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## The invisible college: working within the Pricean tradition

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## Professor Katherine W. McCain

DEREK DE SOLLA PRICE MEDAL WINNER, 2007



# The invisible college: working within the Pricean tradition

It's hard to isolate and focus on "how the work of Derek de Solla Price influenced and continues to influence your work", as the invitation put it, because I, and several other Drexel faculty and students, have worked within the 'Pricean tradition' of research and scholarship throughout our scholarly careers.

De Solla Price's contributions to the history of science and developmental trends, quantitative patterns of citation and scholarship in the sciences (and non-sciences), and the role of the invisible college in scientific communication were part of the Drexel research environment in the 1970s and 1980s. This came about directly through the friendship between de Solla Price and the late Belver Griffith and more generally the key role that studies of bibliometrics and scientific communication played in faculty and doctoral research at the time under the guidance of Griffith, Howard White and Carl Drott.

In my case, I came to information science and bibliometrics/scientometrics fairly late in life, after two degrees in the life sciences, five years managing a biology library and a strong interest in the history of science and technology. I had actually encountered de Solla Price's work at high school through his article on the Antikythera Device (1) but of course had no idea who the author was and no inkling of his influence on my future career.

### Index for the natural sciences

I first encountered the kinds of phenomena that de Solla Price focused on when tallying citations to journals in faculty and Ph.D. student papers in the Biology Department at Temple University, Philadelphia, US (2). Most citations could be described by what I subsequently discovered was de Solla Price's Index for the natural sciences (majority of citations to articles published in the previous five years) (3).

As a doctoral student at Drexel with an interest in quantitative studies of science and mapping, I read most of de Solla Price's major works in my doctoral coursework and as background for my thesis research. Much of it resonated particularly with me because of my previous experiences in the life sciences. The concepts of the invisible college and research front (4, 5) seemed

to fit my observations of the way that zoology and marine biology worked and, as noted above, de Solla Price's Index described the citation patterns of the biologists I worked with at Temple University.

### Mapping as scientific representation

Looking at my post-Ph.D. publications, I see several influences of de Solla Price's work on my own. Generally, I focus on quantitative data that describe trends and activities in the sciences, as de Solla Price did, supplementing it with interviews and other methods of knowledge elicitation. De Solla Price's interest in patterns of citation in journal literature is reflected in my studies of journals in the natural and social sciences and what citation and co-citation patterns can tell us about the core literature of a field. Invisible colleges and research fronts can be identified in co-citation maps – a major part of the bibliometric work at Drexel.

However, I think the most important links between de Solla Price's work and my own are his comment on an early author co-citation map of information science and his general thoughts on mapping. In the first case, Howard White (6) quotes de Solla Price as saying that he "knew everyone about halfway across and then no one". In the second, de Solla Price commented in 1979 that the major features of science could be represented in two-dimensional maps. These two observations validate the usefulness of mapping as a way of representing a field of science more broadly than even the most knowledgeable expert and have continued to inspire me over the past 30 years.

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