

Interactions between Networks and Territories

China Fieldwork within Medium Project

Research Directions Proposal

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Date

Abstract

This note describe potential research directions for a thesis fieldwork in China in the frame of the Medium project. The focus on literature by the author resides in the fact that most of these papers are part of the thesis and serve as basis or preliminaries for the directions presented here.

1 Context

1.1 Thesis Context

In the current state of affairs, purposes of the thesis includes (among others) the following highlights (read provisory Memoire [] for more details) :

1. Proceed to a quantitative epistemology study
2. Extract stylized facts on relations between Networks and Territories, focusing on transportation networks, at different spatial and temporal scales, and on different case studies.
3. Propose toy and semi-parametrized models of Urban and Network growth, designed to be either elementary bricks of a larger family of models of co-evolution, or exploratory tools.
4. In co-construction with the previous objectives, construct a geographical theory of co-evolutive networked territorial systems.

1.2 Insertion within Medium Project

The Medium project features several research directions for some of which a fieldwork focused on themes given before would be of a particular interest, namely :

- Macroscopic perspective on middle size cities
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2 Research Directions

2.1 Urban Systems Modeling

In consistence with Medium axis X, a first major project is the study of the Chinese city system within the Evolutive Urban Theory. This mature theory (for specific aspects and details, see e.g.) has already proven powerful to understand cities as complex adaptive systems.

Stylized facts from Chinese cities dynamical database

Modeling Chinese cities growth : towards a *SimpopSino* model

Co-evolution models

2.2 Metropolitan Governance Modeling

At the metropolitan scale, the question of governance processes for transportation planning is of particular interest as path-dependency is strong at such a scale : bad planning decisions can have disastrous impacts such

An extension of this model, integrating game-theory-based decision rules [Le Néchet and Raimbault, 2015]

2.3 Mobility and Inter-modality : a Bike-sharing case study

At a microscopic scale, relations between Transportation Networks and Territories are partly captured in mobility processes, the study of which complexity provides in consequence useful insights. For example, concerning the properties of the processes, we studied in [] spatio-temporal stationarity properties of traffic flows for Paris region, unveiling strong variabilities with the consequence of a reduced validity range of the Static user Equilibrium framework.

3 Organisation

References

[Le Néchet and Raimbault, 2015] Le Néchet, F. and Raimbault, J. (2015). Modeling the emergence of metropolitan transport authority in a polycentric urban region. In European Colloquium on Theoretical and Quantitative Geography, Bari, Italy.