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The transit metropolis of Chinese characteristics? Literature review, interviews, surveys and case studies

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ABSTRACT

In 2011, the Ministry of Transport (MoT) of China announced to competitively select and fund at least 30 cities in their respective efforts of building a transit metropolis. Incentivized by MoT, many Chinese cities have started planning for a transit metropolis and even implementing related measures. This signifies some larger-than-ever government-led efforts towards the transit metropolis that we have heard of. Why did China/MoT initiate the transit metropolis program? Is the transit metropolis idea of MoT similar to what Robert Cervero defines in his book, which introduces the concept of transit metropolis and illustrates it using 12 exemplars? If not, why? Have Chinese cities followed the same principles or taken comparable measures proposed or identified by Cervero? Or, have they produced brand new principles or measures? If so, what is the implication? This article answers the above questions through literature review, interviews, surveys and case studies. It shows that MoT's idea of the transit metropolis differs notably from that of Cervero. Even though MoT proposes more universal and quantitative performance measures for a transit metropolis than Cervero, its perspectives and policies are still parochial. Local governments, nevertheless, have comparable principles or measures like Cervero. But compared to a transit metropolis exemplar such as Curitiba, they overlook issues such as the match between regional commuter sheds and the services/administrative boundaries of local transit-related entities, coordinated, regionalized transit services and fares, pedestrian-friendly streets and parking pricing strategies. The above indicate that more work is needed to better define, plan and implement a transit metropolis in China.

1. Introduction

Given that they always have finite resources and cannot afford car dependence in the long run, cities and regions shall have a competitive transit system. How can cities and regions establish and maintain a competitive transit system? Numerous articles, reports and books have been published on this (e.g., Highway Research Board and Transportation Research Board, 1974; Transportation Research Board, 1979,1995; Cervero, 1998; Ceder, 2004). Among them, Cervero (1998) is one of the most influential across countries. It has inspired people who are interested in a wide range of issues such as which role transit should play in cities, how to coordinate transit services and land development, how to increase the competiveness of transit, how to create a more compact and transit-oriented metropolis and how to reduce vehicle traffic congestion by increasing transit usage (Chen and Yang, 2013; Liu and Huang, 2013; Liu et al., 2012; Wheeler, 2000; Handy, 1999). It has presented 12 successful cases of transit metropolis around the globe and summarized what could be the unique and common ingredients of those cases. "[It] includes a wealth of information and insights about current transportation problems and potential solutions and will be an important resource for planners not just in the U.S. but throughout the world" (Handy, 1999, p.108).

In theory, China should pursue a competitive transit system in light of its enormous population size and relatively lack of resources. Urban transportation in many Chinese cities, however, tends to encourage or gear their infrastructure towards private automobiles (Liu and Guan, 2005). This has posed challenges for other modes of transportation, public transit, in particular. Countermeasures have been advocated to turn the tide (e.g., Huang, 2011; Jiang et al., 2013; Guo et al. 2013). In 2011, the Ministry of Transport (MoT) of China called one of its most expensive programs to promote urban transit systems as "the transit metropolis ('公交都市' in Chinese) program". Arguably, this has helped increase the popularity of Cervero (1998), which was translated into Chinese and published with the same title in 2007.

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Thanks to the transit metropolis program, MoT would spend billions of RMB across Chinese cities as the seed fund incentivize local efforts to promote public transit, aiming to realize at least 30 "transit metropolises" in the foreseeable future (Jiang et al., 2013). The transit metropolis program is therefore a larger than ever government-led program for the transit metropolis that we have heard of in any countries. Why did China/MoT initiate and invest so heavily into transit metropolises? Is the transit metropolis in MoT's mind the same or similar to as Cervero (1998)? If not, why? Have Chinese cities followed the same principles or taken comparable measures proposed or synthesized by Cervero (1998) when building a "transit metropolis"? Or, have they come up with brand new principles or measures given that Chinese cities are quite different from Cervero's 12 exemplars, which are all from outside China? This article attempts to answer the above questions through literature review, interviews, surveys and case studies. The answers would provide useful references to transit planners and decision-makers who are interested in realizing a transit metropolis of their own. The answers should also help whoever wants to know more about the ongoing transit-metropolis efforts in China, the most populous country in the world and a country that is becoming increasingly influential in the global society.

The article adopts a comparative perspective when seeking the answers. Its main rationale is that there are at least some common ingredients of a transit metropolis or a transit-friendly city across countries. Cervero (1998) contains both theories (Section 1) and 12 case studies (Sections 2–5) from both developing and developed countries. Therefore, regardless whether there are direct connections between MoT's transit metropolis program and Cervero (1998) or not, we can still learn something from comparing the two. The comparisons could benefit both China and a foreign country/region in their respective efforts to make their transit systems more competitive. Comparisons could also help us better situate and contextualize existing claims, expand the range of debate and inform new perspectives (McFarlane, 2010).

This article is organized as follows. The next section (Section 2) provides a review of relevant literature, which helps position this article in the ongoing policy dialogue surrounding transit metropolis and identify its potential contributions. Section 3 details sources of information used to address the above questions. Section 4 describes MoT's transit metropolis program and compares it to Cervero (1998), trying to answer the first three questions posed above. Relevant existing literature, information collected from interviews of local experts and surveys of local professionals are used to enhance this section. Section 5 is a comparative case study of the transit metropolis efforts of Jinan and Curitiba, which helps address the last two questions posed above. Section 6 concludes and discusses policy implications of the transit metropolis program of China and future research that may generate more knowledge about how we can plan for and build a transit metropolis.

2. Relevant literature

In the western context, Cervero (1998) has triggered the interest of many people. Overall, Cervero (1998) is thought highly. It provides case studies "are richly interdisciplinary, detailing how metropolitan politics, transit technology, and urban geography combine in sometimes planned, sometimes serendipitous ways to yield 'world class' transit…These histories should be of some encouragement to aspiring transit metropolises as they discover just how slow the processes of land use change or metropolitan political reform"(Levine 1999, pp. 445). "By offering a range of alternatives rather than a single template for transit metropolis, the book should enable even residents of the world's most transit-challenged continent to visualize a more sustainable transportation future" (ibid pp. 446). In addition to real-world planners, Cervero (1998) would be useful to planning educators. "The book as a whole could work as the core of a graduate-level seminar on transit planning, while selected chapters could enrich overview courses on urban transportation planning" (Handy 1999, pp. 108).

Cervero (1998) has been viewed by scholars such as Pritchard (2007) and Bakogiannis et al., (2014) as an important reference which deals with the integration of transportation, land use and sustainable mobility, together with other more recent references such as Banister (2005) and Meyer and Miller (2001). Often, the latter cite Cervero (1998). Banister (2005), for instance, uses cases in Cervero (1998) to argue that public transportation can more effectively change existing land use through concentration of activities close to an accessible transportation corridor.

Cervero (1998) has also influenced various organizations. Suzuki et al. (2013), a technical report published by the World Bank, which explores the complex process of transit and land-use integration in rapidly growing cities in developing countries and which also adopts a case study approach like Cervero (1998), for instance, has adapted and updated several cases in Cervero (1998). In Cervero (1998) was cited four times. A few cases in Cervero (1998) were highlighted for readers to scrutinize. Plus, Cervero (1998) was recommended as the source for more detailed information about how to improve transit systems. Similarly, Cervero (1998) was cited ten times in TCRP (2002). Among regional planning agencies, Cervero (1998) was listed as one of the most important references for transit supportive development (e.g., Regional Plan Association and BFJ Planning, 2007).

In the Chinese context, people more frequently cite Cervero's (1998) Chinese version, Cervero (2007). Chen and Yang (2013) argue that Cervero (2007) has appropriately defined "transit metropolis" qualitatively and they further expands Cervero's definition by introducing goals and objectives into "transit metropolis". Liu (2013) treats Cervero (1998) as the theoretical origin of the transit metropolis program implemented by MoT in China. He proposes, similar to Cervero (1998), that there should not be one universal approach to a transit metropolis. However, all transit metropolises can be evaluated or benchmarked in four aspects: overall performance, transportation management, facilities, instruments and vehicles and system management. In each aspect, he proposes usage of quantitative indicators such as average vehicle speed, level of congestion, on-schedule rate, ratio of urban and rural transit services. His indicators are similar to those by MoT (2011). Similar to Liu (2013), Huang (2011) regards Cervero (1998) as the origin of "transit metropolis" in the Chinese context. But he contends that Cervero (1998) does not contain a clear and evaluable definition of "transit metropolis".

In both the western and Chinese contexts, however, little has been done to compare MoT's idea of transit metropolis with that of Cervero (1998). But given that Cervero (1998) had been so influential, as highlighted above, and that all transit metropolises may share something in common, there could be a gap to fill. This article is an attempt to fill this gap, which will collect information of the transit metropolis program in the Chinese context from different sources and compare it with Cervero (1998) and related cases, trying to understand better differences and connections between the two, obtaining policy and planning implications from the comparisons for China and other countries which are interested in "transit metropolis".

3. Sources of information

There are three primary sources of information for this article. First, Cervero (1998) and related refereed articles. Second,