Theories of spatial analysis

The general theoretical position of spatial analysis consists in proposing a partial explanation as well as prediction possibilities about the state and probable evolution of geographical objects / entities, on basis of knowledge of their situation with respect to other geographical objects.

There exists not yet any general theory of geographical space that could be a theory of concentrations, of spacing, of spatial structures and of evolution of spatial systems, relying on knowledge of behaviours in space and of spatial representations. Relatively consistent subsets of theoretical proposals have nonetheless been worked out and gradually enriched. Most of these theories, which attempt to explain location and distribution of human activities, refer to the major role played by distance, which on the one hand slows down interactions and on the other makes value of places vary in function of their relative geographical situation. Examples of this are the centre-periphery theory, the central places theory, and the theory of spatial diffusion of innovations.

The first theory of spatial analysis is that of differentiation between centre and periphery, basis for the central places theory. Space produced by societies is oriented (anisotropic). Some places, selected as centres, acquire a social, symbolic and economic value, which makes them foci toward which flows of persons, energy, material, information, converge from the periphery to the centre. This convergence is called polarisation. The property that centres have to offer a number of services to their periphery is called centrality. Functioning centrality supposes for the centre to maintain a good accessibility with? its periphery over time. Most of the time the centre also exerts - in various ways - a domination on its periphery which may be political, military, religious, commercial or administrative and which is translated into an unequal exchange, a dissymmetry in the balance of interactions between centre and periphery favouring the centre. This process tends to reinforce accumulation of supply in the centre, which increases the degree of complexity of its activities. A diffusion of amenities, of a part of central functions or of current innovations toward the periphery may happen, but it almost never results in a total reduction of inequalities between centre and periphery.

Size of the periphery polarised by a centre depends on the reach of activities of the centre, linked to its complexity level, and on modalities of circulation between periphery and centre, which historically increase travelling speed and thus reaches of centres. Interactions between centre and periphery, which follow the gravity model, may define periphery as an adjoining area around the centre, or as a network of places accessible through connectivity. Distances-times and/or distances-costs are indeed those that tend to regulate interactions.

Centres emerge on a characteristic distance from another centre, called spacing, and which is on the average equal to the double of their reach, whether centres stand spaced out along an itinerary or tend to cover a territory following a grid that completely partitions it. Regularity of spacing refers to population or to activities served by centres (and not to physical distance). Average spacing between centres rises with their complexity level. The result is a hierarchic organisation of the spatial grid of centres.

Differentiation of space into centres and peripheries may be observed at different geographic scales. This multi-scalar organisation characteristic of the exercise of centrality and polarisation incites to explore the fractal character of the evolutionary processes that generate the hierarchically organised configurations of central places and of their peripheries.

Centres enter in competition for the capture of resources of their periphery, and develop innovations in the course of this interactive process. Development of innovations depends on action of actors located in the centre. This action may be either creation, anticipation, and attempt to take a profit from it, or imitation of an innovation that has registered success elsewhere, both attitudes representing an adaptation strategy. Innovations imposed or imitated in this way diffuse among centres, by proximity or by hierarchic diffusion. A centre acquires an upper centrality level through accumulation and increased complexity of its activities only if it succeeds in competing with other centres by capturing the initial advantage of a sufficient number of innovations. It is this process that tends to regulate spacing of centres, in any area where interactions have been happening during a sufficiently long time in contiguity, according to the proximity rule, and it is also this process which leads to growing inequality in centres weights. The latter is strengthened through systematic increase of the reach of spatial interactions caused by the increasing speed of communications, which determines a historical trend toward contraction of physical space and toward widening of space accessible for interactions.

Bibliographie