

Polycentrism

Polycentrism refers to a mode of organisation of space comprising units that each have different degrees of centrality. The use of the term "centre", or the qualifier "central", suggests an idea of concentration, weight, and/or decisional power in comparison to the rest of the entity considered. Synonymity with the words "poly-nuclear" and "multipolar" has long been assumed in geography. As for the notion of the "pole", while the word can be used to describe the structure of an object possessing a degree of complementarity between two parts, it also evokes a field of attraction of the pole with regard to the rest of the territorial unit considered. The present-day prevalence of the concept of polycentrism is linked to its polysemy, and to its interface status.

The idea of polycentrism, which has long been part of reflection on the configuration of cities (polycentrism versus monocentrism), appeared in the literature in analyses on the supposed impact of technological innovations in reorganising urban space. These analyses focused on the alternative between continuing concentration and the initiation of a process of de-concentration. The first prospective diagnoses went back to the development of industry and the railway networks, contributing to the formation of "conurbations" (Geddes, 1915), and this was contrasted with tendencies towards dispersion resulting from the arrival of electricity and the motor car (Mumford, 1934). In these early acceptations, the qualifier "polycentric", sometimes replaced by "poly-nuclear", was only applied to intra-urban space. Thus, as an alternative to Burgess's concentric zone model, Harris and Ullman (1945) proposed a development model with a "poly-nuclear structure". Nevertheless, the relevance of the concentric model of urban space was backed up by the urban economy models, such as that developed by Alonso (1964), which envisages an urban space comprising a single economic centre (Central Business District) which concentrates the highest land prices, while these in turn determine the residential location of households and other activities.

Two decades later, Claval (1981) and Aydalot (1984) continued to restrict this view to the intra-urban space, attributing the polycentric dynamics of the structure of certain urban areas to the rise of the automobile (for Claval) or urban sprawl for Aydalot ("lower-ranking centres progressively integrated into the urban fabric of the main city"), both returning to the phrase "poly-nuclear city". It is nevertheless possible to consider that the Central Place Theory (mainly conceived by Christaller, 1933 and L sch, 1938) already referred to a hierarchised, polycentric city system. On the other side of the Atlantic, the attention devoted to polycentrism was accompanied by a formalisation of models assessing the imbalances between place of residence and workplace in the large metropolises (Leinberger & Lockwood, 1986, Cervero 1989), and the impact of the appearance of new centres on the distribution of residential densities and land and building prices (Fujita & Ogawa 1982).

Although for some time the word polycentrism was almost exclusively applied to describing intra-urban structures, there was a sudden extension of its field with its arrival in the area of European territorial development, and at the same time the scale on which it was applied changed. Baudelle & Peyroni (2005) mapped out the development of this extension; entailing both a semantic broadening and an international legitimisation. This new meaning appears to have developed in Germany from 1991 in a study on European cities where we find the first "bunch of grapes" image, "*well-suited to representing the polycentric structure of the city system in Europe*" (Kunzmann, Wegener, 1991). Official European Commission documents referring to "*a balanced polycentric urban system*", such as the ESPD (1999), then confirmed the evolution in meaning. This first, general view of territorial development in Europe aimed to reduce the relative weight of the central "pentagon", and at the same time established a conception of polycentrism applied to inter-city relations. The emergence of polycentrism in the field of territorial planning also had the effect of promoting the word from a descriptive status to that of a strategic objective (Davoudi, 2003). Thus polycentrism became a main element (with its archetypes such as the Randstad in Holland) in political projects for territorial development considered on European scale. This led Hall (2006) to ironically remark on the importance taken on by the concept: Polycentricity: geographical phenomenon or Holy Grail? Finally, polycentrism in this broader acceptance had a pivotal function for other "official" words such as territorial cohesion, competitiveness, or sustainable development.

Following these evolutions we can attempt a clarification (see Nadine Cattan, 2007). Polycentrism can be observed, on different scales, in morphological form (mono- or poly-nuclear) and/or in relational form (relationships based on flows between urban zones, as a result of both institutional processes (cooperation between urban ensembles) and structural processes resulting from a specific type of spatial development ( polarisation ,  diffusion , etc). From an operational viewpoint, it is considered that polycentrism is indeed facilitated by a poly-nuclear configuration, but that polycentric policies can be successfully implemented within a hierarchised space. Nevertheless, relationships, flows and cooperation among centres can take on different forms. While relationships between

cities are crucial in determining polycentrism, conversely numerous urban nodes with no relationships among them do not form a truly polycentric system.

In the literature, the importance attached in contemporary times to polycentrism and its different modes of functioning can be attributed to both the internal transformations of metropolises, and the success of the concept as a normative project enabling priorities to be set in terms of integration and development planning. A whole set of processes, such as de-concentration of jobs, the shift to an economy of higher services, or restructuring linked to the globalisation of territories, have been put forward. Thus the global city regions (Scott, 2001), the mega-city regions (Hall, Pain, 2006) and metropolises (Saint Julien, 2015) are seen as evolving towards more polycentric configurations, and are thought to possess a number of functional relationships and mutual connections that enable their identification.

According to the way in which the concept of polycentrism is approached (intra-metropolitan, regional or national) the issues and the debates differ. Concerning intra-metropolitan polycentrism, research has sought to define the importance and the role of secondary centres in the overall configuration, and focus on the hierarchy across intra-metropolitan centres (Berroir, Mathian, Saint-Julien, 2002), or to measure the diffusion of "higher" services within the urban space (GuÃ©rois, Le Goix, 2000). Other researchers have explored the question of the balance between jobs and housing in the large metropolitan areas, and related problems such as urban sprawl and the fragmentation of the labour market (Bertaud, 2003). They show that in polycentric urban systems, home-to-work commuting appears more limited in scale, and that a better job-housing balance is liable to develop. This leads to the notion that a polycentric structure presents certain advantages compared to monocentric structure in terms of ability to create equilibrium between centres and a complementarity of urban functions, while at the same time avoiding the disadvantages of congestion (Meijers & Romein, 2003).

When polycentrism is understood in a normative meaning and as a model to be followed, there is the question of the operational feasibility of reorganising the spatial configuration of a set of cities so as to promote or create polycentrism, or to maintain a state of polycentric organisation. These orientations are underpinned by the implicit notion of complementarity and cohesion considered to be inherent in polycentrism and able to solve contemporary territorial development problems. This idealisation of polycentrism also opens onto another debate, that of the institutional governance of ensembles of this nature. On a political level, the idea of polycentrism goes hand in hand with the development of new decisional processes, accompanied by institutional "solutions" intended to enhance the representativeness of the various administrative levels (Jouve & LefÃ©vre, 1999). On the scale of the European Union, this promotion of the notion of polycentrism is based on an implicit homology between the organisation of European city systems and a European ideal of political decentralisation (or even federalism).

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