Geographical Proximity of Knowledge-Intensive Companies and Knowledge Flows: Interactions, Mechanisms and Dynamics

In the era of network economy, the global use of ICT and frequent business trips the opportunities for collaboration over long distances have increased. Therefore, the importance of geographical proximity is often depreciated and considered as the auxiliary in comparison with other types of proximity. Hence, the author will test the thesis of limited importance of geographical proximity for knowledge flows (proximity paradox) in different industrial and spatial contexts. In addition, a model of the relationship between proximity and knowledge networks that has been built so far has been often simplified. The relationship between knowledge flows and financial and innovative performance and have been usually studied. Typically, these dependencies were treated as direct, without taking into account the long and complex causal chain.

From general and practical perspectives, the project aims to make the concept of geographical proximity more realistic through its conceptualization and operationalization and to undertake comprehensive and detailed research on the dynamics of the relationship between geographical proximity and knowledge flows. The main objective of the project is to build a complex model of evolution of the relationship between geographical proximity and technological and market knowledge flows and in advanced industries (on the case of the aviation and biotechnology industry and computer services). At the beginning, however, the construction of the relational model requires conceptualization and operationalization of the geographical proximity (the first research problem) that is inherently strongly relative. The following hypothesis will be tested that in some industries, geographical proximity is best expressed not by physical distance, but by the temporary proximity. The second research problem is the issue of the spatial scale of technical and market knowledge flows. Thus, the proximity paradox will be verified: closer actors are less inclined to cooperate. The author hypothesized that this paradox occurs in Polish conditions – in advanced industries the supra-regional (with the neighboring region or the capital region) knowledge flows are more intensive and important. Thirdly, the project will allow to address the question of which dimensions of proximity (institutional, organizational, social, cognitive, geographica;) affect the intensity and character of knowledge flows. It will be tested in spatially concentrated and dispersed types of clusters and also in spatial agglomerations of industries that are not organized in clusters. It is supposed that geographical proximity of companies does not significantly affect the size of knowledge flows in formal clusters (social and organizational proximity matters, there) and plays an important role in knowledge flows in informal (non-organized) spatial agglomerations.

Addressing three research problems will allow to conceptualize and operationalize the notion of geographical proximity and knowledge flows and statically discuss the relationship between them. This is a good starting point to deal with the main research problem which is the research into variability of the relationship between geographical proximity and knowledge flows. The diversity of this relationship is strongly conditioned by the context of the industry, economic diversity and evolution of other types of proximity. The project will investigate the dynamics of the volatility of that relationship and the factors shaping it. Therefore, it is hypothesized that at the beginning of the focus this knowledge flows affect the spatial concentration of companies, and eventually proximity naturally impacts development of knowledge networks.

Verification of hypotheses will be possible with the use of various research methods and techniques. First, after a pilot study on a random sample of 200 companies internet survey among companies will be conducted that will allow to analyze the perception of the notion of proximity and spatial scale of knowledge flows. Secondly, in selected eleven spatial clusters and agglomerations 110 in-depth companies' interviews and 30 interviews with key informants (representatives of business organizations, state and local authorities, scientists and other experts) will be conducted. Thirdly, nine case studies of completed cooperation projects between companies will be carried out. Analysis of the relations between different dimensions of proximity and knowledge flows will be conducted with the use of quantitative methods, including using multiple network regression and longitudinal analysis.

From the scientific point of view the project will enable the verification of debatable thesis on the proximity paradox in the geographical context. As the result of the project it will be possible to build and test a dynamic model of the relationship between geographical proximity and knowledge flows. In-depth analysis of the spatial structure of knowledge flows and the identification of the main mechanisms and directions of flows may support formulation of local and regional development policies, including those focusing on smart specialization.