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Urban Governance of Economic Upgrading Processes in China

The Case of Guangzhou Science City

FRIEDERIKE SCHRÖDER / MICHAEL WAIBEL

Introduction

China's export-oriented regions such as the so-called "factory of the world" – the Pearl River Delta[1] (PRD) in south China – have been particularly affected by the global financial and economic crisis. Thousands of migrants mostly working in the low value-added manufacturing sector were laid off due to the closure of plants virtually overnight. However, the crisis hit the region in the middle of a deliberately planned economic upgrading process encouraging the shift of its economic structure from labor-intensive manufacturing towards higher value-added services and high-tech[2] industries.

This upgrading process is embedded in the national "Plan for the Reform and Development of the Pearl River Delta (2008 to 2020)" initiated by the National Reform and Development Commission. Hereby, national and provincial governments are seeking to build up a more advanced industrial system by prioritizing the development of modern service industries such as

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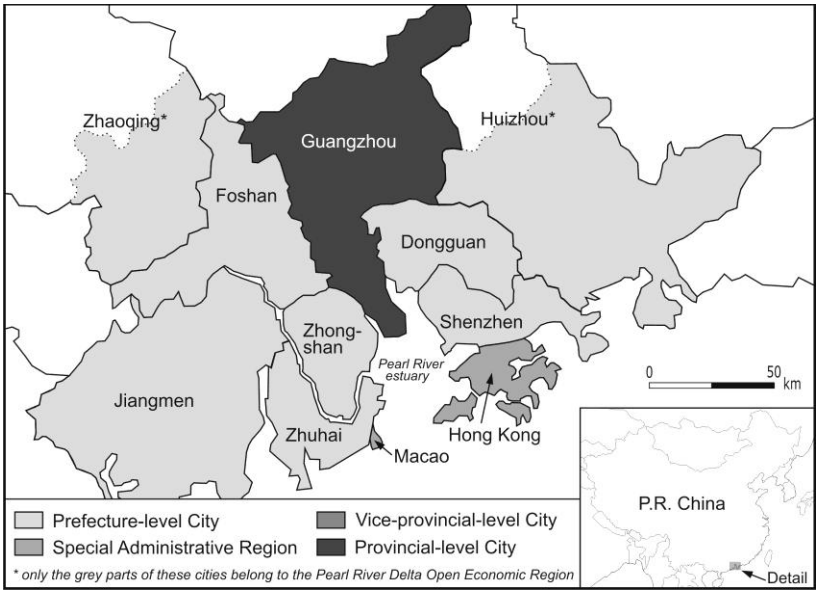
1 The PRD is variously defined. In our paper we use this term to include the cities of Guangzhou, Shenzhen, Dongguan, Foshan, Zhongshan, Zhuhai, as well as parts of Huizhou and Zhaoqing. This priority development area was designated as "Pearl River Delta Open Economic Region" by the State Council of People Government of China in the mid-1980s (Philipps & Yeh, 1990). The inclusion of the Special Administrative Regions of Hong Kong and Macao in this spatial entity is commonly referred to as the so-called "Greater Pearl River Delta". For a geographical overview see Figure 1.

2 In the Chinese context, the term 'high-tech' or 'high technology' is often defined very broadly. However, the official recognition of high-tech companies is mainly based on three factors: (1) concentration on research and knowledge-intensive business sectors, (2) possession of sufficient capitalization, adequate organization structures, and market potential, (3) corporate management is done by highly educated persons (Gu 1996; Liefner 2006). High-tech areas mainly involve industries such as optoelectronics, micro-, nano-, electronic, and telecommunication technologies as well as pharmaceutics, air- and spacecraft, computer, bio and gene technology (Walcott 2003).

banking, marketing, sales and distribution, as well as vigorously speeding up the development of advanced manufacturing industries with a focus on high-tech development (NDCR 2008). High-tech development in particular has become a prime concern of national and local development strategies. In this context, the national 'Tenth Five Year Plan' (2001–2005) was a significant milestone. The latter as well as the '2010 Development Outline for National High-tech Development Zones' classify Beijing, Shanghai, Xian and Shenzhen -Guangzhou and others (Huang 2001) as the so-called 'High-tech Intensive Regions' (HIRs).

FIGURE 1: Administrative structures of the Greater Pearl River Delta



Source: Own design

China's high-tech movement and political strategies to forge a reform of its science and technology environment have been under extensive review (Hong 2003, Pereira 2003, Walcott 2002, Zhou and Xin 2003). Existing studies mostly take a micro-economic perspective, looking at enterprises and impacts of political measures on their investment decisions. This paper, however, has a more spatial focus on urban governance with regard to the implementation of urban development strategies in the field of economic clustering and industrial upgrading.

The development of Guangzhou Science City (GSC), located in Guangzhou (formerly known as Kanton), has been chosen as a case study. From an analytical governance perspective its implementation is rather innovative. In contrast to earlier developments, it is the result of a comprehensive urban development strategy. The latter is part of the so-called "Concept Plan" of 2000. In that context, strategic planning was introduced for the first time in China.

GSC is a showcase project representative of a spatial cluster in the higher value-added sector. The focus is on the electronic information industry, the biological and pharmaceutical industry as well as the environmental industry. At the same time, GSC represents much more than a mere economic entity with a high-tech focus: the formerly strict division of industrial and urban residential and commercial areas is loosened. Besides building a new administrative and commercial centre as well as living area, the entire district in which GSC is located has been planned as a comprehensive urban environment to become an integral part of the whole metropolis. Therefore, it embodies a newly developed sub-urban centre following the first-ever introduction of strategic planning in China (Wu and Zhang 2007). This is part of the city's overall urban development strategy to build Guangzhou into a polycentric metropolis.

It is embedded in a complex set of national, provincial, municipal, and even district strategies. Furthermore, it illustrates the multifaceted relations between government, economy, and the emerging civil society. It is also the result of three main trends that have been changing urban governance processes rapidly.

First, the innovative approach has been introduced in order to enhance the city's economic strength in times of intense competition within the PRD, with other cities and regions in China, and with metropolises and regions worldwide. Inter-city rivalry is especially fierce due to both external and internal changes. Externally, it is a result of increased exposure to global markets since China entered the World Trade Organization (WTO) in 2001. Internally, it is a result of decentralization policies which have increased the autonomy of urban and local governments in the context of China's overall transitional policy (Chan and Shimou 2009).

Second, the construction of large-scale infrastructure and flagship projects, such as airports, railway stations, cultural and exhibition centres, has led to increasing socio-spatial fragmentation (McGee et al. 2007; Chan and Shimou 2009).

Third, the rise of postmodern cultural forms and space-time compression (Harvey 1989), i.e. especially information flow via telecommunication and the spread of the internet have enormously amplified the pace

of economic, social, and cultural change not only in China (Chan and Shimou 2009). Altogether, these trends require constant adaptation of urban development strategies.

With special regard to Guangzhou Science City as a case study, the issues discussed in this paper evolve around four key questions: How is this functionally integrated area being newly developed? Who is involved in planning and implementation, who are key decision makers? What are their political objectives? And how are decisions made?

Discussing these issues, the authors use the concept of urban governance as an analytical tool to embrace the complexities of urban development processes and structures behind them. The investigation of stakeholders involved, their modes of interaction, and political objectives, and finally the identification of modes of governance will result in a broader picture of the organizational logic behind the ongoing economic restructuring processes in urban China. Our main hypothesis is that the implementation of high-tech development and industrial upgrading processes require new institutional arrangements, even new forms of governance on how a city is governed.

Urban Governance as Analytical Approach

In this paper, governance is understood and used as an analytical tool. This enables looking at how regulation and coordination within a city occur and it opens the eyes for structures and processes. According to Benz et al. (2007) and Pierre and Peters (2000) structures are institutional contexts in which actors operate (hierarchy, markets, networks, communities, associations). In contrast, processes describe what actors can do, i.e. regulation (via incentives or hierarchical command) or coordination. Thus, governance comprises different structures and forms of control and coordination which can be both formal and informal (Risse 2007). These forms range from self-regulation in the realm of civil society and different kinds of co-action between public and private stakeholders to sovereign regulation by public actors (Mayntz 2004).

Accordingly, governance as analytical concept is applied to the southern Chinese case, not using the term normatively. It should be noted in this context that in China, the concept of governance is usually understood in a normative sense, i.e. good governance, and is often limited to the aim of improving governmental processes, e.g. promoting more efficiency. Though normativity cannot be fully neglected, this paper aims at embracing the complexities of urban governance processes and at identifying how urban regulation and coordination are shaped within Chinese cities. This can best be achieved using an analytical approach.

Furthermore, in contrast to models such as the "growth machine" (Logan and Molotch 1987) or "urban regime" (Stone 1989), the governance concept has at least two advantages: (1) it does not solely focus on the formation of alliances and coalitions within a city but it also takes into account wider social, economic, and cultural forces, (2) it investigates the broader system in which a city is embedded by considering different spatial levels influencing urban governance processes vice-versa, such as local, regional, and national (Lin 2002).

In China, governance is still characterized by a high degree of state control of urban policies, mainly through the local government as a result of decentralization of power (devolution). Against this background, the analytical framework of this paper discusses an approach proposed by Pierre (1999). His assumption is that configurations of governance are diverse and offer different degrees of actor participation and influence. Accordingly, the political, economic, and cultural framework within which these processes are embedded must be taken into consideration when analyzing urban governance (ibid.). The character of governance is examined in a particular urban setting by identifying modes of governance with different roles of local government constituted by different structural and cultural systems. These modes describe how a city is governed. Pierre (1999) identifies four different, ideal-type models of urban governance, i.e. managerial, corporatist, pro-growth, and welfare models. The characteristics associated with the participants involved, their political objectives and instruments or tools used by them are shown in Figure 2.

The foundation of the empirical case study is based on qualitative, semi-structured interviews conducted by the authors. Interviewees were mainly divided into two groups: (1) people having a potential stake in the development of GSC, such as members of governmental bodies, planning bureaus, companies located within GSC, as well as inhabitants in the area of interest, (2) experts, such as university members, planning experts not directly involved in the development process but with in-depth knowledge regarding the case study. Furthermore, the research is complemented by documentary research and literature review.

In the following sections, the framework within which governance processes are embedded and that constitute the development of Guangzhou Science City are explored. Following Pierre (1999), economic, cultural, and political aspects of high-tech development are first investigated on different spatial levels, i.e. national, provincial, and local levels. These form the basis for examining and identifying governance modes in the construction of Guangzhou Science City.

FIGURE 2: Urban governance models according to Pierre (1999)

	Managerial	Corporatist	Pro-growth	Welfare
Participants	Managers of organizations producing and delivering public services; customers	Organizational leaderships involved in political processes; limited direct involvement by political institutions	Downtown elite and senior elected officials sharing interest in boosting local economy	Local government officials and state (national) officials and bureaucrats
Objectives	Efficiency of public service production and delivery	Interests of organization's members should shape urban services and policies	Economic growth	Secure inflows of state funds to sustain local economy
Instruments	Contracts with for-profit organizations providing selected public services	Bringing in all major actors and interests into urban political processes	Urban planning; mobilization of resources from regional and national government; infrastructural development; city marketing	Networks with higher echelons of government (can be political and administrative)

Source: Own design

Political, Economic and Cultural Framework of High-tech Development

The National Context

Under Mao, China's science and technology strongly resembled the Soviet model, being mission-oriented, centralized, and directed top-down. At the beginning of the 1980s, this system was inadequate to compete with research and development activities globally (Greeven 2004). Basic and applied research was carried out in state research institutions following five-year national or other central or local plans, and generally had no link to the economy. Enterprise-led R&D emphasized prototyping or other downstream activities (ibid.). The institutional setting did not encourage technological development in other than state-run institutes and foreign investment was not endorsed. The number of highly skilled workers was low, except for the defense industry, and therefore, the contribution of science and technology

to China's economy was small and its average level far behind that of other countries (ibid.).

However, given the progress in the market-oriented reforms as well as global influences from foreign high technologies since the end of the 1970s, the central government and especially Deng Xiaoping increasingly acknowledged the significance of market forces for generating technological innovation and that a more efficient and dynamic economy was needed (Hong 2003). The ability of a country to advance its technology is considered an essential condition for economic progress. Thus, how to upgrade quality and increase China's economic growth became a key issue. China more and more tried to get the most out of its limited investment capital by investing in science and technology ventures (Gong Xue 2008). Hence, the reform has brought about a new setting for high-tech industrial development (Fang and Xie 2008; Huang 2001).

According to Greeven (2004) China's science and technology have developed in four phases. In the first phase from 1978 to 1984, policies were aimed at restoring science and technology to their pre-Cultural Revolution status. Between 1966 and 1976 research and development activities were limited to military technologies. Nevertheless, it quickly became apparent that major deficiencies in science and technology made a structural reform necessary.

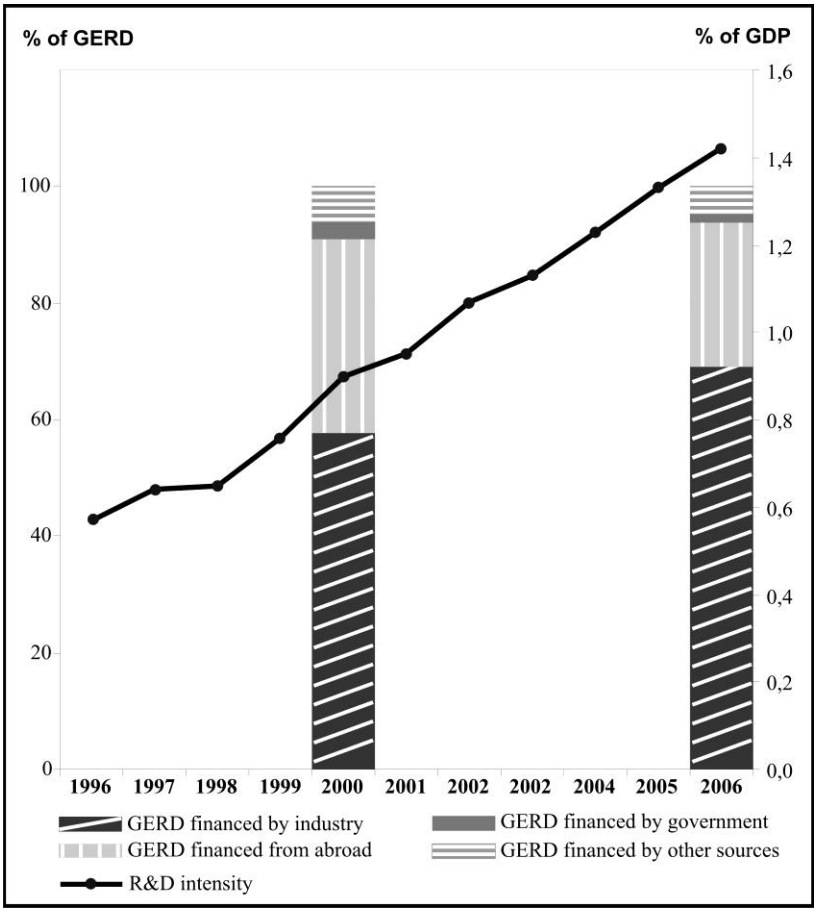
The second phase from 1985 to 1986 is characterized by the attempt to boost horizontal interaction between research institutes and enterprises and to promote, commercialize and internationalize their high-tech products (Gong Xue 2008; Hu and Zhao 2009; Walcott 2003). One of the most influential policies pushing these attempts was the so-called '863 Program', launched in March 1986. Its main goal was to create a technology market with supporting institutions (Greeven 2004). During this phase the first high-tech zone in China was established in the pioneering region of Shenzhen. Joint initiators were the Shenzhen Municipal Government and the Chinese Academy of Science (Hu and Zhao 2009). Its location was strategically important due to Shenzhen's great significance in introducing and testing reforms and policies towards opening up China's economy. Furthermore, in 1988, the State Council approved the establishment of the first national-level high-tech zone, the 'Beijing Experimental Zone for the Development of New Technology'. Located in the northwest suburb of Beijing adjacent to universities and research institutions, this zone is – until today – the most prominent high-tech centre in China. Its successful establishment was followed by the erection of further high-tech development zones mainly in the coastal area of east China (Hu and Zhao 2009).

However, at the end of the 1980s, it became clear that high-tech development still faced many constraints as market forces still did not offer a supportive environment for both basic and applied research. Consequently, the third phase from 1987 to 1992 showed an additional attempt to commercialize R&D-outcomes. The famous 'Torch Program' was set up in 1988 aiming at enabling the establishment of new technology enterprises in a favorable setting. This was created by the establishment of so-called incubator centers providing several start-up-companies with the essential economic infrastructure and by the development of 'High-tech Industrial Development Zones' (Greeven 2004). This has turned out to be one of the most important cornerstones to promote high-tech development in China's science and technology system (Gong 2008; Gu 1996).

As a result, a first wave of 26 national-level High-tech Industrial Development Zones was established in 1991. Another 27 were approved one year later in 1992 as well as in 1997 (Hu and Zhao 2009). In the Chinese context, high-tech zones represent geographical concentrations of R&D and knowledge-intensive industries, designed to attract companies that include a high degree of research and development in their products (at least higher than the average). Analogous to the development of Special Economic Zones and export processing zones in the first phase of transition these demarcated areas served to maximize the commercialization of R&D outcomes through creating a milieu of innovation supported by the government (Huang 2001; Walcott 2003). China now has 53 state-level high-tech zones, most of which are located in big or medium-sized cities relatively open and rich in knowledge resources – such as Beijing, Shanghai, and Shenzhen – in order to take advantage of "urbanization economies" (Walcott 2003). Six out of the 53 national-level high-tech development zones are located in the Pearl River Delta (Guangzhou, Shenzhen, Zhuhai, Huizhou, Zhongshan, Foshan) (Zhong 2009).

Even though the Torch Program was considered quite successful, China's economy was still unable to catch up technologically at the beginning of the 1990s. This was also due to the international isolation the country met after the tragic events on Tiananmen Square in June 1989. Hence, another turning-point in China's high-technology development is marked by Deng Xiaoping's famous Southern Tour in 1992 during which he promoted liberalization, reform and foreign investment. For the first time, significant domestic market access was offered to foreign firms that brought in advanced technology. Since then, a wide set of further policies has been launched to encourage and promote entrepreneurial spin-offs from universities and other R&D institutes, education and training.

FIGURE 3: China: R&D intensity and GERD (Gross Domestic Expenditure on R&D) structure (by funding), 1996–2006



Source: OECD Science, Technology and Industry: Outlook 2008

Besides enterprise incubation China's policy focus in terms of high-tech is today mainly on innovation-driven development (Hu and Zhao 2009). Thanks to yearly growth rates of 20% in R&D expenditure, China's R&D intensity reached 1.49% of the Gross Domestic Product (GDP) in 2007 (Germany Trade & Invest). This is a triplication since the beginning of the new millennium. Thus, China comes up to the level of some European

countries. In comparison, the average Gross Domestic Expenditure on R&D (GERD) in the European Union at the same time was 1.8%, in Germany and Japan 2.5% and 3.5% respectively (ibid.).

With its "Program for Mid- and Long-term Development of Science and Technology (2006 to 2020)", the Chinese government intends to increase its R&D intensity to 2.5% of GDP 2020. Amongst experts, a GERD of 3% is considered the optimum value for a high-tech location. Due to market-oriented reforms of the science and technology system since the mid-1980s, the industry's share of investments in the R&D sector rose to 69% in 2006 (see Figure 3). However, multinational corporations are mostly only localizing, i.e. adapting their products to the Chinese market, only. This is mainly due to inadequate intellectual property rights. The highest proportion of R&D expenditure comes from innovative domestic companies such as the Shenzhen-based, internationally successful information and communication technology companies Huawei and ZTE (Germany Trade Invest 2009).

In sum, the role of the national level is important as it sets the frame for high-tech development on lower spatial levels, such as regional, local, and urban. However, the concrete implementation of high-tech development, e.g. in the sense of provision of infrastructure, education, or investment attraction takes place on provincial and more importantly on local levels.

Role of the Provincial Level in High-tech Development

High-tech development on the provincial level in China generally reflects the national development process following regulations and programs initiated by central government. Each province is responsible for the implementation of national policies and programs and therefore shows the same development phases and steps as the national level, though with some local specifications (Zhang 2009). Over and above national-level high-tech development zones, provinces have also approved numerous provincial-level high-tech parks and zones, especially during the late 1990s and at the beginning of the new millennium. Guangdong province has established ten so-called High and New Technology Zones (in Shantou, Dongguan, Jiangmen, Zhaoqing, Foshan, Yangjiang, Heyuan, Meizhou, Qingyuan, and Jieyang). With sixteen national and provincial high and new technology industry development zones, Guangdong Province has presently the largest number of high and new technology zones among all provinces in the country (Zhong 2009).

Guangdong has played a predominant role in China's transition process ever since the late 1970s. It comprises the highly dynamic mega-urban Pearl River Delta (PRD) region known for its mainly labor-intensive, low value-added industries. Only sparsely populated and with marginal

economic as well as political importance during the Mao era, the delta region, especially Shenzhen adjacent to Hong Kong, became an ideal location to introduce and experiment with reforms and economic opening up. Therefore, potential failures and threats to the overall political and economic system could be minimized (Enright 2005; Wuttke 2009).

The region is further characterized by its historically evolved concern for its autonomy. Guangdong province is widely known for its extensive use of informal ways of decision making. Its strong local governments tend to ignore the oversight capability of the central government (Wuttke and Waibel 2008). A famous saying characterizes this behavior as: "the heaven is high, the emperor far away" (Garett 2002). Moreover, the practice and impact of *Guanxi*, i.e. long-term interpersonal relationships or social connections based on mutual interest and benefit (Reusswig and Isensee 2009), are considered to be more effective in south China than in regions close to the capital of Beijing. *Guanxi* are the key to understanding the political culture in this region. They reduce transaction costs and increase trust relations where political and administrative processes are characterized by a low degree of institutionalization (ibid.). Together with the strong influence of overseas Chinese originating from this region, this has led to a higher openness towards testing and implementing reforms.

High foreign direct investment flows coming mainly from Hong Kong and Taiwan – which transferred labor intensive manufacturing to the PRD in favor of a concentration of knowledge intensive branches in their own jurisdictions – as well as rapid economic development soon revealed the success of the reforms. Today, the PRD is home to 30 to 40 million inhabitants and accounts for more than ten percent of the country's GDP (GSB 2009).

However, the PRD is facing strong competition from other metropolitan regions, such as the Beijing-Tianjin-Hebei megalopolis or the Yangtze Delta Region which had promoted the development of knowledge-intensive high-tech and tertiary sectors earlier and more intensively than Guangdong province.

In order to sustain its economic progress industrial upgrading towards higher value-added and knowledge-intensive sectors has recently been deliberately initiated and supported. On the one hand, the restructuring process is forged by increasing wages and restrictive policies on polluting factories as well as resource and labor-intensive industries. On the other hand, the support becomes apparent in massive investments in high-tech parks which are meant to provide a physical and supportive (institutional) environment conducive to attracting high-tech enterprises, R&D centers and a highly educated workforce (Wuttke 2009). These strategies are embedded

in the nationally initiated and approved "Plan for the Reform and Development of the Pearl River Delta (2008 to 2020)". The plan is mainly implemented by the provincial government which seeks to build up a more advanced industrial system by prioritizing the deployment of modern service industries, as well as vigorously speeding up the development of advanced manufacturing industries with a focus on high-tech development (NDCR 2008).

Meanwhile, the construction of flagship high-tech industrial parks, such as Shenzhen High-tech Industrial Belt or Guangzhou Science City (GSC) plays a predominant role in the regional upgrading strategies of Guangdong province. The main concern thereby is to integrate these upgrading strategies in a comprehensive manner and to avoid un-coordinated development projects on local level. However, as it is shown in the case study, local governments are playing the major role in implementing the upgrading processes and therefore in high-tech development.

Local Framework for High-tech Development

In the light of ongoing political decentralization which went along with rising local fiscal independency, China's cities have become more and more powerful and increasingly self-governing. As local governments have direct knowledge of their own jurisdictions, they get heavily involved in detailed decision-making processes of high-tech development (Fang and Xie 2008; Walcott 2003). This has contributed to growing inter-city rivalry. As a consequence, many cities in China have been developing large-scale infrastructure and pioneering architectural projects such as international airports, opera houses, conference and exhibition as well as new city centres (for the case of the new city centre of Shenzhen see Cartier 2002; for Dongguan see McGee et al. 2007, chapter 6).

As part of this strategy to reach world class status, high-tech parks have become an integral element of the city since the start of the new millennium, loosening its strict mono-functional division in exchange of a comprehensive urban environment including amenities for work, accommodation and leisure. Generally located in the urban periphery of major cities, industrial high-technology zones are also often on low-cost agricultural land that municipalities have transferred from rural to urban land-use classification status in order to expand the municipal area and benefit from supplementary rents (Cartier 2002). These high-tech parks or science cities can also be considered as a form of large-scale urban development projects. Along with the desire – especially of local governments – to gain from modern technologies, high-tech parks are expected to produce technological power and economic prosperity (Fang and Xie 2008). They also serve as a

showcase for modernity and world city status by displaying up highly symbolic flagship architecture (Cartier 2002).

This is actively promoted by local governing bodies, often coloured by the personal developmental visions of high officials. For example, as a result of the former mayor's personal interest, the erection of Guangzhou University Town (also known as Guangzhou Higher Education Mega Center) was realized within a period of just two years (2002 to 2004). After final completion, the huge campus will host ten top universities of Guangdong and a total of 350–400,000 people, around 120,000 of whom will be students (Lu and Wei 2007; Wing 2004).

Physical implementation of high-tech policies in Guangzhou officially started with the establishment of the national-level Guangzhou High-tech Industrial Development Zone (GZHIDZ). It was approved by the State Science and Technology Commission in 1991 as part of the Torch Program. This initiative on national level triggered an explosive boom of local-level high-tech or science parks all over China during the 1990s, labeled 'zone fever' (Cartier 2001). The enormous wave of zone erections was implemented by government bodies on various levels, such as municipal, town, and district level, by universities (such as the Science and Technology Park of Jinan University) or by state or non-state companies (Zhong 2009).

Despite the major importance of the establishment of a favorable environment for high-tech development and substantial public investment in infrastructure, high-tech output in Guangzhou compared to the entire industrial sector was still rather low during the 1990s. Major problems were a lack of highly educated personnel, as well as a low number of patent applications and patents granted (Wang and Huang 2007). According to the Policy Research Office of the GDD Administrative Committee (2009), GHIDZ ranked only as no. 30 among all state-level high-tech zones at that time. The insufficiency of the local science and technology system, the desire to gain on modern technologies, and the increasing importance of place promotion through large-scale projects resulted – for example – in the development of GSC. This was accompanied by a general trend of changing urban development strategies at the local level in the late 1990s.

Changing Urban Development Strategies in Guangzhou

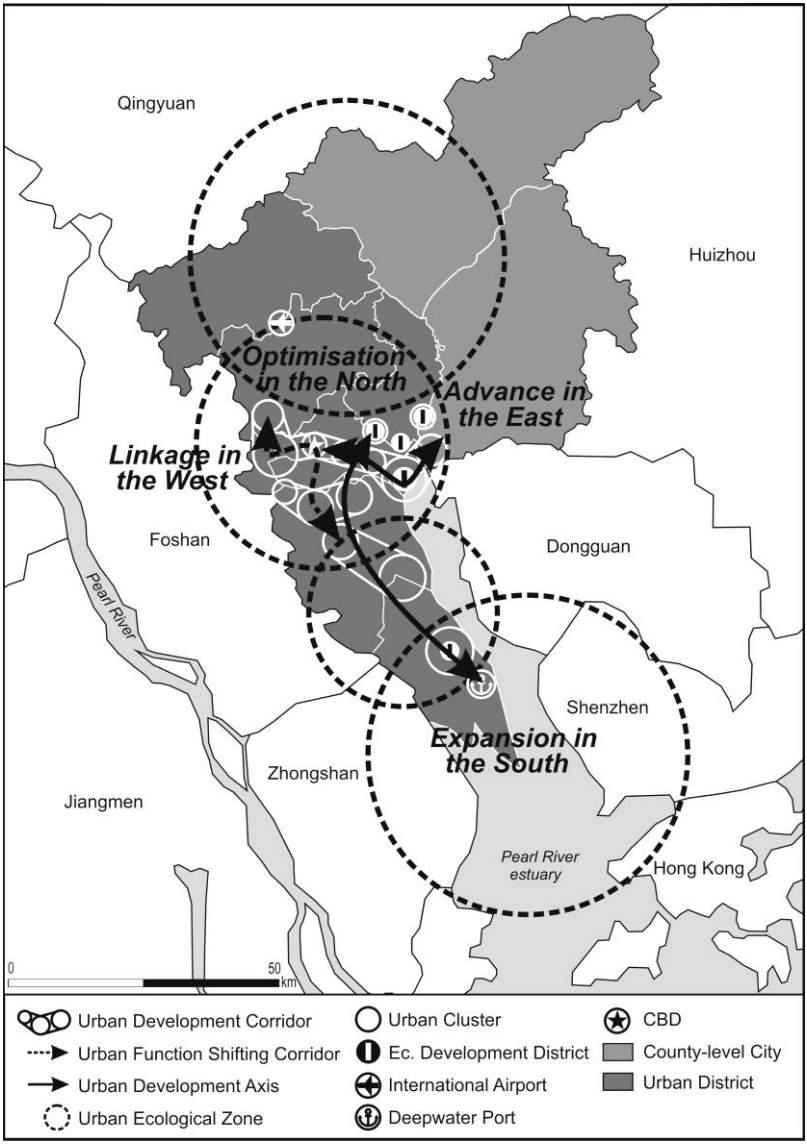
Realizing the importance of changing approaches towards industrial upgrading, conventional urban master planning was generally regarded by municipal governments all over China as being inadequate to provide strategic guidance for the highly dynamic urban growth (Wu and Zhang 2007). This was also true for Guangzhou. With its history of over 2000 years, the city

had long been the economic and cultural centre of south China. Since the opening-up and reform process started in 1978, global, national and local changes have brought rapid development and economic success to other metropolises within the PRD region as well. Especially Shenzhen as the first Special Economic Zone in China overtook Guangzhou in economic performance in the 1990s. This led to a relative decline of Guangzhou's status in the regional and national urban system. At the same time, Guangzhou had grown into a megacity with over ten million inhabitants and suffered from problems typical of megacities all over the world, such as traffic congestion, environmental degradation, spatial fragmentation, and social segregation as well as unregulated urban growth in the periphery (Xu and Yeh 2003).

Confronted with these challenges, Guangzhou was desperate in 2000 to strengthen its attractiveness to investments and therefore introduced new methods of strategic urban planning supplementing conventional master planning which was considered static (Wu and Zhang 2007). The so-called "concept plan" was the first strategic tool for urban development implemented in China. It combined strategic formulation, spatial planning and city marketing in one package and thus served as a more flexible instrument to address rapid urban growth and increasing inter-city competition (ibid.). One important objective of Guangzhou's concept plan was to build the city into a polycentric metropolis (Figure 4). The strategy is described as 'expansion in the south, optimization in the north, advance in the east, and linkage in the west'. Transferring this programmatic principle to the future spatial layout of the city, it has four implications: (1) the south shall be developed into a growth pole promoted by knowledge and information based projects; (2) the north shall be optimized to preserve the ecological environment of Baiyun; (3) the east shall be developed into a new urban centre of the city; and (4) the west shall be cooperatively linked with neighboring Foshan municipality. In each direction so-called 'urban clusters' – in the sense of spatial agglomeration of urban functions – will be established in order to deskew the mono-centric city structure.

The adoption of a more strategic planning approach finally resulted in an administrative reorganization of Guangzhou's area by creating two new districts, i.e. Nansha in the south and Luogang in the east. Especially the city's east is meant to serve as centre for high-tech development (Xu and Yeh 2003). Since the early 1980s, the eastern part of the city has been strategically important for Guangzhou's economy, comprising four national-level special economic areas (Guangzhou Economic and Technological Development District GETDD, Guangzhou Hi-Tech Industrial Development Zone GHIDZ, Guangzhou Free Trade Zone GFTZ, and Guangzhou Export Processing Zone GEPZ) which were combined under one joint administration

FIGURE 4: Guangzhou urban development concept plan, 2000



Source: Xu and Yeh 2003, modified

in 2002 and renamed Guangzhou Development District (GDD). Forming a joint administration with Luogang District, GDD is now an integral part of the new urban development approach and is planned to mature into a new sub-urban centre of Guangzhou. In this regard the managerial function of GDD has changed from a mere economic into a comprehensive urban management, taking the requirements of a qualified labor force, in respect of housing, recreation space, education facilities etc. into account (Wang et al. 2001; Wong and Tang 2005; Wong et al. 2006). Within Luogang District and GDD, the establishment of GSC is the key project of economic restructuring and industrial upgrading.

The introduction of strategic planning by means of the concept plan in 2000 has brought about a new institutional setting which changes urban governance arrangements. Despite the strong position of local government bodies, private as well as international actors, e.g. planning bureaus, architects come into play and get increasingly involved in the planning and implementation process.

In the next section the development process of GSC in terms of governance, its implicit political objectives and key decision makers will be investigated in more detail. Thereby, the four key questions of this paper, namely "How is this functionally integrated area newly developed? Who is involved in planning and implementation, who are key decision makers? What are their political objectives? And how are decisions taken?" will be answered. Distinct modes of urban governance in the case of GSC will be identified.

Guangzhou Science City

Development and Objectives of Guangzhou Science City

GSC was conceived by Guangzhou municipal government in 1992. However, it took three years for the project and its master plan to be approved by the National Scientific and Technological Commission in 1995. It was initially planned as a predominantly industrial area in line with national policies. However, by the end of the 1990s, changing socio-economic conditions and needs required an accentuation on comprehensive capacities, loosening the strict division between industrial and urban areas. Therefore, a second and third master plan were designed in 1998 and 2000 respectively, focusing on GSC as a comprehensive urban area suitable for living, for commerce and for business incubation. Between 1998 and 2000, plans for the expropriation of land for building purposes and for resettlement of the population were drawn up. Construction finally started in 2000. The master plan of 2000 has

been updated almost every year in response to the specific needs and aspirations of the employed in the knowledge-intensive sectors.

Today, the objective is 4to explicitly develop a high-tech cluster where interactions and networks between cluster members (companies, universities, governmental bodies as well as individual persons) can evolve and thereby create an innovative milieu allowing synergetic and collective learning processes to enhance the local innovative capacity. The upgrading is to take place through cluster development, focusing on the electronic information industry, the biological, pharmaceutical and environmental industry. At the same time, the formerly strict division between industrial and urban areas has been relaxed in favour of building a comprehensive urban area including amenities for work, accommodation, and leisure. Thus, the GDD as a whole will become an integral part of the city as a whole with GSC as new city core of the recently established Luogang District.

Participants and Governing Instruments

When analyzing stakeholder involvement and governing relations in China, it is essential to take China's political culture into account, which is strongly characterized by the party-state structure. The hierarchical party system repeats itself in the administrative system. Party branches exist at all levels of government, workplaces and institutions, and play a leading role in their organization (Hu 2002; Wu 2002). This two-fold structure encompasses many diverse linkages between vertical and horizontal lines of authorities (Heilmann 2004). Many models of urban governance developed in western countries, clearly distinguish between politicians and civil servants. However, in Chinese context, a clear distinction between these two groups which are in many cases one and the same person is almost impossible. In the following, the involvement of actors in the development of GSC and their means of interaction are explored.

Guangzhou municipal government and its relevant administrative departments played the major role in developing GSC. They initiated the project, selected the site, and led the design of three relevant master plans. A common occurrence in China's urban planning is the involvement of so-called 'experts' as consultants from outsourced urban management research institutes or planning bureaus to aid in shaping the economic reforms (Tang et al. 2007; Wong et al. 2006). Accordingly, Chinese research and planning institutes were directly approached by governing bodies to participate in functional planning and design of the master plans for GSC.

Central and provincial government were involved in that they generally approved the overall project proposal at the beginning of the 1990s, not

however, in planning single documents such as the manifold updates of the master plan or detailed plans for infrastructure and buildings.

As a consequence of the introduction of strategic planning – by means of the above mentioned Concept Plan 2000 private and international planning bureaus were allowed to participate in urban planning processes as well. Hence, these were invited to bid for the design and construction of individual buildings as well as amenities and the urban fabric within GSC. In 2001, an international consultation meeting was held for the urban design of the central area of GSC including the new administrative centre of GDD and Luogang District. Participating companies were well-known American based planning bureaus such as SASAKI Associates and Skidmore, Owings & Merill (SOM). Though their planning schemes were not accepted in the end, domestic design institutes amended their own plans according to these proposals with the objective of learning from internationally reputable architects, combining international and Chinese planning targets, and strengthening up their own planning proposals (He 2006). Hereby, the strong impact and major importance of urban space, increasingly produced through ambitious urban design, highly symbolic images and flagship architecture becomes evident (Ren 2008) (see Figure 5).

Besides governmental bodies on municipal level, district level bodies, namely GDD and Luogang District forming one joint administration, were heavily involved and had a major stake in the development process, too. They were responsible for project implementation and participated in the planning process led by Guangzhou municipality. Another feature specific to the Chinese context is that local district administration and relevant departments despite their execute and advisory role during the planning process also act as real estate developers which compete with private developers.

Furthermore, semi-private enterprises or special purpose associations have been outsourced to take over functions that were formerly the prerogative of the administration. GDD has several spin-offs mainly in the field of investment consultancy, such as CDC Investment Consultants Ltd. or Guangzhou Global Star Investment Ltd. For example, one of these consultants took over negotiations with the heads of eleven urban villages located in the planning area of which ten had to be relocated in the process of erecting GSC.

Moreover, since investment consultancies have close relationships with companies already located within GDD (and also within GSC) they share their experiences with local governments and give suggestions based on their in-depth knowledge about companies' and their workforces' needs.

FIGURE 5: Joint headquarter of Luogang District and of GDD Administrative Committee

Source: Waibel, 2009

Thus, these investment consultancies serve as mediator for the needs and aspirations of companies and their – in the knowledge-intensive sector – mostly white collar workforce, too. Together with the government's own mostly informal exchanges with companies and with overseas experiences, these suggestions form the basis of decision-making processes in development of GSC. Face-to-face communication, e.g. during regular company meetings or business symposiums, is used to learn about changing needs and demands of companies, workforce and inhabitants (mostly white collar) of the planning area. This information is then filtered and presented to the local People's Congress (PC) and Chinese People's Political Consultative Conference (CPPCC) for discussion. Accordingly, planning strategies are constantly revised and adapted.

In sum, though not formerly involved in the development process, non-state actors such as companies and the white collar workforce are indirectly involved in forming informal arrangements with governing bodies, thereby influencing changing urban development strategies. Local officials learn about development experiences from outside via interactions with foreign and domestic investors, also with returning overseas Chinese. Hence, investment, especially foreign direct investment is not only a driver of economic growth but also an important channel of knowledge diffusion in changing urban governance (Chien and Zhao 2008).

FIGURE 6: Actors involved, their particular role and degree of involvement in the development process of GSC

Actors	Role	Degree of Involvement
Guangzhou Municipality	Project initiator, site selection; planning/ design of master plan (GZ Urban Planning Bureau)	+++
GDD/Luogang District Administration	Implementation, advisory body	+++
Experts from planning institutes/bureaus	State-owned, domestic: functional planning/design of master plan (GZ Urban Design Institute)	++
	Private, domestic and international: planning of amenities, urban design as well as design of individual buildings	++
Companies	Expressing their own or their workforce's needs which – after revision – are taken into account for planning	+
Population	Villages, selectively represented by village leaders	(+)
Central government	Approval of overall project but not of single planning documents, such as master plan	+
Provincial government	Approval of project plans but not of single planning documents, such as master plan	+

Degrees of involvement: **+++** *high* **++** *moderate* **+** *low* **–** *not involved*

Source: Own design

However, these informal arrangements are open to a small group of selected persons, only. Although villagers are directly affected by the development process of GSC, their involvement seems to be limited to negotiations by the village head.

Key decisions have been finalized by officials in high governmental positions whose personal development visions regularly colour the expert's planning proposals. For example, the focus on Guangzhou's east as mainly an economic centre is an outcome of the GDD's director's twofold position as the head of the Administrative Committee of GDD and Luogang District

as well as member of the Guangzhou Standing Committee of the Communist Party which results in a much higher decision-making power than that of a city's vice-mayor. An overview of the actors involved, their particular role, and the degree of involvement in the development process of GSC is shown in Figure 6.

Conclusion

Increasing global integration, political decentralization, and marketization have forged highly dynamic socio-economic conditions in China's metropolises. As a consequence, urban governance processes are shifting rapidly towards complex relations between governing bodies, the economy, and the emerging civil society (Chan and Shimou 2009). Key trends, such as the rising autonomy of urban and local governments resulting in intense inter-city rivalry has augmented the velocity of change (ibid.) This has strong impacts on urban development strategies. The shift from labor-intensive towards higher value-added and capital intensive industries is currently actively promoted by national, provincial, and local governing bodies in urban regions of China, Beijing-Tianjin-Hebei and Yangtze-Delta region and the Pearl River Delta in particular.

Yet, this upgrading process requires changing urban governance arrangements. Urban planning in China still follows a strongly government-led and top-down system, where administrative divisions are in command of urban affairs. However, the investigation of the development of GSC has shown that external and internal influences have led to a transformation of institutional and organizational structures in Guangzhou's urban development process. The introduction of concept planning in 2000 led to comprehensive reform. Urban planning is now focusing more on strategic response to rapidly changing challenges in this mega-city. Private as well as international actors, e.g. planning bureaus and architects, are increasingly involved in the planning and implementation process. This shows the dramatic trend of urban space being increasingly produced through international design and images (Ren 2008). Economic growth and place promotion have become the most important drivers in the urban development of China's metropolises.

Moreover, learning from experiences of others has become a key vehicle for advancement and adaptation strategies. In the case of GSC, informal interactions – by means of face-to-face communication – between governing bodies and companies play a critical role in adapting urban development strategies to changing needs and aspirations of the workforce and local population. Interactions are not just formal activities but social processes involving knowledge diffusion and innovation (Chien and Zhao 2008).

Eventually, the identification of governance modes gives answers to the key questions, posed at the beginning, how is the functionally integrated area of GSC being developed, who is involved in its initiation, planning, and implementation, what are the political objectives, and finally how are decisions taken.

In Pierre's (1999) terminology, the urban governance model in the process of developing GSC can be identified as pro-growth. The development of GSC clearly rests on economic growth and competitiveness as overarching objectives. Participants in this process, such as high officials and business elites share a common interest in boosting the local economy, mostly due to a direct or indirect personal stake. Ideally, this growth is to be reached through the upgrading process towards knowledge-intensive sectors, i.e. mainly high-tech in the case of GSC. Furthermore, with its ambitious design and very symbolic architecture, GSC stands for the attempt to create a transnational urban space that caters for the needs of new city users, i.e. a (presumably) highly educated, creative workforce as well as inhabitants. Thus, place promotion plays a significant role in the newly developed GSC and shows further evidence of a pro-growth urban governance mode.

However, Pierre's model also has its constraints when applied to the Chinese context. It is evident that his four ideal-types represent vast simplifications given the complex realities of urban development in transitional China. Further, talking about participants in urban governance processes, Pierre clearly distinguishes between government officials or bureaucrats and politicians. As mentioned earlier, in China, a clear distinction between civil servants and politicians is almost impossible due to the parallel party-state-system and diverse linkages between vertical and horizontal lines of authorities (Lieberthal 1995). Also, who belongs to the group of politicians in the Chinese context remains an open question. Certainly, the group of politicians cannot be restricted to members of the Communist Party of China alone. Furthermore, the role of informality does not find adequate consideration in Pierre's models of urban governance. However, informal arrangements, mainly personal communication connections, commitments and networks that act as gatekeepers to personal advantage (*Guanxi*) play a significant role in every aspect of China's economic, political, and cultural life (Hartmann 2006). Third, interviews with stakeholders responsible for the development of GSC have also shown great importance of learning processes. These may be characterized among others as "learning by interacting" (Liefner 2006). Learning processes evidently contribute to changing urban governance processes and may even form the basis for shifting urban development strategies.

Overall, analyzing urban governance in China reveals major empirical challenges given the complex set of national, provincial, municipal, and even district strategies as well as the multi-faceted relations between government, economy and the emerging civil society. Pierre's model of urban governance helps to address these complexities of urban affairs. Especially, his notion of pro-growth modes of governance can contribute significantly to discussion of current urban development in China. However, Pierre's approach also has significant limitations since informal arrangements are not explicitly captured, though they play a predominant role. In this context, other models may be consulted to supplement the complex picture of urban governance within the highly dynamic urban environment of transitional China.

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