations can Publish or Perish", in *International Science and Technology* **70** 84-90 (1967)
- "Citation Measures of Hard Science, Soft Science, Technology, and Nonscience", in Nelson, C. E. & Pollock, D.K. (eds.), *Communication among Scientists and Engineers*, Lexington, Massachusetts: D. C. Heath and Company, pp. 3–22 (1970).
- Price, D.J. de Solla (November 1974). *Gears from the Greeks. The Antikythera Mechanism: A Calendar Computer from ca. 80 B. C. Transactions of the American Philosophical Society*. New Series. **64**. pp. 1–70. doi:10.2307/1006146 (https://doi.org/10.2307%2F1006146). ISBN 978-0871696472. JSTOR 1006146 (https://www.jstor.org/stable/1006146).
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doi:10.1002/asi.4630270505 (https://doi.org/10.1002%2Fasi.4630270505). (Winner of 1976 JASIS paper award.)

- An Old Palmistry Being the Earliest Known Book of Palmistry in English, 1953, W. Heffer & Sons; 1st. Edition, ASIN B000PIYKBW
- The Origin of Clockwork, Perpetual Motion Devices, and the Compass, FQ Books, July 6, 2010), ASIN B003YMNPOE.
- with D. J.; Wang, Ling Heavenly Clockwork: The Great Astronomical clocks of Medieval China by Joseph Needham, Cambridge University Press (1678) ASIN B01JXO3E0Q.
- Measuring the Size of Science, 1969, Israel Academy of Sciences and Humanities, ASIN B007EMQHT0.
- An International Checklist of Astrolabes, 1955, Peyronnet, ASIN B0007JKDJ2.
- The Differences between Science and Technology, 1968, Thomas Alva Edison Foundation, ASIN-B0007HNK3U.
- Scientific Humanities: An Urgent Program, 1957, ASIN B0007KAV84.
- Portable Sundials in antiquity: Including an account of a new example from Aphrodisias, 1969, ASIN B0007K65O8.
- The Little Ship of Venice: A Middle English instrument tract, 1960, ASIN B0007JV620.
- Chaucer's astronomy (Weekly evening meeting), 1952.
- Contra-Copernicus, 1952, Royal Institution of Great Britain, ASIN- B0007KCWS6.
- Equatorie of Planetis, 1955, 1st ed, Cambridge University Press, ISBN 978-0521059947.

See also

- Equatorium
- A Treatise on the Astrolabe

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External links

- Works by Derek John de Solla Price (https://www.gutenberg.org/author/Price,+Derek+J.+de+Solla+(Derek+John+de+Solla)) at Project Gutenberg
- Derek de Solla Price (1983) (http://garfield.library.upenn.edu/michaelis/title403.pdf)
- This Week's Citation Classic: Little Science, Big Science (http://www.garfield.library.upenn.edu/classics1983/A1983QX23200001.pdf). *ISI. Current Contents* 29:18 (July 1983).
- Derek John de Solla Price Medal of the journal *Scientometrics* (https://web.archive.org/web/20170211235944/http://issi-society.org/price.html); International Society for Scientometrics and Informetrics