Special Session Proposal

Networks: an empirical and conceptual toolset to understand and model cities, regions and their interactions

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Abstract

Spatial relationships have always been at the core of regional science: from trade to supply chain and firm relationships, and from migration to mobility flows, to name a few examples. Such network settings come with conceptual and empirical complexities. Therefore, regional scientists employed methodological developments from different disciplines to support endeavours to model such spatial relationships. On the one hand, Spatial Interaction Models, which have been widely utilised in geography, have become a staple for modelling spatial relationships. On the other hand, developments in network science enabled the regional science community to represent such relationships as networks and, consequently, model and understand their structures. What is more, approaches bridging these two worlds have also been developed to answer urban and regional problems.

Importantly, the anchoring of such networks in space is a distinct challenge for regional scientists. Understanding how the topology of these networks is intertwined with the geographical embeddedness of actors and their relationships not only requires substantial theoretical grounding, but also poses considerable analytical and computational difficulties.

Recent availability of new sources of data, promising insights into unanswered research questions, has also introduced additional challenges. While these sources enable the capture of network structures at an unprecedented level of spatial and temporal resolution, they also introduce new and often severe computational challenges. These challenges require regional scientists to adopt and develop tools beyond their traditional toolkit.

This Special Session invites empirical and conceptual contributions depicting how regional science can leverage both new and well-established network analysis and network science tools to answer research questions about spatial relationships. We welcome contributions about urban and regional problems which can be represented as networks. We are keen to see how researchers have employed and designed such network settings. Examples include, but are not limited to, trade, mobility, transportation, firm and other actor material or online relationships.