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Invisible Colleges 2.0: Eponymy as a Scientometric Tool

Gabriel Vélez-Cuartas, Universidad de Antioquia

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Merton's idea of eponymy as a prize for scientists, perhaps the most great of incentives, relatively addressed for a few ones, is revisited in the text from Collazo et al. An idea exposed nearly as a footnote in Merton's *Sociology of Science* let open in this text two ideas that can be amplified as opportunities to go a step further in understanding scientific dynamics: (1) The idea of a literary figure as catalyzer of cognitive evolution of scientific communities; (2) the claims for geographical priority to show relevance in the hierarchy of science structures.

### **Faculty of the Invisible Colleges**

(1) Derek de Solla Price (1963) and Diane Crane (1972) developed in the sixties and seventies of the last century the idea of invisible colleges. Those invisible colleges merged the idea of scientific growth due to chained interactions that made possible diffusion of innovations in cycles of exponential and linear growth. This statistic idea of growth has been related to the idea of paradigmatic revolutions in Kuhn's ideas. These interactions determined the idea of a cognitive dynamic expressed in networks of papers linked by common references in Crane and De Solla Price. In other words, knowledge growth is possible because there are forms of interactions that make possible the construction of communities.

This idea has not evolved in time and appears in different works as: institutionalized communities combining co-authorship networks and citation indexes (Kretschmer 1994), social networks of supervisors, students and co-workers (Verspagen and Werker 2003; Brunn and O'Lear 1999; cultural circles (Chubin 1985); collaboration networks and preferential attachment (Verspagen and Werker 2004; Zuccala 2006).

More recently, the cognitive dynamic related to the other side of the definition of invisible colleges have been some advances focused on detecting cognitive communities. For instance, studies of bibliographic coupling based on similarity algorithms (Leydesdorff 2008; Colliander and Ahlgren 2012; Steinert and Hoppe 2017; Ciotti et al. 2016); hybrid techniques mixing different similarity measures, modularity procedures, and text- and citation-based analysis (Glänzel and Thijs 2017); and the explicit merge made by Van Raan (2014), he proposes a bibliometric analysis mixing co-word analysis, co-citation, and bibliographic coupling to describe invisible colleges dynamics.

Those advances in analysis claim for a transformation of the concept of invisible colleges. The determination of cognitive dynamics by interactions is on the shell. Indeed, different levels of hierarchies and determinations in multilayer networks are arising. This means that collaboration networks can be seen as local interactions embedded in a more global set of relationships shaped by all kind of scientific communications chained in networks of references (Luhmann, 1996).

Eponymy in scientific communication gives a sign of these dynamics. We agree that in the first level of interactions eponymy can describe prestige dynamics, accumulation of social or

scientific capital as Bourdieu can describe in his theory of fields. Nevertheless, in a global context of the scientific system, Eponymy acts as a code that catalyzes communication functions in the scientific production. Different programs emerge from the mention of Jerzy Plebanski in the literature (the eponym analyzed within the text from Collazo et al), nevertheless is a common sign for all this communities. The eponymy gives a kind of confidence, content to be trusted and the scientific small masses confirm that by the grace of redundancy. Prestige becomes a communication function, more important than a guide for address the interaction.

### **How the Eponym Stakes an Invisible College's Claim**

(2) In this direction, the eponym appears as a rhetoric strategy in a semantic context of a determined scientific area, a partial system within the scientific form to communicate debates, controversies and research results. The geographical issue disappears in a way for this system. Cognitively, Jerzy Plebanski is a physicist; a geographical claim for the contributions seems distant to the discussion about the formation of invisible colleges or scientific communities.

Nevertheless, there are two underlying dynamics related to the space as category. One is the outlined dynamic of diffusion of knowledge. The eponym made itself stronger as a figure as can be redundant in many places. Diffusion is related here with dispersion. The strength of eponymy is due to the reach of dispersion that have emerged from redundancy of his name in different global spaces. It means penetration too.

The second is that scientific communities are locally situated and they are possible due to an economic and political context. It can be said that a scientific system needs roots on contexts that facilitate a scientific ethos. The modern expansion through colonies around the world left as a legacy the scientific way as a social function installed in almost every culture. But the different levels of institutional development affect the formation of local scientific communities conditioned by: the struggle between economic models based or non-based on scientific and technological knowledge (Arocena & Sutz, 2013); cultural coloniality (Quijano, 2007); the openness of science and the concentration of knowledge in private companies as part of a regime of intellectual property (Vélez Cuartas et al, 2018).

In other words, the claim for the work of Jerzy Plebanski as a Mexican and the appearance of eponym in Latin American lands borne as an exclamation. The acknowledgement of Latin American science is a kind of reaffirmation. In logic of scientific system observed from the Global North it seems a trivial issue, where a dictionary of scientific eponyms can list more than 9,000 renamed scientists. The geographical issue plays in two sides to comprehend this dynamic: from one side, the penetration of a global scientific form of communication, that is expansion of the system. This means growing of cognitive capacities, growth of collective intelligence under the ethos of science. Locally, express conditions of possibility of appearance of scientific communities and their consolidation.

The eponymy appears not as signal of prestige but as indicator of scientific growing as form of organization and specialization. Although Plebanski is a foreign last name, the possibility to stay there, to develop his work within that place, and to reach a symbolic status in a semantic community that is organized in a network of meaning around his work, express self-organization dynamics of science. Then eponym not only gives a function to indicate prestige, shows a geographical penetration of scientific institutions and global dynamics of scientific systems.

The work of Collazo et al shows an important step to induce analysis on other areas of sociology of science and social epistemology. Introduce the rhetoric figures as a cybernetic instrument that make able to observe systemic possibilities of scientific community formation. Eponymy as a Scientometric tool sounds good as a promising methodology.

**Contact details:** [gjaime.velez@udea.edu.co](mailto:gjaime.velez@udea.edu.co)

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