

Peripheral Cluster versus New Town: A Comparative Study on Two Types of Peripheral Developments in the Beijing Metropolitan Region

Jing Zhou and Lei Qu

1. Morphological Transformation of Beijing Metropolis

1.1 Background: spatial decentralisation as a planning goal

The traditional layout of Beijing city inherited since the Ming Dynasty was an orthogonal chessboard-like street pattern with the royal palace-Forbidden City in the central position. Other urban functions were organised around the centre.

During the post-war reconstruction period in the 1950s, Beijing, as the capital of China, started to grow as a mono-centric urban structure. The original idea was maintaining the administrative centre by building the new city upon the traditional centre. At the same time the concept of spatial decentralisation already appeared in the master plan of Beijing in the late 1950s, when heavy industries were required to relocate to the 'scattered groups' in suburban areas, defined in *Beijing Master Plan 1957 and 1958*, in order to meet political and environmental objectives.¹ More than 40 satellite towns were planned to associate with the mother city. However, the following decades, the 1960s and 1970s, formed a period divested of urban planning, almost leaving the city in anarchy. While the use of space in the central urban area had greatly intensified and industrialised, expanding from 109km² in 1949 to 340km² in 1978, the idea of spatial decentralisation became vague.

Responding to the fundamental socio-economic

reform begun in 1978, a new master plan of 1982 proclaimed the identity of Beijing city as the 'political and cultural centre of the country'. The main aims of spatial planning were to regenerate the historical city, to adjust the land use pattern and to renew the dilapidated housing areas. The master plan also tried to recover the idea of 'scattered groups' by proposing ten 'peripheral clusters' in the near suburban areas (*Beijing Master Plan 1982*). However, this planning idea remained on paper during the 1980s. In 1993, facing the economic boom and new opportunities brought about by globalisation,² the master plan was revised again with the purpose of transforming the city into a modern international metropolis. Due to the tremendous expansion of the infrastructure network in the second half of 1990s, the city had been experiencing uncontrolled suburbanisation based on the mono-centric model, especially along main arteries. The planned 'periphery clusters' in near suburbs had finally been realised mainly as residential settlements. In the town system of 1990s, there remained 14 major satellite towns and 33 old satellite towns were redefined as central towns in the far suburban districts. [fig. 1] During this period, the far suburbs developed slowly.

In the past 40 years, the boundary of Beijing central city [fig.1] has been constantly enlarged. It covers an area of 1040km² in 2008, encompassing mostly 'periphery clusters'. In the latest *Beijing Master Plan 2004-2020*³, a poly-centric spatial structure of the entire Beijing metropolitan region has been proposed to accommodate the rapidly increas-

ing population and new urban functions, in order to achieve a more balanced regional structure. Eleven new towns in far suburbs are designated to release the heavy burden of the central city (see note 1, 3 above). Most of them are in fact old satellite towns defined in the 1950s.

1. 2. Urban Expansion: Periphery in Transition

Within the Beijing metropolitan area, 62% of the territory is covered by mountains in the northwest, while only 38% of the land is available for urban use and agriculture. As a mega-city lacking the land resource, Beijing has been struggling to accommodate the rapidly increasing population and urban functions since the late 1990s. During the '10th Five-Year Plan'-period (2001-5), the total population rose quickly from 13.67 million to 15.38 million. Under the pressure of rapid growth and internal structural adjustment, Beijing has experienced a continuing suburbanisation in the 1990s. [table 1] The city was forced to expand and intensify the periphery, improving the compactness and forming new centralities.⁴

The acceleration of residential suburbanisation has resulted in big changes and new forms of residential spatial patterns on the metropolitan scale. Due to the large demand for new housing and the shortage of vacant land in the central urban district, new large-scale housing projects were rapidly developed in the periphery. These are mainly gated residential districts constructed by real-estate developers. Many of them occupy an area of more than 100 hectares. Moreover, high-speed light rails were constructed for improving the accessibility of the new residential developments in the periphery.

Meanwhile, propelled by the process of de-industrialisation, the population of the central urban districts decreased as people moved to the nearby suburbs; the spatial distribution of three industrial sectors was also differently affected. For instance, the primary industrial sector recorded a 60%

decrease in the central urban districts, as well as an extensive decrease in the suburban areas. The secondary sector also decreased rapidly in the central urban area at a rate of about 30-40%, while it increased in the suburban areas, pointing towards a relocation tendency. Tertiary industries on the other hand grew very rapidly in both central urban districts and near suburban areas (see note 1 above).

1. 3 The New Master Plan of 2004-2020

The new version of *Beijing Master Plan* was released at the end of 2004 (see note 3 above). The main strategy is to restructure the city into a polycentric urban structure, with 'two urban axes and two development corridors'. Within this plan, new concepts, strategies and methodologies of urban development under the current globalisation context were developed for the Beijing metropolis, shifting the emphasis of urban development from the central urban area to the periphery. This was a starting point for a more holistic approach to regional planning, considering the urban and rural development as a whole. [fig. 2]

In the new urban strategies, the pattern of urban transportation and infrastructure network were considered essential components in shaping the spatial structure of metropolitan areas, especially along the development corridors. Originally, the transportation system was very automobile-oriented. The two metro lines in Beijing, which were built in the 1960s and 1970s, merely serve the central urban area. In 1998, the plan for rearranging transportation infrastructure networks was proposed. The main idea was to form a high-speed public transportation network by building thirteen new subway and light-rail lines within 50 years. Once finished, the over 400 kilometre-long network will fundamentally improve the accessibility of the metropolitan area. In this sense, the time-space distance between the central urban area and the periphery could be dramatically reduced, making it possible to develop

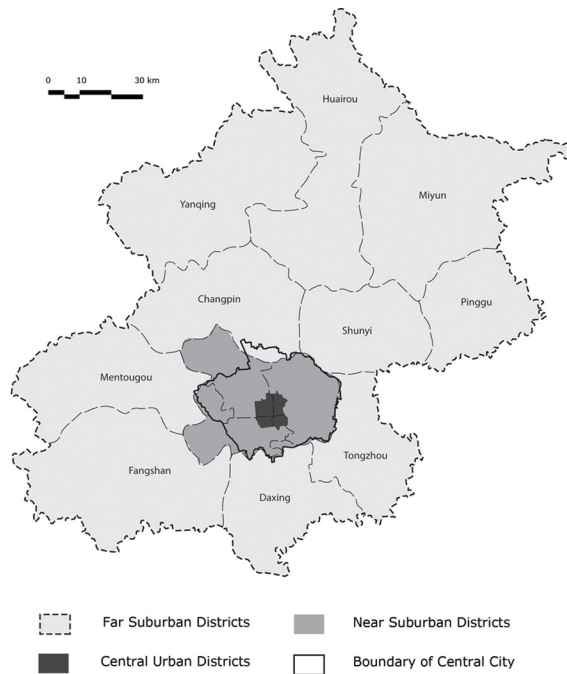
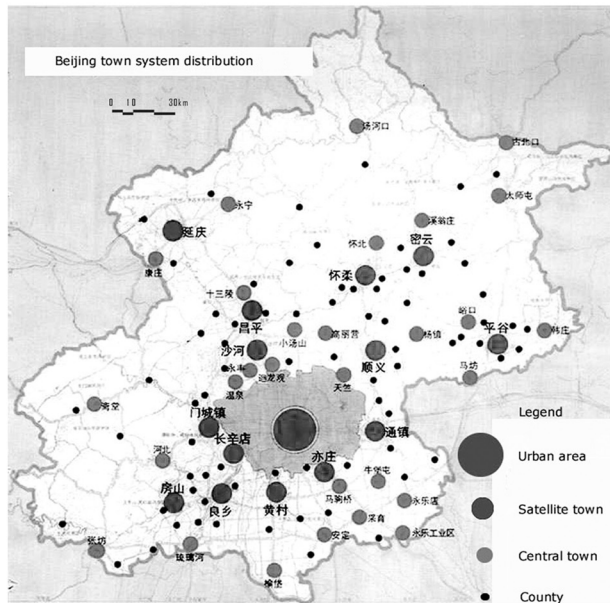


Fig. 1(a): Distribution of Satellite Towns in Beijing defined in 1950s. Source: Beijing Municipal Bureau of Urban Planning.
 Fig. 1(b): Administrative Boundaries of Beijing Metropolitan Area. Source: illustrated by Jing Zhou, based on Beijing city map.

housing in the periphery for the middle-low income population, reducing the population density of the central urban area, where land could be used for more greenery.

However, such a long-term perspective has to deal with many uncertainties in the future and existing major challenges, one of which is the current housing system in Beijing (see note 4 above). Firstly, housing development in a market economy may fundamentally influence the daily commuting patterns of different social groups. As mentioned above, ten peripheral clusters have been planned in the near suburban districts since the 1980s to absorb urban functions and population. However, as will be shown later in the case-study of Tiantongyuan, some of them have almost turned into large-scale sleeping towns. Most people who live in these peripheral settlements still work in the central urban area, which even strengthens the mono-centric urban structure. Such lessons were taken into account in the new master plan. Thus, the main strategy for the eleven newly-appointed towns is to enable them to become more self-relying by mixing living and working. In doing so, it is expected that the spatial structure of the Beijing metropolitan region could eventually be transformed to a polycentric model. [fig. 3]

There are important strategic structural adjustments of the industrial and economic development of new far suburban towns in the new master plan of Beijing, in accordance with the strategies launched already in the *Tenth Five-Year Plan* of the Beijing municipality (2001-5). These five years were the essential period of the urban fringe, transforming from rural economy to urban economy. Modern manufacturing and high-tech industries, such as electronic communication, new materials, ecological engineering and new medication, have been and will continue to be actively promoted. The share of service industries in new towns will be fostered by taking advantage of the abundant cultural herit-

ages and good ecological environment. According to the master plan, the new far suburban towns will become comprehensive new centralities, not only helping release the population pressure from the central city, but also developing their own characteristic urban economy.

2. Comparative Case Studies

In order to gain some understanding of the suburbanisation process of the Beijing metropolitan area, two distinctive cases have been chosen for in-depth analysis. They are different in character, but both illustrate comparable problems. Tiantongyuan is a large-scale housing district planned on the fringe of the central urban area, part of a peripheral cluster, while Tongzhou is one of the three major new towns defined in the *Beijing Master Plan 2004-2020*.⁵ By comparing these two cases, problems and new strategies considering spatial decentralisation will be analysed.

2.1 The Case of Tiantongyuan

Planning and Development

In 1998, the Beijing municipal government planned Tiantongyuan as one of the key economical and affordable housing districts of the city, which are mostly large-scale residential areas oriented to the middle-low income population. The construction started in 1999, developed by Beijing Shuntiantong Real Estate & Development Co., Ltd., which is a privately-owned enterprise. Among the economical and affordable housing districts built since 1999, 76% were distributed in the near suburban areas, while 20% in far suburban areas, and only 5% in the central urban area. Therefore, as one of the first nineteen economical and affordable housing districts, Tiantongyuan actually represented the suburbanisation process of residential functions in the near suburban areas. [fig. 4]

Tiantongyuan district has a total of 5.2 million kilometres planned for housing floor area, with a

Demographic changes Increased (+)/ decreased (-)		Metropolitan area	Central urban area	Near suburban districts	Far suburban districts
1982- 1990	People (1000)	+1589	-82	+1149	+521
	Rate (%)	+17.21	-3.38	+40.48	+13.12
	Annual rate (%)	+2.0	-0.43	+4.34	+1.55
1990- 2000	People (1000)	+2750	-222	+2400	+572
	Rate (%)	+25.42	-9.5	+60.15	+12.73
	Annual rate (%)	+2.29	-0.99	+4.82	+1.21

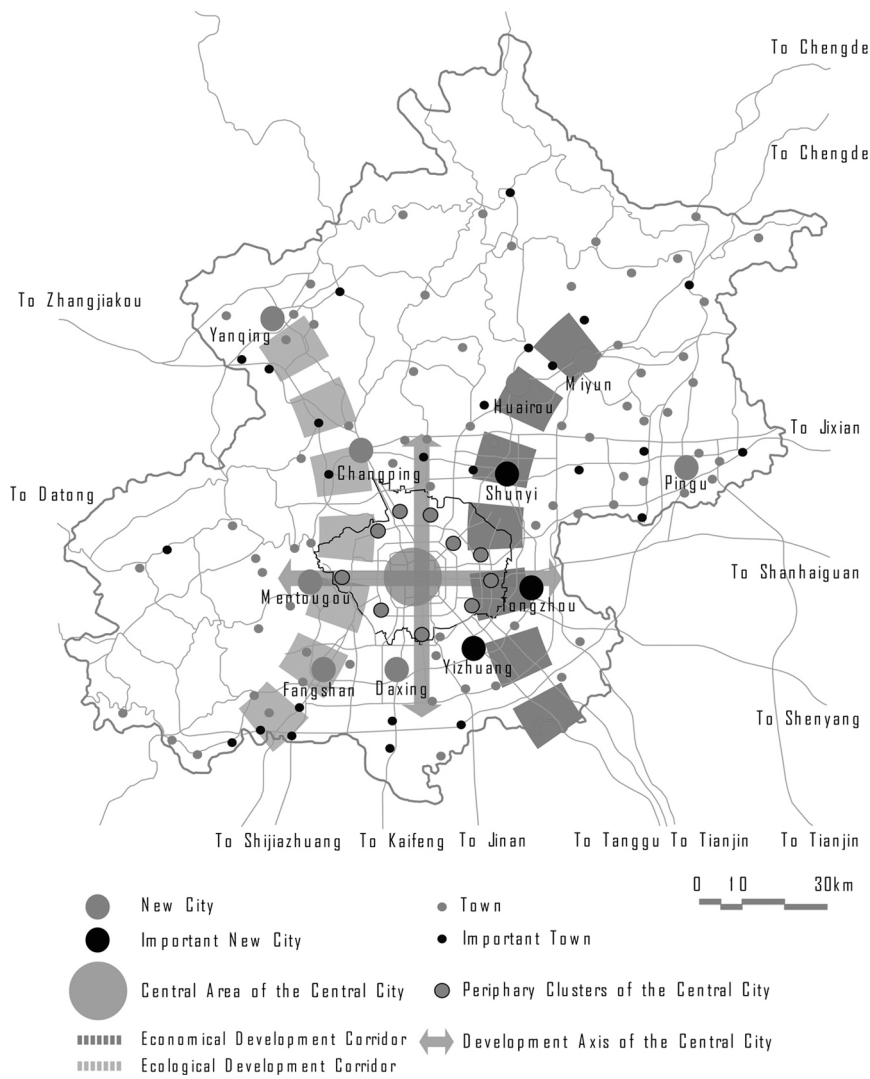


Table 1: Demographic changes in Beijing from 1980s to 2000s. Source: Beijing Municipal Bureau of Statistics: <http://www.bjstats.gov.cn/esite/>. See also Fig. 1 for spatial definitions of Metropolitan, central urban, near suburban and far suburban areas

Fig. 2: Integrated Regional Concepts of Beijing Master Plan 2004-20. Source: Illustrated by Lei Qu based on Beijing Master Plan 2004-20.

population of 300,000 residents. Since the housing district is so big that it has already reached the scale of a city, it should not simply have been planned as a pure residential area of high density. However, little thought was given to public facilities when plans were made. Problems started to appear when the first group of residents moved in, most of which were related to the mono-functional land use, such as a lack of educational and medical facilities, as well as commercial activities. [fig.5] What is more, accessibility was very poor. There were neither enough main roads nor a metro line connecting it to the central city, which led to heavy traffic jams on the commuting route during peak hours. All these conditions gave the early-stage residents a strong feeling of living in an inconvenient sleeping town. Security problems also became a concern of local residents.

Spatial Interventions

The government and the developer conducted investigations on the problems in the neighbourhood, based on which they made special spatial interventions. As the results show, accessibility has been improved after several main roads were built and connected to the existing road system. Moreover, metro line No.5 has been in use since before the opening of the Olympic Games in 2008, reducing commuting time to the city centre to half an hour. From the spatial point of view, the master plan of Tiantongyuan district was also modified. The mono-functional residential district was transformed into a lively mixed-use living area. A large-scale green public space was made in the western part of the district, surrounded by public facilities like commercial, cultural, medical and logistic services, which created new a working and recreational environment of high spatial quality.⁶ [fig. 6]

Although people have criticised the population density of Tiantongyuan as being too high, this also brings vitality to the neighbourhood. Old people sitting in the green space and kids playing in the

playground create a similar feeling to that of living in the city. However, the high presence of greenery, parking space, and better building qualities are the added value that cannot be found in the old neighbourhoods in Beijing central urban areas.

Demographics

As housing prices have increased dramatically in big cities like Beijing, Tiantongyuan is one of the several housing districts still maintaining relatively low prices, nearly $\frac{1}{4}$ of the average housing price in the central urban area. Such an advantage seems very attractive, especially to young people looking for their first house in the market. The average living space of the various housing typologies in Tiantongyuan district is around 80-200 m², which is larger than most of the apartments in the central urban area, where housing prices are high. Therefore it attracted not only the middle-low income groups, but also the middle-high income population. There were voices from the public claiming that this diminished the meaning of 'economical and affordable housing', which was supposed to target middle-low income group. Responding to such critics, new policies were made in November 2006, obliging developers to turn the economical and affordable housings that are larger than 140 m² per unit to market housing. Nevertheless, the actual social structure within Tiantongyuan district realised the mixing of different social groups, which reduced the possibility of residential differentiation among the peripheral housing districts. The problem is a lack of work opportunities within the neighbourhood or in adjacent areas for these middle-low income groups. They still have to commute to the central urban area every day, which exacerbates the heavy transportation load on the road system and newly-built light-rail lines.

Another special phenomenon in Tiantongyuan district is the 'Separation of Registered and Actual Residences'. Although there are already more than 150,000 residents in the neighbourhood, less than

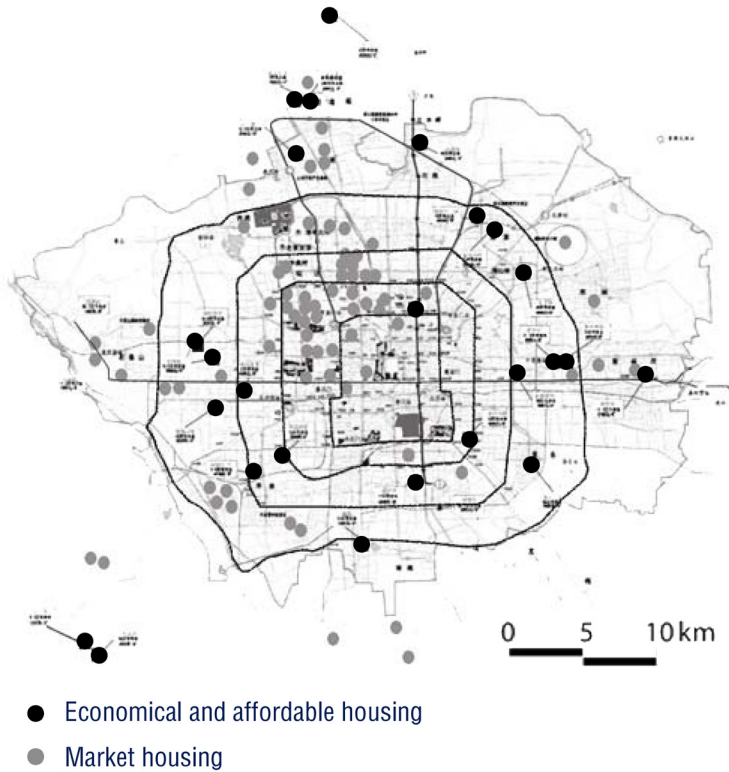
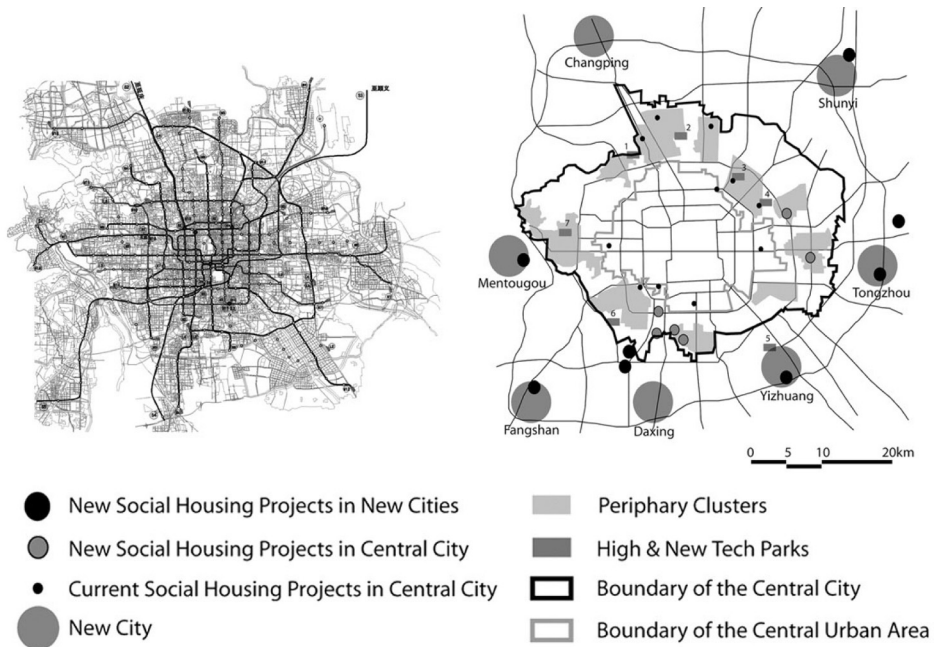


Fig. 3: Proposals of Public Transport System and polycentric urban structure in Beijing Master Plan 2004-2020. Source: Illustrated by Lei Qu based on Beijing Master Plan 2004-20.

Fig. 4: Location of Tiantongyuan district. Source: Illustrated by Lei Qu, based on Beijing city map.

10% of them have actually registered their home address there. This is partly because of the gap between urban and rural areas, for instance in the differentiated quality of education in schools. Those families having extra houses in the central urban areas prefer to keep their registered residence in the city area, so that their children can study in better schools and the elderly family members have better hospitals nearby. Moreover, there is a very high percentage of privately-rented housing in the Tiantongyuan district (about 20%), and a high percentage of floating population currently living in the neighbourhood. As implied, 'housing as investment' has become a common phenomenon.

Conclusions

The scale of the Tiantongyuan district is similar to a medium-sized city, which normally takes at least decades to build. Therefore, those emerging problems such as a shortage of public facilities and commercial/cultural functions are inevitable to a large-scale housing district newly built in a few years. The relatively large-size and low-price housing typologies with a better spatial quality than the old neighbourhoods in the central urban areas are very attractive to various social groups, and have resulted in the mixed social structure within the district. However, the lack of suitable work opportunities for the target middle-low income population is crucial, which caused large amount of residents continuing their daily commute to the central urban area.

Nevertheless, these problems should not be neglected, especially when linking them to issues of urban management. Developers form the main drive behind housing development. They hardly care about the provision of public facilities. However, accessibility and commercial activities are not only related to the daily life of local residents, but also to the spatial structure and urban development of the city as a whole. The municipal government has become aware of the inefficiency of the current

urban planning and management approaches. Adjustments to housing development policies as well as the process of issuing building permits are being made to cope with the problems of the lack of public facilities in large-scale mono-functional housing projects. Public participation will also be integrated into the decision-making process, e.g. building permission will not be issued if the project is opposed strongly by the public.

2. 2 The Case of Tongzhou New Town

The Tongzhou District is located about 20 kilometres to the east of the centre of Beijing, and 16 kilometres from Beijing Capital International Airport to the south. Among the 11 nominated new towns in the far suburbs of Beijing, Tongzhou is endowed with the most strategic location. [fig. 7]

Historical Development

Tongzhou stands at the north end of the famous Grand Canal in China which meanders for 1794 kilometres. It had been transporting food supplies and building materials from southern China to the capital Beijing for over 700 hundred years, from the Yuan Dynasty till the late Qing Dynasty.⁷ Tongzhou used to be prosperous in economic and cultural aspects. When the direct train connection replaced the function of the canal at the beginning of 20th century, the town began to decline due to the loss of its role as a harbour city.

Following the decentralisation strategy in the *Beijing Master Plan 1958*, heavy industries from the inner city and near suburban areas were relocated and dispersed to a dozen satellite towns. Tongzhou became one of the most busy and successful industrial towns at that moment.⁸ The town expanded westwards from the bank of the Grand Canal in the direction of the central city. New housing construction projects before the 1980s were mainly traditional courtyard housing and accommodations for factory employees. These two typologies still dominate the old town of Tongzhou. During the 1980s Tongzhou

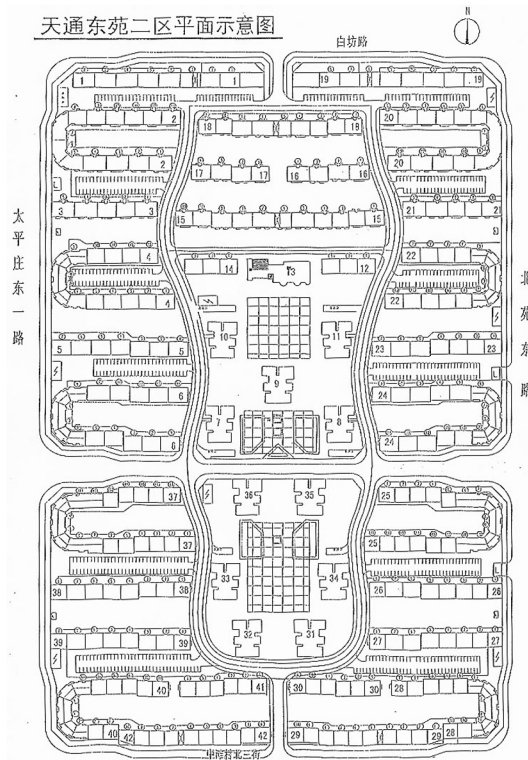


Fig. 5: Spatial morphology of Tiantongyuan district (a) neighborhood plan of zone-II east ; (b) Tiantongyuan bird-view.
Source: Tiantongyuan community website www.tty.com.cn.

remained the largest satellite town in Beijing based on manufacturing industries.

Since the early 1990s Beijing central city started to experience rapid growth and modernisation, which exacerbated the contrast between the central urban and rural areas, as well as the competition among the satellite towns. Some of them seized the opportunity to absorb the spill-over urban functions and population, and developed rapidly. For example, Changping became the town accommodating new expansions of university campuses, while most other towns, including Tongzhou, remained underdeveloped during this period. Driven by the emerging market forces, many unregulated housing developments started to take place rapidly from the bottom-up (see note 8 above). Due to the inefficient land management, developers mostly made deals directly with local villages, which resulted in a rather chaotic land use pattern.⁹ [fig.8]

Spatial Expansion: Booming Real Estate Development

The real acceleration of the Tongzhou District started in 2001 [fig.8],¹⁰ which is directly linked to a strategic project in Beijing central city - the construction of the Central Business District, which is only 13 kilometres from the centre of Tongzhou. Moreover, the accessibility between Tongzhou and the central city has been significantly improved. Besides the existing Jing-Ha highway, three more car connections and a light-rail line, which was the first line connected to suburban towns, were realised in 2004.

At the same time, Tongzhou municipality started to have higher ambitions for the '10th Five-Year-Plan' period (2001-5) by promoting real-estate development as the main economic growth pillar. This was also the period when the city of Beijing aimed to enhance tertiary industry and improve environmental quality. Many factories in Tongzhou were forced to shut down or moved out, leaving more vacant land for urban development. The situation of the housing

market in the central city also changed. In the late 1990s, the old Danwei welfare-housing system was officially banned, which means housing has been thoroughly commercialised (see note 1 above). As it gets more difficult for middle-low income people to afford housing in the central city, the suburban market is becoming the new hot spot.

The joint forces from both top-down and bottom-up triggered a burst in Tongzhou's housing market. In 2001 for example, the built-up floor area for housing projects was the total sum of the previous 'five-year' period (1996-2000). [fig.8] From 2002 to 2004, the number went up to an average of 2 million square meters per year. In the peak year 2003, the amount of on-sale housing in Tongzhou even accounted for half of the total amount in the entire Beijing metropolitan area, which made it one of the most productive satellite towns. [fig. 9] There was a big rise in housing prices before and after 2001, from less than 2000 to 3200 Yuan/m². From 2002 to 2005 the price increased steadily by 9% per year to 4050 Yuan/m² in 2005. (see note 10 above) Even though, the average price was still less than 50% of that in the central city, which is very attractive to middle-low income groups.

Since 2005, the amount of new housing projects in Tongzhou went down sharply. As a result, the average housing price increased rapidly to over 6500 Yuan/m² in 2007. This is partly due to the reduction of available land in favourable locations in the town, but also largely influenced by the changing land-management policies of the central government, for instance the payment of land purchase in a lump sum since August 2004, stricter financial control on bank loans for real-estate projects since June 2005, and large-scale social housing programs in the central city in 2008. Furthermore, the new Tongzhou master plan of 2005 issued essential land use changes, resulting in more prudent urban governance on new urban developments.

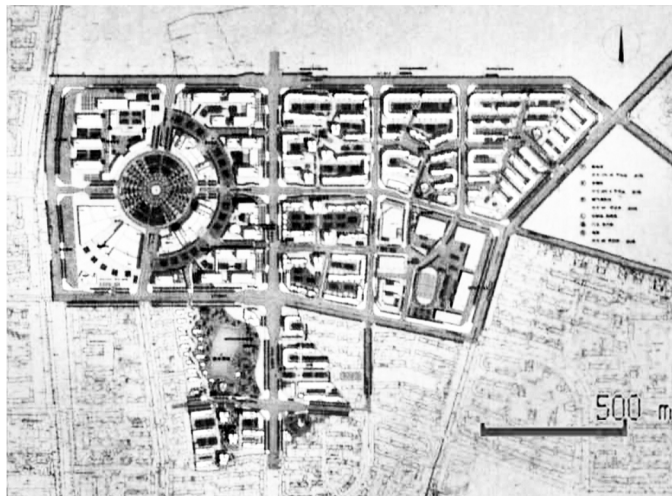
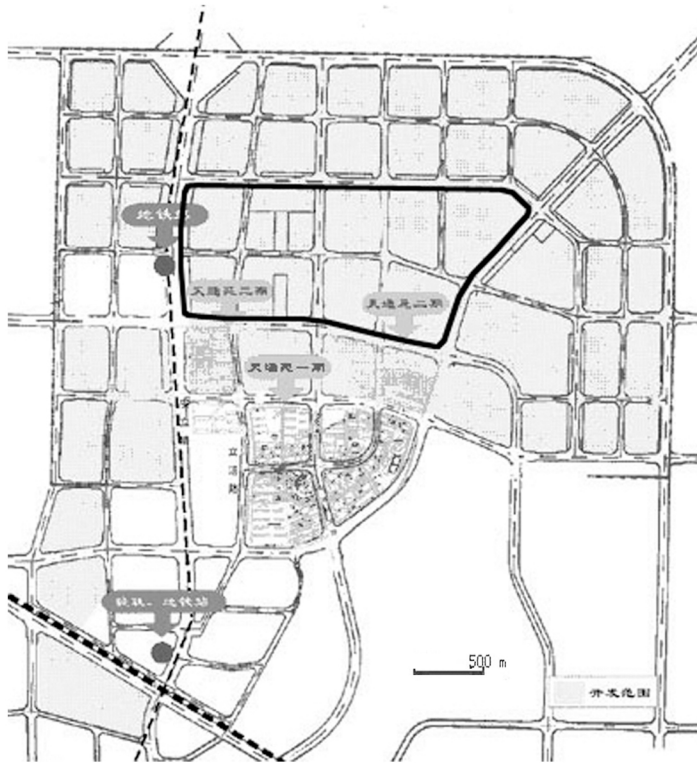


Fig. 6: Spatial intervention in Tiantongyuan district (a) master plan of Tiantongyuan District; (b) Spatial transformation- New civic centre. Source: Yang Liu, 2006, p. 129.

Between 2001 and 2008 a total sum of 9.42 million square metres of floor area has been constructed in Tongzhou, [fig. 8] out of which about 93.6% is for housing, 5.5% for commercial use and only 0.4% for office space.¹¹ The land-use pattern is quite homogenous. The main housing typology is middle-rise (6-9 floors) medium density apartment. [fig.10] Such typology is considered comfortable because of natural ventilation and sufficient sunshine, which can hardly be found or is very pricy in the central city. 93% of the total housing stock in Tongzhou belongs to this type; the remaining 7% is mainly villa and townhouse. There are three major popular residential belt zones in the town – along Batong light-rail, the bank of Grand Canal and Jing-Ha highway. Compared to new developments, the progress of urban renewal in the old town is slow, which results in an increasing contrast in terms of urban quality and image.

Demographics

When referring to Tongzhou, there exist two distinct territorial definitions. *Tongzhou District* encloses an area of 912 square kilometres, governing a central town and 10 counties. *Tongzhou New Town* refers to the central town, which is to be expanded to 155 square kilometres in 2020, according to the *Tongzhou Master Plan 2005-2020*.¹²

Between 1998 and 2008, the number of registered residents in Tongzhou District kept a steady level of 650,000 people with slight growth. [fig.11] The percentage of urban residents out of the total registered population mostly living in the New Town territory has increased from 29.5% to 47.5%, and reached 300,000 people in 2008. It is estimated that about 10,000 local farmers become urban dwellers each year because of the urbanisation process.

What is noticeable is the rapid increase of the unregistered residents since 2001, when the housing market started to boom. These are the people who report living in Tongzhou District to

local authorities but officially register (Hukou in Chinese) in other municipalities. Their number reached 400,000 in 2008. These newcomers were mainly from Beijing central city and other cities. The ratio of the latter has increased from 33% in 2002 to 55% in 2006,¹³ which means that Tongzhou has become a gateway for immigrants to enter the city of Beijing. The people who moved from the central city are composed of several groups: the young professionals, the 25-40 age group working mainly in the CBD area or Chaoyang District; people who relocated themselves because of urban renewal in the central city or who were looking for affordable/second apartments in far suburbs. According to an official estimation in 2007, there were about 270,000 commuters (about 30% of the total population) living in Tongzhou New Town and working in Beijing central city (see note 11 above). During peak hours, not only the traffic is quite congested, but also public transportation is overly busy.

The education level of the registered residents is much lower than the average in the central city. About 80% of them only had primary- and middle-school education, which is similar to that of other far suburban towns (see note 11 above). The majority of the unregistered residents is of a younger age, mainly between 20 and 40 [fig. 12] and also better educated. About 50% of them have a college degree. However, the ratio between male and female is about 2:1, which is quite unbalanced. Nevertheless, the strong and fresh impulse of the newcomers since around 2000 certainly influences the culture of the new town.

As discussed above, the social composition of Tongzhou New Town is quite diverse. On the one hand, it offers a variety of economic opportunities, which brings vitality to the new town. On the other hand, because of the large-scale new housing development and slow process of urban renewal, there is noticeable spatial segregation between the well-educated people, who aggregate in the new

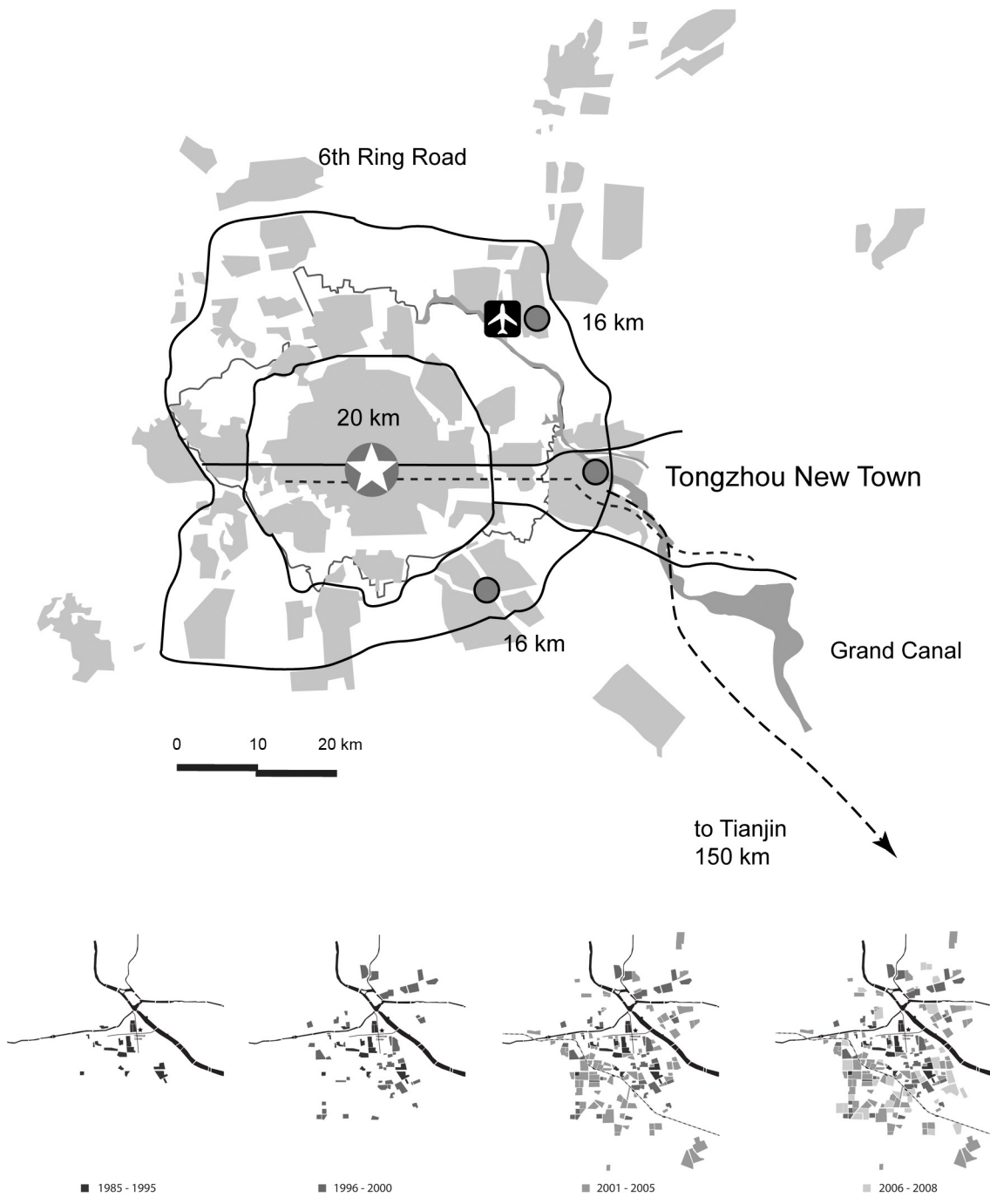


Fig. 7: Tongzhou: regional position. Source: illustrated by Jing Zhou based on Beijing city map.

Fig. 8: Tongzhou: Real Estate Development 2001-8. Source: illustrated by Jing Zhou, based on data from Tongzhou bureau of statistics.

urban areas, and the poorly-educated who concentrate in the old town.

Urban Economy and Employment

The ratio of primary, secondary and tertiary industries in Tongzhou District changed from 11:48:41 in 2003 to 6.5:50.6:42.9 in 2007.¹⁴ Manufacturing industries remain the biggest sector. Having been an industrial town since the 1950s, a number of old factories are still scattered in the old urban area [fig. 13], which has a negative influence on the urban image.

Currently there are five newly-planned specialised industrial parks occupying a total area of 32 square kilometres (see note 11 above), which is the largest among all the suburban districts in Beijing. However, it is not as attractive as expected for the target competitive companies at this moment. The main occupations in the new town lie predominantly in the low-end sectors, i.e. manufacturing, building construction, retail and catering business, and social service. Therefore, not enough highly-skilled or well-educated employees are attracted to Tongzhou New Town. The total revenue from new industries is less than in other major suburban districts.¹⁵

In terms of daily life services, the new residential districts have become self-contained. Many big chain stores, supermarkets and a shopping mall have opened there. There are also plenty of small neighbourhood shops that make local streets lively. The existing main shopping street in the old town part has been moderately upgraded, serving the less wealthy locals. People living in different urban districts - new and old - do not have the necessity to go to other parts of the city for supplementary urban services. The revenue from the retail and wholesale sector in Tongzhou continues to grow, and is the highest among other suburban districts (see note 14 above). Still the quantity and quality of urban services cannot compare to that of the central city. Therefore people, especially the young white-collar,

have to go to the central city for leisure activities.

Conclusions

Tongzhou, which used to be a famous historical town, has been developing very fast since around 2001. The new ambition drawn up in the new Beijing Master Plan 2004-20 is to transform it into a modern middle-size city with comprehensive urban functions. [fig.14] Currently the challenges are multi-faceted: (1) the local employment is to be enhanced, in order to guarantee the sustainability of urban economy, and to avoid it becoming a dormitory town; (2) the town needs to upgrade its social structure further; currently there is a large percentage of poorly-educated low-income people; (3) the spatial arrangement of new housing districts is homogenous and to some extent fragmented, therefore high quality cultural leisure services as well as public spaces should be well integrated; (4) the quality and image of the old town has much to be improved in order to coordinate with the new areas; the town lacks a central image, whether new or traditional. Dealing with these challenges requires creative spatial interventions and effective urban management.

3. Comparison of the Two Cases

3.1 Concise Comparison

In this section, a comparison between the two cases is summarised in a table, based on which critical analysis on the official plans and more concrete recommendations will be provided in the following paragraphs. [table 2]

3.2 Common Problems

Whether planned or market-driven, these two cases share the same problem of mono-functional development in the early phase - purely housing with insufficient public facilities. This was partly caused by inefficient urban management. Private developers became the biggest beneficiary in the projects; however, the profit has not contributed to subse-

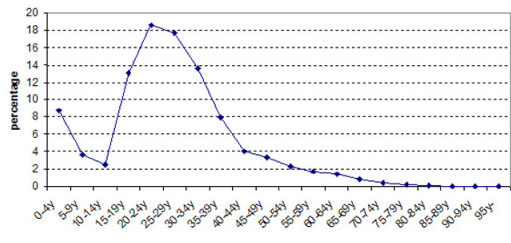
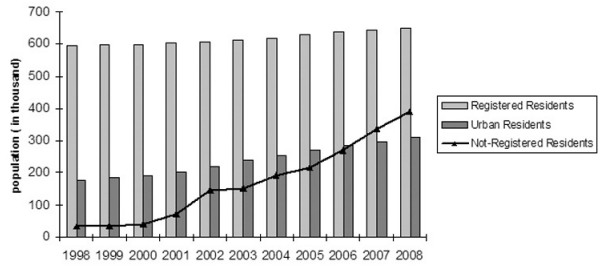
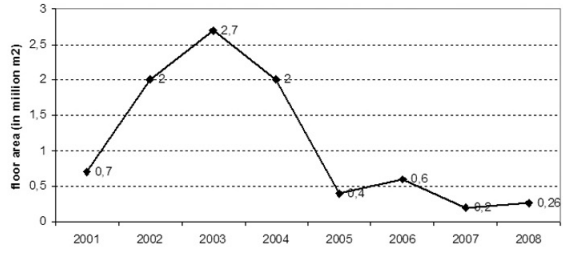


Fig. 9: Tongzhou: growing process of housing stocks 1985-2008. Source: illustrated by Jing Zhou.

Fig. 10: Tongzhou: typical neighbourhood model. Source: www. Soufun.com.

Fig. 11: Tongzhou: population growth 2001-28. Source: illustrated by Jing Zhou, based on data from Tongzhou bureau of statistics.

Fig. 12: Tongzhou: Age Composition of Not-Registered Residents in 2000. Source: illustrated by Jing Zhou, based on data from Tongzhou bureau of statistics.

	Tiantongyuan	Tongzhou New Town
Time Frame	1998 master plan 1999 started construction 2004 transformation program Nearly finished in 2007	1953 industrial town 1995 satellite town as in master plan 2001 started rapid development 2005 new town as in master plan 2008 priority after Olympics
Location	Near suburb in the north of metropolis 17 km from the centre of Beijing 8 km from National Olympic Park 12 km from University Cluster	Far suburb in the east of metropolis 20 km from the centre of Beijing 13 km from CBD area 16 km from Beijing Capital Int. Airport
Accessibility	1 main city artery Metro no. 5 since 2008 Light rail no. 13 since 2003 About 30 bus lines	3 main city arteries 1 highway connection Light rail Batong line since 2003 Intercity train connection About 30 bus lines
History	Start with a clean slate	Historical harbour town North End of the Grand Canal
Size	Planned total area: 8 km ² Current built-up area: 8 km ² Planned population: 0.3 million Current population: 0.15 million	Planned total area in 2020: 85 km ² Current built-up area: 42 km ² Planned population in 2020: 0.9 million Current population: 0.4 million
Planning & Development	Planned by Beijing municipality Developed by a private real estate company	Independent Tongzhou municipality Free market-driven
Housing Price	2001: 2650 Yuan / m ² (controlled) 2008: 7600 Y / m ² *2001 average of Beijing city: 4770 Y/m ² *2008 average of Beijing city: 15,000 Y/m ²	2001: 3200 Yuan / m ² 2008: 6500 Y / m ² * 2001 average of Beijing central district: 13,000 * 2008 average of Beijing central district: 25,000
Housing Typology	Middle, high-rise apartment building High density	Middle-rise apartment building; townhouse; villa Middle-low density ¹⁶
Social Composition	Mainly middle-low , mixed with middle income groups High percentage of ‘Separation of Registered and Actual Residence’ Safety problems	Diverse , covering low, middle-low and middle income groups High percentage of ‘Separation of Registered and Actual Residence’ Spatial segregation between old and new
Public Facilities	Not well-considered in the beginning A new centre with comprehensive commercial, recreational, educational and medical services has been built since 2004	An existing main shopping street; new centralities developing around metro stations, but lack of a new central image Enough small daily business in the new neighbourhoods
Industry & Business	None Difficult to compete with new towns	biggest sector: low-end manufacturing growing retail business Aims to enhance diverse service business
Public Space	Spatial quality is being improved with new parks, more greenery, and better architectural design	Old urban area: several historical cultural places, but few visitors New urban area: good quality street greenery, but lack of large public spaces
Public Participation	Strong sense of community Self-organised society via local website ¹⁷ Collective request on improving public facilities and traffic conditions	More organised cultural activities by public sectors Self-organised social activities via active community website ¹⁸
Urban Governance	Heavy burden for the municipality to re-invest in public facilities	Loose land control before 2005 New Town Master Plan Heavy burden of urban renewal

Table 2: Summary of Comparison.

quent public investment on facilities and services as it should. The burden of re-investment and maintenance has been left to the municipality again, for instance improving infrastructures, providing quality educational and medical services, public spaces etc.

3.3 Lessons from Case Studies

Building a self-sustained new town is the priority and biggest challenge for the urban development of Beijing in the coming two decades. Therefore it is essential that the Beijing municipality should learn valuable lessons from these two pilot projects, Tiantongyuan and Tongzhou, which represent two models of peripheral developments, and have crucial impact on the regional spatial structure.

Based on the comparative analysis above, lessons can be drawn from the two cases.

(1) The need for new models of project management.

Instead of commissioning a private real-estate developer or decentralise the responsibilities by loosely dividing them among various public sectors, a specialised non-profit development corporation should be established to play a leading role in such long-term urban projects.¹⁹ Such a corporation could take charge of the public funding and subsidies from the municipality and cooperate with various public sectors. It could operate like a private developer, but with the priority to use the profits for re-investing in the public interest. As a result, it may help to realise long-term social objectives and reduce the negative effects driven by market forces. External monitoring by a third party should be guaranteed in this case so as to maintain transparency and openness for the public.

(2) Enhance the role of spatial planning for more effective urban management.

Such large-scale urban programs should have a feasible phasing plan that fits the long-term strate-

gic planning of the metropolitan region in the first place. The case of Tiantongyuan demonstrates the failure of coordination in urban development on the city scale. Lacking sufficient traffic connections in the early stage, it was known by the nickname 'the trapped community' for a long time. In the case of Tongzhou, the problem is slightly different, and mainly related to land development. Although the master plans were updated every five to ten years before 2005, they were not strictly legally-bonded and focused too much on the macro scale, and they were not efficient in directing land development. The role of spatial planning should therefore be re-considered and more concrete and effective instruments for urban management should be researched and implemented, for example strategic planning, and a flexible 3D zoning plan.

(3) Spatial intervention as a tool for a better social composition.

The planning idea of a large-scale community or new town accommodating homogeneous middle-low income groups has been proven to be problematic. More well-educated middle-high income people or young professionals should be attracted to these areas. Besides mixing different housing typologies and providing sufficient public services, improving the quality of various public spaces has also proven to be an efficient spatial solution. A well-known reference could be Barcelona. The city used the strategy of regenerating various public spaces to successfully achieve the goal of lifting urban attractiveness.

(4) Increase residential mobility for vulnerable groups.²⁰

Residential mobility should be considered an essential part of urban strategies towards sustainable development, since it has a crucial influence on the socio-spatial structure of the city.²¹ The increase in residential mobility is mostly initiated by the changing of employment locations (labour mobility), which could be supported by an available and affordable housing stock near work places and vice versa.

Currently, the government is initiating revolutionary proposals on housing provision for low and middle-low income population, in order to reduce the severe influence of the free market on the affordability of vulnerable groups.

3.4 Specific Recommendations for the Cases

Tiantongyuan has reached a stable phase with a slow increase in new building and population. Urban transformation for better quality has been and will continue to be its aim. More efforts need to be made on two different levels: for the city scale, new infrastructures, urban functions, and public facilities are expected to improve the accessibility and urban vitality, which needs to rely on public interventions; for the local scale, more attention needs to be paid to the socio-cultural life in the community. Moreover, the improvement of the spatial quality of outdoor public spaces is still in demand, especially in dealing with the current safety problems. Interestingly, during the difficult early phase, there were already some forms of self-organised collective activities, which contributed to improving the social environment of the neighbourhood. This could also be institutionalised by creating a certain type of community committee that exclusively serves for organising local activities. Community life could also be improved by re-designing the space around the new metro station, which is absent in the current plan.

Tongzhou New Town is supposed to be one of the major growth poles for urbanisation and modernisation after the 2008 Beijing Olympic Games. It has a great opportunity to become a self-sustained modern town with a distinct identity. Our suggestions include: firstly, in order to reach a cohesive urban structure for the entire town, the physical connection between the old and new urban fabrics should be strengthened. This could be realised by designing a recognisable and integrated public-space network connecting the old and new parts. To avoid socio-spatial segregation, attention should be

given to social housing in the new urban area, while inducing a positive gentrification of the old central area. Secondly, new centralities (dots) around metro stations are currently self-developed. They should be designed better and enhanced. Together with several existing neighbourhood shopping streets (lines), the city, especially the new urban areas, can form a very lively service mesh. Considering the large amount of urban commuters in the town, the centralities should be mix-used and provide 24-hour programs. It is also important to establish a clear central image of the new town in order to improve the sense of recognition. Thirdly, history and culture are comparative advantages for Tongzhou New Town. This potential should be explored better, for example by waterfront designs, or periodical cultural events. Interestingly, the biggest artists' villages in Beijing are concentrated in the rural area of Tongzhou (see note 7 above). This valuable resource could also be utilised, for example by inviting artists to cultural events or having them contribute to the public arts in the town.

4. Final Remarks

The rapid urbanisation process in the Beijing metropolitan region since the mid-1990s can be seen as the spatial product resulting from the joint forces of top-down planning and the free market. The main character of this trail-and-error phase is the rapid quantitative increase in housing in the periphery - residential regionalisation, but without a holistic and coordinated regional plan and efficient urban management approaches that can provide sufficient public facilities and balance regional socio-spatial structure.

We suggest that now is the time to start the second phase of regionalisation, which is to transform the role of existing satellite towns from peripheral units into self-sustained new centralities with diverse urban qualities that are complementary instead of highly dependent on the central city. This conclusion is in conformity with the general regional strategies



Fig. 13: Tongzhou: existing land-use. Source: modified by Jing Zhou, based on atlas of Tongzhou masterplan of 2005.

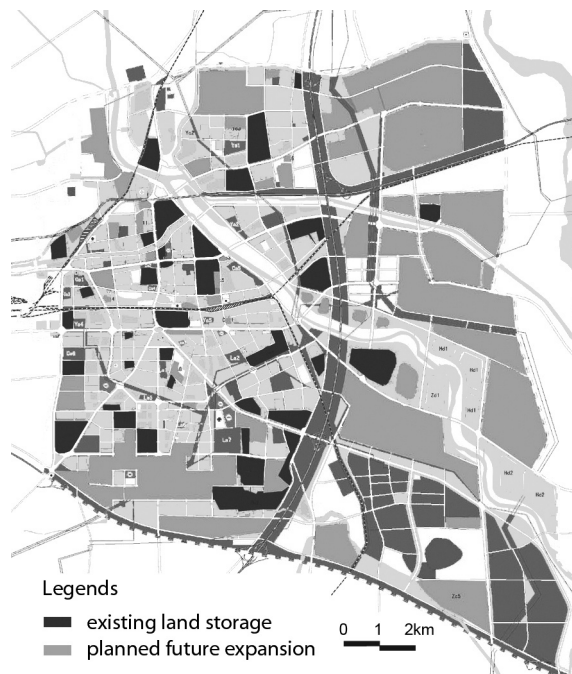


Fig. 14: Tongzhou: landuse plan for 2020. Source: modified by Jing Zhou, based on atlas of Tongzhou masterplan of 2005.

of the new master plan 2004-20, which emphasises the enhancement of the regional positions of peripheral developments - both near suburban clusters and far suburban new towns. However, the new master plan is just a starting point. It is a great opportunity but also a big challenge for the current satellite towns/clusters, because the success of the regional planning idea would largely depend on sound implementations from the bottom-up, as well as on the consistent support and supervision from the Beijing central government. Therefore, in this paper we have tried to provide some concrete spatial and managerial strategies as well as design recommendations for the two cases. Four important lessons have been drawn from the comparative analysis. We believe observations and suggestions from diverse points of view can serve as useful complements and references for local planning. The more complex the metropolitan form and internal factors grow, the more indispensable is the role planning and spatial research can play in getting a grip on the uncertainty and complexity.

Notes

1. Jing Zhou, 'From Monocentric to Multinuclear Spatial Model: An Analytic Study of Metropolitan Transformation of Beijing City 1949-2008', in *Conference Proceedings of Urban Project Conference*, ed. by Leen van Duin et al. (Amsterdam: IOS Press, 2009), pp. 392-99
2. Chaolin Gu & Jianafa Shen, 'Transformation of Urban Socio-Spatial Structure in Socialist Market Economies: the Case of Beijing', *Habitat International*, 27 (Amsterdam: ELSEVIER Press, 2003), pp. 107-22.
3. Beijing Municipal Commission of Urban Planning, *Beijing Master Plan 2004-2040*, May 17th, 2005, <<http://www.bjghw.gov.cn/ztgh/>> [accessed 30 April 2009].
4. Lei Qu, 'Socio-economic Forces Behind Sprawl and Compactness in Beijing', *ENHR International Conference 'Sustainable Urban Areas'*, 2007, <http://www.enhr2007rotterdam.nl/documents/W19_paper_Qu.pdf>.

5. Lei Qu, 'Compactness and Mobility of the Beijing Metropolitan Area: seeking a sustainable urban form', in *Conference Proceedings of the Permacity International Conference*, ed. by Jürgen Rosemann (Delft: Delft University Press, 2007), pp. 129-33.
5. Instead of starting from scratch, the term 'new town' in the Beijing Master Plan of 2004-20 refers to existing satellite towns that will be modernised and upgraded. Therefore in this context 'New' means 'Renewed'. There are in total eleven new towns in the master plan, and only three of them are defined as major developing poles.
6. Yang Liu, 'Planning Design of the Core Area of Tiantongyuan Residential Quarter', *Architectural Creation*, 2006, 2 (Beijing: Beijing Institute of Architectural Design Press, 2006), pp. 129-31.
7. Limin Zhan, 'How to Make a New Characteristic Tongzhou', *Invest Beijing*, 2007, 12 (Beijing: Beijing Develop and Reform Commission Press, 2007), pp. 41-43.
8. 'the History of Urban Planning and Development of Tongzhou District' (unpublished research report, Beijing Tongzhou Planning Bureau, 2003)
9. The new housing projects in Tongzhou developed during 1990s were emerging in a self-organised way, i.e. firstly chaotic but forming a degree of internal logic afterwards. The projects popped up here and there like patches. Early developers cared little about integration with urban structure. City planning during that period was often to adjust passively to the informal developments, e.g. making up for infrastructure and facility shortage. However, the later projects tend to coordinate with existing urban fabric, e.g. forming neighbourhood shopping streets and aggregation of similar quality (price arranged) neighbourhoods.
10. Yan Xu & Wenhua Li, 'Analysis of the Structure and Development of Market Housing in Tongzhou', *Beijing Real Estate*, 2007, 8 (Beijing: Beijing Real Estate Press, 2007), pp. 73-75.
11. Qi Xiao, 'From "Sleeping Town" to "Business Town": the new issues of planning nine business parks in Beijing Tongzhou', *Beijing Real Estate*, 2007, 9 (Beijing: Beijing Real Estate Press, 2007), pp. 4-11.

12. Tongzhou Planning Bureau, *Tongzhou New Town Master Plan 2005-2020*, February 18th, 2006, < <http://www.weilai.gov.cn/xcgj.asp>> [accessed 30 April 2009].
13. 'Research Report on the Subject of Social and Cultural Development of Tongzhou New Town' (unpublished research report, China Academy of Urban Planning and Design, 2004)
14. Yongming Zhang, 'Promoting Socio-Economic Development of Tongzhou in Post-Olympic Period', *Journal of Beijing Agricultural Vocation College*, 23, 1 (Beijing: Beijing Agricultural Vocation College Press, 2009), pp. 52-55.
15. 'Tongzhou New Town Master Plan 2005-2020' (unpublished digital presentation, Tongzhou Planning Bureau; Beijing Municipal Commission of Urban Planning and China Academy of Urban Planning and Design, 2005)
16. The difference in neighbourhood typology between Tongzhou and Tiantongyuan just reflects the different ways of housing development – market-driven and government-planned. As explained, housing in Tiantongyuan is subsidised to be affordable for the middle-low income group. The higher compactness is considered to have a higher economic and social efficiency. In Tongzhou, developers have to attract middle-low income people from the central city by using lower density and better housing typology as selling points. Moreover, Tongzhou as a new far town has more available land at a lower price, which makes middle-low density development possible.
17. Tiantongyuan community website: < <http://www.tty.com.cn>>
18. Tongzhou community website: < <http://www.batong.cn/>>
19. One of the references for a project-management model could be the Dutch Housing Cooperation, which is a semi-public organisation operating like a company but serving social responsibility. In some new Chinese towns, a program-based New Town company is formed to coordinate various public and private sectors.
20. There are different definitions for 'vulnerable groups' in different contexts, discussed by Edward D. Hulsbergen, 'Don't forget to Measure Down Town', in *Conference Proceedings of the Permacity International Conference*, ed. by Jürgen Rosemann (Delft: Delft University Press, 2007), pp. 59-65. According to the *Government Work Report for the 16th People's Congress 2002 of China*, it refers to people who, for any possible reason, are in a relatively disadvantaged situation in a society for a certain period or in a specific aspect. In this paper it refers especially to people with an economic disadvantage, that is low and middle-low income groups, whose annual family-income is under 10,000 Yuan and 60,000 Yuan respectively.
21. Ana Sugranyes, 'Mobility in the Low-cost Housing Stock: New Housing Supply for the Poorest Sectors in Santiago, Chile', in *Globalization, Urban Form & Governance, Fifth International Conference Alfa-Ibis Proceedings*, ed. by Marisa Carmona, Jürgen Rosemann and Marinda Schoonraad (Delft: Delft University Press, 2001), pp. 329-35.

Biographies

Jing Zhou received bachelor education in architecture and urban planning in Tianjin University in China. In 2004 she came to the Netherlands to pursue master degree in urbanism from Delft University of Technology. After graduating as Cum Laude, she continues with Ph.D. research in Delft on the subject of comparative study of Chinese and Western new towns. She is also a researcher for International New Town Institute (INTI) in Almere.

Lei Qu studied architectural design for her bachelor education. During the postgraduate period, she was studying urban planning and design, specialized in housing and urban transformation. She received her Doctorate degree from Tsinghua University in China in 2004. Currently she works as scientific researcher at the Chair of Spatial Planning and Strategy, Department of Urbanism, Delft University of Technology.