Chapter 51
Networks of Co-Authorship:
A Case Study of the Postgraduate of CEFET-RJ

Antonio José Caulliraux Pithon
Federal Center of Technological Education, Brazil

Ralfh Varges Ansuattigui
Federal Center of Technological Education, Brazil

Paulo Enrique Stecklow
Federal Center of Technological Education, Brazil

ABSTRACT

The networks are transorganizational arrangements forming a structure and, in a more abstract and generic manner, are built from the interactions between individuals and organizations. These interactions allow the emergence of network structures more related to personal ties and the types of existing social interactions between the actors. Social networks aren't a recent enterprise, but have been the subject of deeper studies due to universalization and convergence of communication processes, fundamental to the establishment and proliferation of networks. The structure where networks are manifested calls for horizontality, where there is no formal hierarchy of the elements that comprise it, composed by nodes elements and lines elements. This article analyzes the social network of authorship of one of five Postgraduate Programs of CEFET/RJ, presenting the connections between network teachers, justifying the morphological characteristics of the network and suggesting methodologies for continuing the study for the teaching and researching networks.

INTRODUCTION

Studies on social networks are not recent. For Both (1976) there is no social network theory but the concept can be employed with various social theories, requiring additional empirical data besides identifying links and relationships between individuals. Social networks are composed of organisms that establish a communication network to meet specific targets such as keeping informed on a subject, maintaining a social system, accomplish a goal. It is evident that they develop and are increasingly present in human life, but also exist in other species, such as the networks established to ensure social hierarchies in groups of animals.

The social network is called collaborative or cooperative when all its members, not just those who are nodes or integrator members contribute significantly to the group, strive to spread via network which is of common interest, share information with everyone. In this type of social network, all work to improve the performance of each or the product being developed, or achieving the general or specific goals established by the group.

Nowadays the term network is a central issue in many fields such as social sciences, communications, physics, computer science, virtual organization, virtual enterprise, etc. Among the various types of networks, collaborative networks have a special relevance. The collaborative networks consist of a variety of entities (e.g. organizations and people) that are largely autonomous in terms of operating environment, culture, social capital and goals. Nevertheless, these entities collaborate to achieve better objectives and goals whose interactions are supported by computer networks (Camarinha-Matos & Afsarmanesh, 2005).

Within the broad concept of networks, scientific networks, with their connections and their interrelations, are areas of particular interest. As well as with infrastructure networks, people networks, particularly the scientists and researchers networks are considered essential to the development of science as a whole (Funaro *et al*., 2009).

This article aims to present a critical analysis of the research network formed by researchers' professors from a research and education institution - which in our case is the CEFET/RJ - Federal Center of Technological Education Celso Suckow da Fonseca.

The approach of this study is given initially by a literature review that delimitates the field of study in networking concepts, its integrative elements and taxonomies, social networks and how they form, in general, and in research and education, represented by networks of authorship, specifically. For the case study the software Pajek was used.

COLLABORATIVE SOCIAL NETWORKS

The concept of networks has several approaches. In an etymological sense (area of knowledge that aims to discover the original meaning of words) the term network comes from Latin *retis*, whose meaning is entanglement of wires, ropes, cords or wires with regular gaps forming a kind of tissue.

A network structure means that its members are linked horizontally to the others, either directly or through those who surround him. The resulting group is like a mesh of multiple wires, which can spread indefinitely to all sides, without any of its nodes can be considered principal or representative of the others. It can be said that in networking there is no boss but a team working with a collective will to achieve a specific goal.

Currently there is much talk about networks, network organizations, supermarket networks, communication networks, drug trafficking networks, as the standard for networking was something recently discovered. However, despite the subject seem full of innovation, the social networks are inherent to human activities. The daily

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