

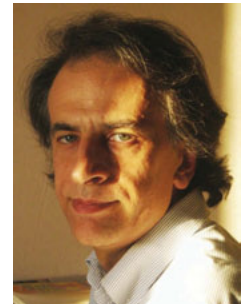
# Introduction to the Special Issue: 'Paradigms of Knowledge and its Organization: The Tree, the Net and Beyond'

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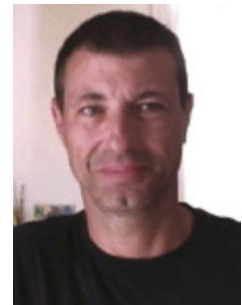
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Fulvio Mazzocchi, biologist and philosopher, is a researcher at the Institute for Complex Systems of the CNR (Italy). His research activity is focused on epistemology, complexity theory (especially in the biological field), and knowledge organization. He participated in many projects concerning the development of thesauri, such as the *General European Multilingual Environmental Thesaurus* (GEMET) of the European Environmental Agency.



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This special issue is devoted to investigating how knowledge and its organization are conceived in terms of the metaphors or topological models used for their representation. It focuses in particular on two of them, namely the tree and the net, which have played paradigmatic roles. We have invited a group of authors from different academic backgrounds and expertise (philosophy, LIS, linguistics, etc.) to share their ideas and perspectives with the aim of furnishing a historical-philosophical analysis of the issue, an inquiry into the epistemological frameworks involved, and on how all this relates to knowledge organization.

The origin of the idea of the tree can be traced back to "Porphyry's Tree" (see fig. 1), an image elaborated during the Middle Ages on the basis of Aristotle's logic. This image has had a strong influence on Western thought and, starting from Bacon, functioned as the dominant model for the classification of knowledge. It has been historically associated with 'strong' epistemic approaches and with essentialism. From the sixteenth century onwards, new images (e.g., the labyrinth and the map) came into being, and, following also the Enlightenment's encyclopedic approach, a more reticular character of knowledge was high-

lighted. More recently, the idea of the net has been described by Deleuze and Guattari in terms of the metaphor of the rhizome (see fig. 2). The latter became one of the symbols of postmodernism and was compared to positions highlighting the contingent nature of knowledge.

In the issue's opening article, Mazzocchi investigates the tree and the net as images of (different kinds of) thought and views about knowledge, raising also a distinction between the (scientific) concept of the network and that of the rhizome. The relation between classification and epistemology is explored, and an argument in favour of pluralism in classification (justified in terms of what is culturally possible) is developed. Some ideas are offered to reconsider this view on the basis of an approach combining epistemic and conceptual pluralism with a weak version of realism. Another aspect is the relation between knowledge representation and geometry. What we are able to "see" depends also on what we are able to construct geometrically. For centuries, our way of representing the

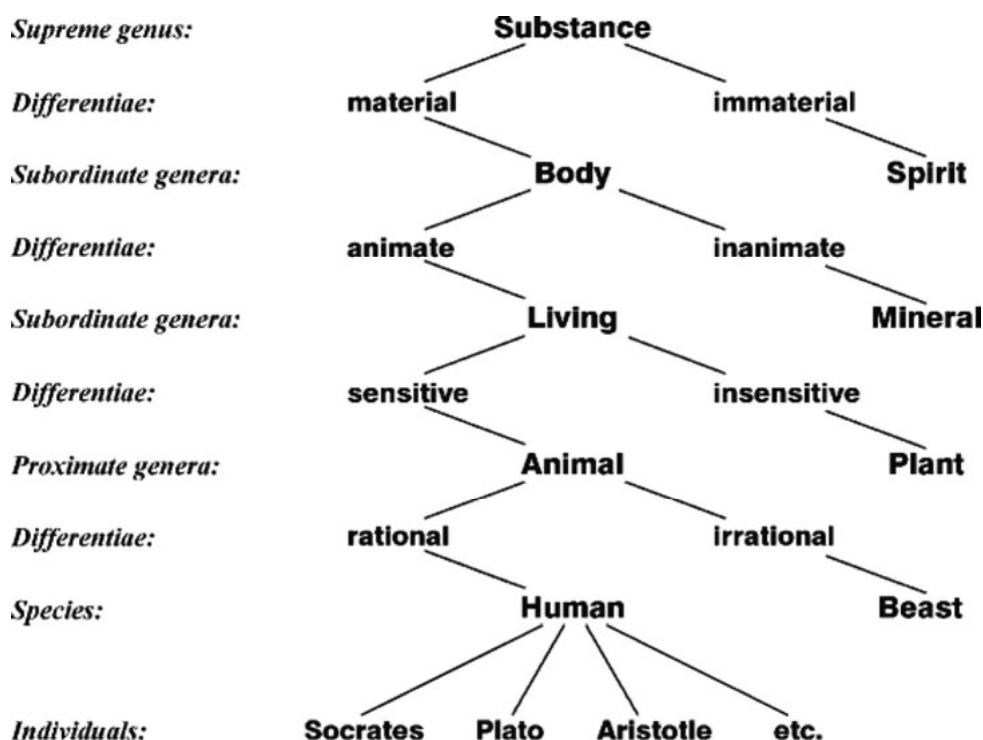


Figure 1. the tree of Porphyry

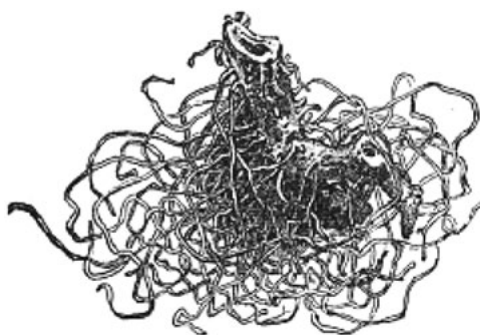


Figure 2. a rhizomic image

world or knowledge, and the metaphors and models used for such a purpose, have been heavily influenced by Euclidean geometry. It may be the time to reflect on what has occurred after the rise of non-Euclidean geometries.

In the second paper, Fedeli deals with this latter issue. He explores the concept of “knowledge space” and the possibility of organizing it by mapping its dynamic linguistic-conceptual aspect. Dealing with a historical-critical analysis of the evolution of metaphors used to indicate the structure of knowledge, he examines the transition from a semantic domain in which metaphors portray a kind of confusion or uncertainty (labyrinth, map) to that in which metaphors express ordering systems of knowledge, or more generally of large masses of information.

Although it does not necessarily correspond to a relation between opposite terms, the tree–net pair is implied in a number of major issues of the contemporary cultural world. For example, it features in the conflict between the dictionary- and encyclopedia-like semantics models, and also in the discussion on the epistemology of science, triggered by the view of the epistemology of complexity which acknowledges the role of the “observer” in the process of gathering knowledge.

The tree and the net can also be seen as incorporating contrasting paradigms of knowledge organization. Knowledge organization systems (KOSs) provide a representation of meaning for information retrieval. And yet the way in which this is done depends on the epistemological founda-

tion upon which they are based. On the one hand, there are approaches to KOSs design and use based on principles resembling the tree model. They tend to assume a logical picture of the world, to make objectivist presuppositions about the nature of knowledge, and to be associated with operationalist or referential accounts of meaning. On the other hand, there are approaches which have arisen from a theoretical substratum emphasizing the situated nature of human understanding, and that of meaning as historically and socially constructed. Relations and structures are seen as basically context-dependent and their value acknowledged beyond the frame of logical hierarchies.

The relation between epistemology, social organization, and knowledge organization is explored in Hansson's paper, which refers to the notions of "materiality" and of "documentality" of social objects. He asserts that as classification upholds the relation between ontology, epistemological structures, and adjustments of these for practical purposes, "the fundamental relation between scientific taxonomy and classification attributes the latter a sort of authority." Based on this authority the way of organizing libraries and document collections has always been reasonably coherent. But this has been possible because "society has acknowledged this order as legitimate."

Marras investigates which metaphors are more suitable to grasp the theoretical and methodological pluralism of knowledge organization. Aquatic metaphorical models are compared with the more traditional terrestrial ones, and the use of both are traced back to the XVII century (Leibniz's philosophy). It is argued that by referring to aquatic metaphors as a model for knowledge organization the possibility of accessing "transversal" viewpoints can be achieved. This would facilitate the establishment of a multi-hierarchical and multidisciplinary knowledge structure.

López Huertas too highlights the importance of "transversality." Concepts and theories underlying multi-dimensional knowledge (multi-, inter-, and transdiscipli-

narity) as well as their main features are analyzed. It is suggested that the transdisciplinarity approach, especially in Nicolescu's reading, can provide new theoretical tools capable of impacting significantly on the foundations of knowledge organization. They may lead to a different way of conceiving concepts and categories, and of organizing them by more genuinely networked-oriented structures.

Burnett and Bonnici use the rhizome metaphor to describe recent trends in the development of education for the iField. It is examined whether the character and growth of the iSchools are 'rhizomorphic,' and conclusions are drawn regarding the applicability of this metaphor to describing the advancement of the iField. They suggest that, if "the iField is as rhizomorphic as the organization that strives to promote it, crystallization of disciplinary identity may be more harmful than helpful ... resulting in stagnation of its dynamic, open, and interconnected nature."

The concepts of network and rhizome have been used also to portray hypertext and the web. Tredinnick analyzes the network and the rhizome as contrasting metaphors, favouring a description of hypertext and the web in terms of the latter. He argues that the web is not only a set of protocols, standards, and technologically enabled services but "a dynamic reorganisation of the socio-cultural system itself that at its inception has become associated with particular forms of technology, but which has no determinate boundaries, and which should properly be constituted in the spaces between technologies, and the spaces between persons."

In the final paper, Fóris explores the relation between network theory and terminology by applying the model of scale-free networks to the latter. The main feature of this model is that everything is interconnected (the "small world" phenomenon). Language too is depicted as having a network structure. The paper establishes the role of the terminological network in knowledge representation, and elaborates on the application of network theory in the field of terminology.