

Reading Record

[Bretagnolle, 2009]

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Reading Record for [Bretagnolle, 2009] *Villes et Réseaux de Transports : Des interactions dans la longue durée (France, Europe, Etats-Unis)*

General Purpose

Focus on relations between transportation networks and cities, at different spatial and temporal scales. Network evolution do deeply influence the structure of cities and system of cities, but network shape has also its proper evolution. The industrial revolution and the introduction of faster transportation modes lead to differentiated conceptions and definitions of the city accross Europe. Therefore, a consistent study of the coevolution between transportation and urban frame must rely on *harmonized urban database*, for which contruction methods are proposed, based on an ontology of the city on large time scales. These database finally allow to understand that major transitions in city systems occured simultaneously with technological innovations in transportation. Evidences for coevolution and mutual adaptation processes are extracted from the study of accessibility and network shape measures.

1 Linear Reading

Introduction

Assumption of structuring effect of intra- and inter-urban transportation network [Bavoux et al., 2005].
Rq : Opposed to *the myth of structuring effects* [Offner, 1993]. – precised here that long time-scale are considered, thus local approximation are made. One can not demonstrate the direct impact of a new line on the economy or urban development because feedbacks do not occur at short term, and effects may appear “random” at non-appropriate time scales. **Q** : references verifying this fact ? → Good question, that should be tested statistically and through *modeling* : good for our purpose.

Urban hierarchy is remarquably stable in mong time, whereas accessibility patterns radically changed, thus the central question of this work, which is the exploration of links between the evolution of urban hierarchy and the stucture of exchange networks.

1.1 A long-time ontology of the city (?): Evolution of urban transportation, city morphology.

After the industrial revolution, limit of juridic limitations of cities (what was practiced before). No consensus on city definition across countries, still not harmonized today.

1.1.1 Transportation Revolution and Urban Agglomeration (19th)

First railways : dilatation of territories (cf Reclus). Direct effect on urban sprawl : e.g. Boston, associated to enormous growth rates ($x3 \simeq 30$ years).

Juridic definitions of the city try to adapt (cf Portugal). In England, pragmatic adaptation (health issues etc).

Other countries propose a statistical definition (population threshold) : France, Italy, Germany, US.

Later (1880), first definition of agglomerations by continuity.

→ list of city definition in Europe in 1900. Only 4 use morphological criteria.

1.1.2 Temporal or Morphological definition of cities ? 1910-1950

New generation of public transportation (electricity) : up to $x5$ in 30 years of pendular mobility. Isochrone maps : temporal referential.

City size determined by an 1-hour time-budget equivalent. Isochrone maps 1919 G. Bonnier (Paris) : natural delimitation of a city.

// morphological definitions, by continuity of constructions. Importance of aerial views (1950).

Insee 1960 : construction continuity implies other criteria. Later diffusion into other countries.

1.1.3 High Speed Transportation and Territorial Discontinuities : the city as a functional area (2 half of 20th century)

US : federal-aid Highway 1956 → more city sprawl. [Example highway networks 2008 Europe/USA] ; new morphology, more diffuse frontiers between urban and rural.

Even more difficult to give a definition of the city (ex Florence, totally different among 2 databases).

Stability of time-budget (Zahavi's law) : new structuration of urban systems through speed

Definition of urban areas by commuters threshold : US 1950. 1962 France, 1967 GB.

Great heterogeneity in LUZ definition across Europe.

1.1.4 Intermediate conclusion

Importance of links between transportation modes and city morphology.

On the long time, (juridic, morphologic, functional) definition $j=l$ (municipality, agglomeration, functional area) views, corresponds to actual historical evolution of cities.

Question of hierarchy of spatial scale (inclusion) : interesting, corresponds to the manifestation of different processes : municipality = political ; aggro = "characteristics" (comparable cities) ; functional area = economic functions.

Q : What about temporal scales ? and city systems ?

Rq : Link with Duranton Tyrannies ? [Duranton, 1999] maybe not so far from the long-time city ontology ?

1.2 Harmonized urban databases for dynamical and international comparisons

Proposition of methods to reconstruct the three levels of definition from various sources.

Difficult to handle because data models are necessarily multi-level (as city is agglomeration of smaller entities) and dynamical.

1.2.1 From ontology to harmonization

Harmonization = find the most consistent definition of the city depending on temporal and spatial context.

Temporal situation Evolution in time of time-budget. Ex : Boston 1830-20000.

Longitudinal harmonization trajectories of population for different defs for a city : allows to detect change of status.

Transversal Harmonization At a given date, best definition to compare cities accross the world.

1.2.2 Methods for data harmonization

Aggregation of finer statistical data Ex Frce INED, US.

Retropolation of past data Reconstruction of unknown past data ; done on Frce ; method proposed for US.

Temporal Harmonization Correction of criteria changes in time. Ex of New York : 11Mio -> 9 Mio

References

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- [Offner, 1993] Offner, J.-M. (1993). Les "effets structurants" du transport: mythe politique, mystification scientifique. *Espace géographique*, 22(3):233–242.