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Embedding of transit and land planning

Looking for the relevant strategy

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This presentation will address the topic of the embedding of transit policies and urban planning. We assume here that the combined development of transit and city can guide urban planning toward sustainable development. Moreover, transit appears to be a tool to build sustainable yet mobile cities. We therefore can ask what strategies are put forward in the current urban planning debate and which one can be relevant for a specific situation like, for example, Irkutsk.

First of all, the embedding of transit and land planning has historical backgrounds like streetcar suburbs in the late 19th and the beginning of 20th century, particularly in northern America. Horsecars, then electrical streetcars, have actually shaped the development of urbanization in the outskirts of the cities, often resulting in a gridiron pattern. Another interesting and crucial milestone was the Copenhagen Finger plan in 1947. Thanks to a light rail system called *S-Tog* and an ambitious planning strategy, a linear urbanization pattern was put forward. More lately, the Scandinavian ABC cities (Swedish acronym for Labour-Housing-Center), which are suburban towns designed to offer their residents everything they need and therefore be independent, were implemented with the help of the Stockholm Metro.

Inspired by these European experiments, American urban planners have built a convenient theoretical arsenal calling up New Urbanism and Transit-Oriented Development concepts, which are now globally known. Whereas New Urbanism is often seen as a reshaping of city design in order to improve quality of life, TOD, sometimes considered as an offspring of the aforementioned doctrine, explicitly addresses the embedding of transit and urbanization. Conceptualized by Calthorpe in 1993, this approach suggests the implementation of community-owned neighborhoods where inhabitants can easily access on foot to stores and services as well as a mass-transit station. The goals are to fight against urban sprawl and congestion, to favor modal shift and to boost local shopping. More generally, TOD aims at reducing car-dependency and its unsustainable effects (air pollution, fossil fuel dependence, social exclusion, etc.). The interplay between transit and land-use policies may permit to avoid unnecessary travel. Several principles are therefore put forward to succeed in such an endeavor:

- infill;
- town center revitalization (with some negative effects as the increases in rents);
- streetconnectivity;
- the 3D's (Cervero&Kockelman 1998): Density (particularly within a quarter-mile surrounding the transit station because it corresponds to the pedestrian catchment area), Diversity and Design that "softens" the perception of density;
- mixed land-use that allegedly shortens trips and spreads them throughout the week in addition of favoring shared parking;
- walkability with minimal parking, non-motorized access, traffic-calming, pedestrian-friendly design of streetscapes and multi-functional environment;
- accessibility.

Accessibility concerns can point out the complexity of the coordination between transit policies and urban planning. The example of Saarbrücken's station of Burbach, targeted as a TOD center although reachable

by only two trains a day, and the resulting fail, underlines the pivotal role of transit effectiveness, besides land-use and design. In order to improve transit, several strategies can be developed, which must be embedded with aforementioned urban planning ones:

- reducing travel times by dedicated transit lanes (which can lead to worsen inequalities in the whole urban area);
- improving the fineness of service with relevant transit modes, like tram-train (which can lengthen travel times);
- improving the frequency of service with interval-service timetables.

Those strategies may be too expensive, that is why planners and stakeholders may rather improve intermodality. Indeed, intermodality of passenger transit network enhances the relational capacity of transit systems. Intermodality requires more than a physical connection and a relevant pricing. The synchronization of schedules between the transit modes and a high level of pedestrian accessibility within the interchange station can help minimizing transfer times and consequently improve transit effectiveness. On the other hand, shorter transfer times can increase the vulnerability of the system. Sometimes a little timetable change can significantly improve accessibility, whereas some unexpected effects can occur at a broader scale. Facilities and stores should be easily accessible on foot within or close to the station, with relevant operating hours, allowing passengers to carry over some activities during transfer times. Yet, this assumption relies on the spatial ergonomics of train stations, because it is assumed that opportunities that are not clearly signaled will be largely ignored by passengers. Finally, all those requirements for an effective intermodality and accessibility strategy draw a micro-scale pattern to design train station, highlighting the importance of footpath continuity, open spaces and last but not least urban services. Indeed, train stations are both transport facilities and urban places.

The whole TOD theoretical assets encounter various limitations when implemented in different areas. Some interesting examples can be mentioned. Orenco station is regarded as the most successful TOD experiment concerning the modal share of local transit and urban sprawl containment. It is also seen as a walkable place, with significant public spaces and a community-owned neighborhood. In spite of this apparent success, the impact of Orenco neighborhood on the whole Portland metropolitan area is quite weak. This problem raises the issue of metropolitan-scale bodies capable of planning a broader pattern of TOD, including coercive policies as well as incentive taxing. In Europe, this pattern of larger scale seems to be more usual. Another problem occurs when all the TOD's principles are not pursued simultaneously. For example, Fremont station is a Bay Area Rapid Transit station in San Francisco, combining density and diversity in the surrounding area. However, urban policies have favored the use of automobile, particularly with large parking plots, to such an extent that walking and cycling are almost not developed at all. In the contrary, the integrated urban planning and transport policies have led to a very dense city of 26 000 inhabitants comprised in a 1.5 km radius circle in Rheinbach, Germany. The ambitious improvements (bike parking facilities, one train each 15 minutes in peak-time, etc.) of Voreifelbahn (light rail), coupled with relevant urban planning and design, led to this successful experiment. However, as good as this example may be, it only concerns less than 30 000 people. The well-known Curitiba example stands for a success at metropolitan scale. This Brazilian city of 1.7 million inhabitants was lately developed according to the 1971 Curitiba Master Plan which, thanks to drastic land-use regulations, led to "corridor-oriented development". Dense building environments surround Bus Rapid Transit lanes and the density decreases with the distance from these structural axes. Curitiba and its transportation system are worldwide regarded as models because of their innovative bus system and their sustainable modal share - relative to other South American cities - but one can argue that low-income dwellers are removed from the corridors toward substandard housing.

The selected implementations point out the complexity of identifying the relevant strategy for the embedding of transit and urban planning. Yet, some findings can be mentioned. First of all, transit and

urban planning policies must be coordinated and thought together and simultaneously. Then, long-term visions can lead to perennial and relevant planning. The strategies must deal with multiscale concerns, as the transit station layout can impact the metropolitan-scale mobility. In addition, planners have to merge the place, with its urban features, and the node, with its network-oriented characteristics. It is also worth recalling that transit must be able to compete with automobile, which means that the improving of transit effectiveness can be coupled with the impairing of automobile assets. Finally, urban planners must be conscious that every new infrastructure creates inequalities, but this problem is hard to resolve. Another issue appears when the theory encounters the field: all the cities have not the same leeway to implement these principles. Historical, geographical, economical, sociological and political characteristics of each city can vary, and the relevant strategy at one time may be different from one city to another. That is why we must not assess sustainability with the result, like urban morphology, but rather with the process, like urban planning strategy. Like Jane Jacobs said (1999), “The result lies more in the means than in the ends, because there is no end”. Thus, some cities considered as unsustainable have yet chosen interesting strategies to build a relevant path toward sustainability, by adapting their transit system to their urban form. For example, Mexico has favored private minibus companies to develop an “entrepreneurial city” model that fits its morphology. Melbourne has revitalized its downtown thanks to the reuse of former tramway system lanes. In the contrary, Adelaide has strongly invested in the efficient German O-Bahn system. Perhaps these examples can be interesting for a city like Irkutsk, which can develop either a strong investment toward an innovative transit system strategy, or a less spectacular process of town center revitalization. Whatever, the relevant strategy must result from a coordinated transit and urban planning policy and must be consistent with the current Irkutsk issues. As good as TOD principles sounds, there is no magic bullet ensuring sustainability.