THE CONSEQUENCES OF MOTORIZATION ON URBAN PLANNING IN CHINA

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ABSTRACT

Car culture has penetrated Chinese society at an extraordinary rate. Municipal governments have built roads, constructed expressways and cleared land to make room for cars. The result is loss of public space, deteriorating air quality, staggering congestion, increased sprawl and reduced quality of life for the majority of residents who remain car-less (Xiao 2007). Further, public transit systems, particularly bus systems, have steadily declined in service because of crowded roads and less investment, meaning less mobility for the working class.

Despite the Ministry of Construction's call to make public transit a priority, cities seem to be following a more auto-oriented development path. They may not turn to public transit until they have exhausted all other measures such as building more roads (Yang, 2007). This paper focuses on the consequences of burgeoning car population on urban planning in China, particularly second-tier cities. In the first part, the overall context of motorization is addressed and a brief history of how the government has encouraged auto ownership in China and thus, restricted cities responses to motorization. In the second part, the BRT is described and the decisions made that shaped urban form as well as accessibility and mobility for other modes, such walking and biking. From this project, a new image of the municipal government emerges as an organization of multiple units that must address multiple objectives and goals that are sometimes in conflict.

Keywords: Urban planning; China; motorization;

INTRODUCTION

In December 2009, as the world was still recovering from the economic downturn, the Associated Press reported that China had overtaken the U.S. as the world's biggest auto market. This was "the first time any other country has bought more vehicles than the nation that produced Henry Ford, the Cadillac and the minivan (Associated Press, 12/11/09). Akin to the United States and its auto history, China is finding itself reshaped by the automobile and its various infrastructure demands—parking, roads, and auto-oriented developments such as malls, big boxes, and even drive-in movie theaters (Jackson 1987; Cao 2008).

This paper focuses on the consequences of burgeoning car population on urban planning in China, particularly second-tier cities. Taking Shandong's provincial capital, Jinan as a case

study, this report provides an on-the-ground account of a bus rapid transit corridor project and the issues planning agencies grappled with to address rising motorization within a finite amount of urban space.

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In the first part, the overall context of motorization is addressed and a brief history of how the government has encouraged auto ownership in China and thus, restricted cities responses to motorization. In the second part, the BRT is described and the decisions made that shaped urban form as well as accessibility and mobility for other modes, such walking and biking. From this project, a new image of the municipal government emerges as an organization of multiple units that must address multiple objectives and goals that are sometimes in conflict.

China's road to motorization

In the early 1990s, China set in motion policies that made the auto industry as a pillar industry (Chinese Academy of Engineering 2003). Not only did China pursue auto production, it sought its place as a major consumer market in the world. With its entrance in the WTO, it further reduced car prices and eliminated ownership restrictions to encourage car ownership. The economic engine that could, exceeded many expectations and became a major player in the auto industry by the mid-2000s. Cars are now affordable to even more people as domestically produced cars have continue to lower in price. Despite efforts to restrict auto use, with the current economic meltdown, those policies have been put on hold as the government implements a stimulus policy to continue its economic climb (Xinhua 2009).

To the Chinese government, linking their economy to the car put them on the road to modernization; cars bring China closer to being considered a developed country (Harwit 2001). Even though the number of motorists is relatively small, urban planning policies have shifted to favour cars (Gan 2003). As a result, motorists are gaining more physical and political space, representing Chinese government policies shift toward modernity; traditional modes such as the bicycle are reminders of the past, despite a national proclamation that encourages sustainable development. Cities are being reshaped by a rising car population.

Consequences of motorization

Current analysis of the motorization impacts in China provides a general overview of what is happening across China. Cities are rapidly expanding their road networks in efforts to address increased congestion at the expense of public space and marginalizing other modes(Gan 2003; Liu 2005; Cao 2008). They are focusing on improving mobility for car

[1] From 2005 to the present, I worked with various planning organizations and experts in Jinan as part of a project supported by the Energy Foundation. As a researcher, I worked on non-motorized transportation issues within the project. I attended several meetings about the BRT project as well as presented early concerns about the Lishan Road corridor.

owners and inadvertently reducing accessibility for other modes. The motorization process in China marginalizes other modes of transportation (Gakenheimer 1999; Schipper 2004; Chinese Academy of Engineering 2003). However, the municipal government is often described as one unit. The BRT case illustrates the need to further break down and analyze the role of the municipal government as one comprised of multiple stakeholders as described by Zhao (2009). Further research needs to be done to dismantle the current paradigm of the municipal government as a single entity for as the Lishan Road BRT corridor will illustrate, even in the public sector, planning is a multi-stakeholder process of multiple negotiations.

Case study: Jinan

Jinan is the capital of Shandong province and serves as the administrative and cultural gateway to Shandong. It is a tourism site known as the City of Springs because of the various natural springs that are found throughout the city.

By 2007, up to 300 new cars were hitting Jinan's streets. Despite the rapid rise in motorization, the majority of trips made in Jinan are still by foot, bicycle, or public transit, comprising 85 percent; cars make up only fifteen percent of daily trips.

Jinan's population numbers approximately 2.50 million, with a built area of 281 square kilometres. According to Jinan's 11th Five-Year Plan, the city is projected to have 5.4 million residents by 2020, of which 4.5 million residents will be residing in the city. Its built area will almost double to 450 square kilometres.

The spatial layout of Jinan is made up of large size blocks and few through streets. It is in the shape of a belt, meaning it is wider than it is long. Jinan's master plan calls for thinning out city centres and fostering suburbanization, which will help to support motorization.

In its 2020 Master Plan, thousands of urban dwellers will move to the east and west districts. Residents are not the only ones to move; government offices are leaving the city centre to profit on increased land values. Several government agencies will move to the east district, resulting in 5,000 workers commuting out of the city. Simultaneously, the municipal government plans to reduce the number of trips by bicycle in the next ten years, and encourage more public transit use.

BRT in Jinan and the Lishan Road BRT Corridor

Many cities were looking for mass transit alternatives since the Central Government had cut back on funding subways in the early 2000s. In November 2004, the US based Energy Foundation held a Mayors' Forum on Bus Rapid Transit in Kunming, Yunnan, China. Amongst the mayor delegations, were representatives from Jinan. Jinan was one of several cities interested in implementing BRT because it was slated to hold the Chinese Olympic Games in 2009 and needed a quick way to improve its mass transit in time. A subway system was cost prohibitive because of the city's underground springs.

In January 2005, the Jinan Public Works Department launched a feasibility study for a bus rapid transit network in the city. The feasibility study identified several roads to pilot a BRT

corridor. Beiyuan Road was chosen as the city had already planned to build an elevated expressway over Beiyuan Road, which required widening the road to over 100 meters. This width allowed enough space for all modes, though it was difficult to navigate. By March 2008, the Beiyuan BRT corridor began operation. The station designs were kept close to the original design or made bigger.

With Beiyuan BRT in operation, the next site chosen to open for operation was Lishan Road. Some experts (foreign and Chinese) involved voiced concern over this choice, since the road was much narrower than Beiyuan, which was 80 meters wide, while Lishan Road was only 50 meters wide and the Public Works department was only going to have 10 additional meters of right-of-way. The municipal transportation plan outlined a plan for Lishan Road to be widened and redesigned. Thus, it provided the right opportunity for a BRT corridor, and since it intersects Beiyuan it could provide a BRT link with the southern part of the city. Lishan Road may not have been the ideal choice, but it was a politically safer choice.

Lishan Road runs 9.1 kilometres from Beiyuan Road to Jingshi Yi Road. Lining it are numerous government agencies and two big box retail stores, as well as many small retail and offices. It intersects major arterials in Jinan and traverses several university areas, government districts, and retail districts. The road was originally a boulevard, lined with trees and auxiliary lanes that accommodated slower traffic.

Bikes used the auxiliary lane and were physically separated from pedestrians. In order to accommodate the BRT stations, which would be in the centre of the road, they expanded their ROW to 60 meters. The planned amount of area to be torn down along Lishan Road amounted to 36, 438 square meters of built space.

Yet, turning Lishan Road into a BRT corridor required extensive negotiations as it was not an elevated expressway and did not have the same backing from the Mayor's office as a new mayor had taken office during construction and was a bit more conservative.

Figure 1 Cars cutting off BRT bus along Lishan Road

A car-friendly BRT

The main stumbling point was space for car lanes. Early in the design discussions, they began looking at ways to remove space from the stations. The auxiliary lane of the boulevard, a bike lane as well as an on-street parking site, was made into a through lane for traffic. The bike lane was moved to the sidewalk. No grade separated bike lane was created at the time of the BRT construction, nor has one been added to date.

Early fieldwork identified a lack of connectivity in Jinan along this corridor as well the predominance of auto-oriented uses (Thomas and Deakin, 2006). The original BRT corridor plan provided enough space for all modes; bikes and pedestrians were to have six meters on each side. The Public Works Department was allowed to raze buildings along the road to get the necessary space. However, they were not able to get the approval to cut down trees from the Parks and Forestry Bureau, a separate agency that did not agree with the plan. The Public Works Department and the Forestry Bureau are equal in agency power. Thus, the negotiation process began.

Despite the impasse, the project continued to be built but was redesigned. Within a context of rapid motorization, demands for better public transit, and the need to follow through on implementing a 135-kilometre bus corridor system, the Public Works Bureau felt pressured to break ground. At this time, Jinan was also preparing to host the National Games and needed to expand its public transit system to support the increased population.

The overarching belief amongst staff I spoke to was that as long as cars were taken care of in the design, everything else could be worked out. In conversations with some planners, I was told me that it was politically safer to put a BRT corridor on Lishan versus other roads, as it had already slated for road widening anyway.

To ensure enough space remained for the cars, they took away the bike lanes and placed the bikes on the sidewalk with pedestrians. This was a design that was becoming ubiquitous in Jinan; the BRT on Lishan made it even more acceptable. In addition, additional buildings and structures were torn down or moved. The main concern was about the car lane widths. While this is a normal discussion point in most traffic engineering designs, of significance was the ease in which space for other modes was quickly ignored. While Jinan's car population represented the minority, the bias in their favor was already present.

According to the original design, the BRT stations were to be a minimum of 4.5 meters wide. To make more room for the cars, 1.5 meters was removed from the station. An official working for the bus company stated, "We know the stations aren't great but we can't compete with the car." Many of the BRT stations were redesigned to be shorter and narrower than the original design.

Signal Timing

One of the added benefits that BRT brings is signal priority to ensure faster and more efficient movement. However, the BRT buses are not given signal priority. In fact, at some of the intersections, every movement has its own signal, resulting in cycles over 4 minutes. The traffic police oversee signal timing and adjust it to move vehicles through as quickly as possible. They are focused on mobility and are interested in the number of cars moved, not

the number of people. They also have to contend with leaders who do not want to be stuck in traffic while a bus passes them by.

Non-motorized modes

Pedestrians share the sidewalk with bikes, electric bikes, and other wheeled vehicles. Electric bike speeds can reach 40 km/hour for higher end bikes. Major conflicts occur at the intersections as everyone meets at the corners to cross the street. At rush hour, hundreds of people and bicycles are vying for space to cross the street. The sidewalk is no longer a safe place for pedestrians (see Figure 4).

Figure 2 Pedestrians on a sidewalk Lishan Road (Source: Brittany Montgomery)

The gas station pictured in Figure 5, shows what the street looked like before the BRT corridor was put in and what it looks like currently. The pedestrians and bicyclists now walk or bike through the gas station. Space was taken away from both to make room for cars. Further north up the street is the Carrefour and bus hub. The bus hub has not been relocated, therefore, other bus lines must turn left to park their buses, and this disrupts the flow of the BRT. The Carrefour is a busy store that includes a 100-space parking lot on its roof. Cars must turn left to gain access to the store. This also cuts off the BRT.

Impact on Urban Form

This case also demonstrates how at the micro-level cities are being reshaped and rearranged for cars. The BRT provides the starkest example of how streets are becoming more auto-oriented at the expense of alternative modes of transportation. Many of the modifications were implemented to appease disgruntled motorists. One international expert stated that a high-level official had told him, “Motorists don’t want to see the BRT.”

These pictures show the ways in which space has been rearranged to provide car owners with more road space at the expense of other modes. Echoed from multiple staff within different planning agencies, the car owner is an important class of resident whose needs must be considered. In addition, other bus lines now use the corridor because of complaints by car owners that the buses had taken space away from them and they were stuck in traffic.

Motorists do not understand that they were given more space; they only see an empty corridor while they are stuck in traffic.

Conflicting goals exist amongst several agencies that give shape to conflicts in planning and this in turn shapes the urban form and undermine sustainable transportation policies as seen on Lishan Road. Through a series of negotiations, the road has been altered to keep some of the trees, remove space from bicyclists to give to motorists, BRT stations were narrowed and shortened, and the BRT buses must fight to keep within its lane as motorists jockey for space. The BRT was not allowed to operate to its fullest potential, as it was not given signal priority or closed bus corridors. To appease motorists, other buses had to use the corridor. Driveways along the BRT route continued to impede traffic flow, including the BRT buses. Yet, “the municipal government” did not change this as there are multiple units that reside along the corridor and control this land; their plans conflict with the Public Works Department’s BRT. That too, has to be negotiated between local agencies and provincial agencies (Hsing 2006). Therefore, planning in China requires a much more complex lens as there are various processes and mechanisms in play that make the notion of “a” municipal government weak.

Figure 3 Lishan Road Gas Station (2006, 2009, 2010) (Photos: left, author; right, Zhu Xianyuan)

Conflicting goals

With the shift to more decentralized planning, local governments have been given more decision making power. In tangent, this power is divided amongst several different agencies. Different bureaus within the municipal government have different goals and objectives and they are not as accountable to the citizens of their cities as they are their supervisors. As Leaf and Hou (Leaf 2006) argue:

> As long as officials are appointed by higher-level governments and not elected locally, their primary responsibility is to their superiors in the personnel system. Their quality of their performance must therefore be directed initially to the leadership hierarchy rather than to either investors or citizens. (p.567)

While it has been widely acknowledged that the municipal government controls all land within its borders, the Lishan Road BRT corridor illustrates that within the municipal government, this control is negotiated amongst different bureaus because of the conflicts of

goals. Government bureaus are in constant negotiations over planning projects. The role of different agencies in providing input in the planning allows for various conflicts. In other words, the municipal government is not a single entity.

Conclusion

Even though urban planning is a negotiated process requiring the consensus of multiple stakeholders, this does not mean that the various agencies, particularly the Construction Commission or the Planning Bureau do not have the power to reshape their cities. However, the ways they reshape may marginalize some while favoring others, as this case exemplifies. New approaches to urban planning projects that require more collaboration are necessary in order to address on the ground conflicts. In terms of implementing new transportation projects from abroad such as BRT or transit-oriented development, understanding that negotiations take place, allows experts to ensure all the decision makers are at the table to provide input. Furthermore, knowing that projects will be negotiated even as they are constructed provides insight into the planning process in China and the need to follow a project through its completion as well as make certain that all possible entities involved are at the table as a project is launched. As this project also demonstrates, when two bureaus have equal power, without the intervention of leader, decisions may be made that will undermine the quality of a infrastructure project.

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