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Production of Space and Space of Production: High-Tech Industrial Parks in Beijing and Shanghai

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ABSTRACT

The development of high-tech industrial parks (HTIPs) has become a salient phenomenon in China's economic and urban development. Current studies regarding the development of HTIPs tend to focus either on the active role of the local government or on the consequences of technological innovation that those parks may have brought about. Very few studies have paid attention to the intrinsic relationship between the process of space production in building HTIPs and the effect on urban development. To fill this theoretical gap, this article considers developing HTIPs as a territorial project through which both central and local states seek to promote economic growth by reorganizing their territories so as to facilitate capital accumulation based on building high-tech industrial parks. The authors use Beijing's Zhongguancun and Shanghai's Yangpu areas as examples to show the active role played by district governments in promoting and using the symbol of "high tech" to develop industrial estates. In the end, due to the HTIPs' quick tax-generating potentiality, their construction has given rise to commodity housing and commercial projects that district governments are much more enthusiastic to pursue. The property-led high-tech development projects have paradoxically generated a negative impact on sustainable high-tech development.

INTRODUCTION

Over the past two decades, high-tech industrial parks (HTIPs) have increasingly been promoted in various cities in China as growth engines to facilitate regional and urban development as well as to generate technological innovation. Large areas of urban and rural land have been developed and redeveloped to support the dream of becoming high-tech nodes in the global technological production networks. Among them, Beijing's Zhongguancun (ZGC) science park, built in 1988, was the earliest and has been regarded as the most ambitious. It has been viewed as capable not only of attracting a huge amount of foreign investment but also of generating indigenous innovation due to the abundant human resources in the city. Shanghai and other cities have followed suit.

The Chinese state in the late 1980s instituted two very important reform programs to rejuvenate the aged research and development (R&D) system: the 863 plan in 1986 and the Torch Program in 1988. The former aimed to pool resources and scientists together wherever possible to serve as a bridge and to keep up with international high-tech development in several high technologies. The latter, by contrast, was intended to learn from the experiences and successes of Silicon Valley in order to build China's technopoles in such a way as to revitalize China's traditional industries while also promoting the creation of new and high-technology enterprises (Wang, Wu, and Li 1998; Zhou 2005; Segal 2003). It was under such circumstances that ZGC was designated as China's first HTIP in 1988. By 1993, fifty-two nationally recognized zones existed throughout the country, covering twenty-eight of the thirty-one provinces, autonomous regions, and centrally administered municipalities.¹ These HTIPs soon became the growth poles in each region, especially in the cities, and thus high-tech industrialization became intertwined with high-rise urbanization, especially in the two major world cities in China: Beijing and Shanghai.

We regard the creation and re-creation of HTIPs in China in general, and in Beijing and Shanghai in particular, as processes of space production in which spatial transformation concurs with China's pursuit of modernity and high-tech-based industrialization. In this respect, as David Harvey argues, modernity entails the conquest of space, the tearing down of all spatial barriers, and the ultimate "annihilation of space through time" (1989, 205). Thus,

the central state wants to open its territory to global capital so as to attract foreign investments and to demand the most updated technologies. The municipal governments in turn want to reorganize urban space through the strategy of building new HTIPs so as to pursue rapid capital accumulation and technological innovation. Finally, the district governments are able to use high tech as a brand to attract capital investment, especially from the real estate sector. The high-tech park has become a representation of progress, designed to bring high value-added economic activities to the locality and contribute to district governments' revenue. Ultimately, the HTIP is a place that has become fused with various forces contesting for its formation.

Existing studies on China's development of HTIPs tend to follow two approaches: the first approach emphasizes the role of the local state in building HTIPs and promoting local economic development (Segal 2003; Zweig 2002; Wang and Lee 2007), whereas the second stresses the importance of cluster effects in generating technological innovation and shaping the local innovation system (Zhou 2005, 2008; Zhou and Tong 2003; W. P. Wu 2007). Very few studies, however, have paid attention to the intrinsic relationship between the process of space production in building HTIPs and the effect on urban development. To fill this theoretical gap in the literature, this article regards developing HTIPs as a territorial project through which both central and local states seek to promote economic growth by reorganizing the spatial structure so as to facilitate capital accumulation based on high-tech industries.

We use Beijing's ZGC and Shanghai's Yangpu area as examples to show how district governments in both cities have actively promoted the construction of HTIPs and how some have used them as symbols to develop the designated land. In the end, due to the HTIPs' quick tax-generating potential, their construction has given rise to property-led projects while not replacing high-tech development, which district governments are much more enthusiastic to pursue. The property-led development projects, we argue, may have had unexpectedly negative effects on the promotion of high-tech development, which was especially apparent in the case of Yangpu District. Our research is based mainly on data collected from field trips to both cities. The authors conducted intensive interviews in Beijing in November 2008, August 2009, and January 2010, and in the Yangpu area in August 2009 and January 2011. The total interviewees in both cities exceeded fifty people.

HIGH-TECH INDUSTRIAL PARKS AS TERRITORIAL PROJECTS

Urban development has experienced a great transformation in the age of globalization. In a world of fast information flows, cities and regions are regarded as more flexible than national governments in adapting to rapidly changing conditions in markets and technology. Technopoles, of which HTIPs are a representative form, have been planned and established in many regions to promote knowledge learning in order to generate both national and regional wealth. *Technopoles* here are defined as cities or regions that “contain significant institutions of a quasi-public or nonprofit type, such as universities or research institutes, and which are specifically implanted there in order to help in the generation of new information” (Castells and Hall 1994, 1). In order to build technopoles, cities or regional governments have to create the conditions necessary for firms to reside, negotiate with multinationals for them to stay, and nurture small venture firms. In other words, an innovation milieu that has a synergistic effect on knowledge creation has to be implanted (Castells and Hall 1994, 9; Camagni 1991). The development of Silicon Valley has become an embryonic model for the rest of the world to imitate.

To create an innovation milieu is in fact not only a project for spatial reorganization but also an image-making venture central to market competition for investment. In order to create a new space for innovation, leaders of a city government become entrepreneurs who engage in reorganizing the city’s physical space as part of a global campaign to attract both foreign and domestic firms. Thus, technopoles are also projects that involve creative destruction, whereby certain old historical spaces are destroyed and new spaces are created. Harvey (1989) identifies this trend of city and regional competition as *urban entrepreneurialism*.

According to Harvey (1989), capitalist accumulation is based on both an immobile configuration of territory and socially constructed institutions that enable capital circulation. Therefore, each successful round of capital accumulation has to be built upon the existing socially produced infrastructures that facilitate the accelerated circulation of capital through space. Harvey’s perspective on the historical and spatial dimensions of capital accumulation are best described by Doreen Massey’s (1984) view, which emphasizes the sedimentation of historical layers of a local area. Massey argues that each local

area contains not only one form of economic structure; instead, it is a product of long and varied histories. Some forms of organization die away, while others linger on and continue to influence new rounds of development. When viewed from this perspective, “the structure of local economies can be seen as a product of the combination of ‘layers’ of the successive imposition over years of new rounds of investment, new forms of activity” (Massey 1984, 114).

Given the increasing scope and scale of globalization, the central and local states’ efforts in strengthening their economic competitiveness reflect a multilevel and multiscale reconfiguration of their territory (Brenner 1999; Jessop 2002). In other words, different levels of government attempt to reorganize spatial structures to enhance the competitiveness of their territories. For the central state, the conditions of globalization have facilitated a loosening of domestic regulations in favor of the imperatives of capitalist accumulation. A competitive state has emerged to create a friendly investment environment that will keep the economy innovative and competitive (Brenner 1999; Jessop 2002).

For city managers, current urban governance is more oriented toward the provision of a “good business climate,” which enables new construction to lure capital into the local territory. Although there are no clear recipes for success in bringing new investments, city governments are forced to adopt approaches that increase the amount of fixed local infrastructural investments to attract mobile capital. Space reconstruction and image-making programs are undertaken to promote the city’s competitiveness. A new growth machine, which especially contains the real estate sector, is formed to promote the city’s rejuvenation and reorientation (Logan and Molotch 1987; F. L. Wu 2002; Jessop and Sum 2000).

To sum up, space is not merely a physical container within which capitalist development unfolds. It involves social and political elements that ultimately shape the ways in which the economy develops. By encountering an increasingly globalized world, the state and local governments and related actors are continually constructing, deconstructing, and reconstructing the historically specific areas through which multiscale territorialization has proceeded, in order to facilitate capitalist accumulation and innovation (Brenner 1999, 42). Hsing (2010) further points out the importance of differentiating the physical, organizational, and discursive dimensions of territorialization of capital, and the linkages and gaps among them.

China, in this specific historical era, has focused much on using the HTIP strategy to develop its economy and to enable its technology to catch up with more advanced countries (Ge 1999; F. L. Wu 2002; Zheng 2010). Moreover, due to each city's history and various types of heritage, city governments have different capacities and ways of building HTIPs. As we will show, the main factor that drove Beijing's Haidian District to develop into China's Silicon Valley was its hosting of prestigious universities and R&D institutes. This historical heritage enabled Haidian to become the core zone of ZGC at an early stage of economic reform. Nevertheless, Shanghai's similar historical heritage was unable to give it a similar advantage. Yangpu, where most of the prestigious universities in Shanghai reside, was ignored by the municipal government in its ambitious Pudong plan. It was only in the early 2000s, when the Yangpu District government utilized the banner of HTIP to try to collaborate with those universities to regenerate its local economy, that the Shanghai municipal government began to support the area to become an innovation-based region. These two cases show how district governments have fully utilized the HTIP strategy at different times to develop their economies and upgrade their development level. In the process, not only have the city spaces been transformed, but the city's territorial organizations have been altered to fit the demands of capital accumulation on a global scale. The creation of HTIPs has resulted, in due course, in a booming real estate sector, which has gained even more attention from the district governments. The details are discussed in the sections that follow.

BEIJING'S ZGC—CHINA'S FIRST SILICON VALLEY

Beijing's ZGC is described as the most innovative region in China (Segal 2003; Zhou 2005, 2008). The achievement of ZGC has been an accumulated and evolutionary process of institutional reforms. At the initial stage of reform in the early 1980s, the area emerged spontaneously out of the increasing concentration of non-state-owned enterprises in the Haidian District, where Tsinghua University, Peking University, and the Chinese Academy of Sciences were located. As the state recognized the potential it had to imitate Silicon Valley in the United States, because of its high concentration of prestigious universities and R&D institutes,² ZGC was granted the status of an experimental zone for its development.

ZGC as a Technopole Project: The Central State's Policy

During the early stage of China's economic reform, the central state undertook incremental approaches to reforming the stagnant economy. One of them was the fiscal reform that unleashed material incentives for local officials to promote their local economies (Oi 1992, 1995). The second was the reform of the science and technology policy, which encouraged local governments to establish HTIPs in order to promote foreign investment.

China's fiscal reforms in the early 1990s clearly redefined the localities' share of tax revenues and granted them rights to a fiscal surplus. In 1994, China experienced a fundamental fiscal decentralization reform, called the tax-sharing system reform, which made central-local revenue sharing more transparent and objective. Local governments were granted the power to generate extrabudgetary revenues besides the state-defined ratio of collected tax. According to the state's regulation, 60 percent of land taxes belonged to local government, while the remaining 40 percent went to the central state. However, of the 40 percent belonging to the central state, 35 percent was to be reimbursed to the local government. Therefore, local governments had a strong incentive to lease land to developers, because as much as 95 percent of the income generated would return to the pockets of the local government (Zheng 2010, 93). This financial decentralization led to the emergence of "local state corporatism" (Oi 1992, 1995), in which local officials routinely manipulated regulations to allow enterprises to receive the maximum tax advantages and pushed local economic development to the point of sometimes even disregarding national objectives (Segal 2003; Zweig 2002).

The unleashing of the local government's drive for economic development was also related to its creation of economic and technological development zones (ETDZs). Local governments used tax incentives or subsidies to attract foreign capital into the zones to create economic growth. These zones needed to be approved and regulated by the central state (the Ministry of Commerce), or by higher levels of government. The HTIP was a special type of development zone, promoted and administered by the Ministry of Science and Technology in the central state through the Torch Program. By studying the success of the development of Silicon Valley, the Chinese government wanted to use the Torch Program to promote high-tech parks in the country so as to create an environment conducive to the development of high-tech

industries by combining research with production activities. In 1988, the central government decided to develop Beijing's Haidian District as the "Silicon Valley of China" and called it the Beijing Experimental Technology Zone (BEZ). This was the first high-tech zone recognized by the central state.

In the initial stage of BEZ's development, the main administrative office responsible for the management of the zone was established under the Haidian District government. Because of the inclusion of other parts of the city into BEZ, a new administrative office was set up under the city government in 1997 to coordinate among the districts; the zones within the various districts were still managed mainly by their own district governments. In 1999, the central state approved the city's application to reform the administration and to rename BEZ as Zhongguancun. The new ZGC administrative office was established under the city mayor and had an advisory committee with members including the city mayor, minister of science and technology, minister of education, deputy president of the Academy of Sciences, deputy mayor, and some university presidents (ZGCAO 2008). The central state was determined to establish ZGC as one of the most innovative regions in the world.

ZGC has developed rapidly since its inception in the late 1980s and has come to include even more zones developed by different district governments. Over the years, the development of ZGC has created an agglomeration effect for the high-tech industries, especially the information technology (IT) industry. It gathered over thirteen thousand firms in 2006, including Legend, Stone, Fangzheng, and multinational corporations such as Lucent, Hewlett-Packard, Ericsson, Hitachi, and Siemens (ZGCAO 2008). In 2009, the state council supported the Beijing government's proposal to re-create ZGC as a national innovation demonstration zone to speed up innovation and create world-class enterprises.

ZGC as the City Government's Territorial Project

Unlike HTIPs in other places, such as Taiwan's Hsinchu HTIP, which was originally located in a rural agricultural area that was much easier to clear for development, BEZ was initially located in an established city district. The initial plan of BEZ was to develop one hundred acres in Haidian District to host high-tech enterprises; however, because of the concentration of buildings in this area, only ten acres were able to be developed. Later, this area was extended to the remote countryside of the Haidian District (i.e.,

Shangdi IT Industrial Zone) to host manufacturing activities. In the meantime, both the Changping County government and the Fengtai District government were eagerly applying to Beijing city for new ETDZs in their jurisdiction in order to boost their local economies. These two districts were finally included as part of BEZ in 1991, as the Beijing city government and the central state decided to expand the development area of BEZ to host manufacturing activities that were not suited to locations in the inner city.

As BEZ became a symbol of high-tech development that was able to generate economic growth, many other district governments also began to apply to be included. The district governments of Beijing city eagerly applied to become part of the booming high-tech industry after 1999, when BEZ was renamed ZGC, and ZGC therefore continued to expand. Currently, there are ten zones under the ZGC banner, which are located in various unconnected localities within the Beijing municipality. For example, Fengtai Zone is located in the southwestern area of the city; Beijing's economic and technology zone is located at the southeastern end of the city known as Yizhung; and Changping Zone is located at the northwestern end of the city. In 2006, the state council finalized the ZGC development plan with a total development area of 232.52 square kilometers, of which 131.84 square kilometers were located in the inner city and the remaining 100.68 square kilometers consisted of new land for development mainly located in rural areas (ZGCAO 2008). These zones, their locations, and their major economic functions are described in figure 1 and table 1, below.

The development of Beijing's ZGC also had a lot to do with science parks established by universities and R&D institutes. These institutes, following the guidelines of the Torch Program and supported by the Ministry of Science and Technology and the Ministry of Education, tended to establish their own parks to generate university-firm relationships. The earliest university HTIP was established by Peking University in 1992, and then Tsinghua University and other institutes followed suit. Now Beijing has ten university HTIPs.

The university HTIPs have indeed created some smaller firms through their incubation centers and have hosted many global and domestic firms, both small and large. One of the most successful university HTIPs is Tsinghua's. It is located in the center of Haidian District, on twenty-five acres of campus land that have been developed into an area inhabited by many high-

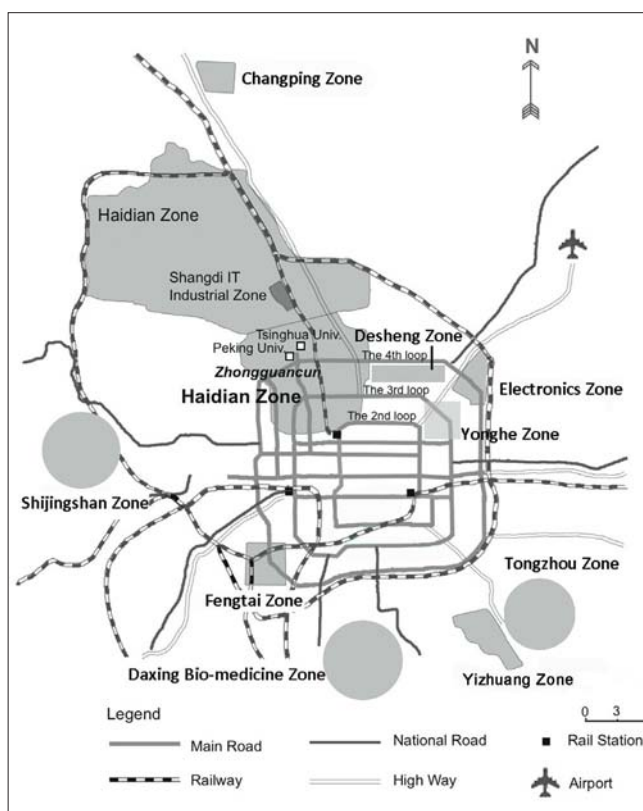


FIGURE 1 Location of Zhongguancun's Ten Zones. Source: Revised and redrawn from Zhou and Tong (2003).

rise office buildings. Due to the university's reputation as China's MIT and its good location, this HTIP has attracted many well-known enterprises, including Google, Sun Microsystems, Proctor & Gamble, NEC, and Tsinghua University enterprises such as Tsinghua Unis Corporation.

ZGC has indeed attracted many domestic and foreign firms to take up residence, especially in the Haidian District. Because of its success in developing high-tech industries, ZGC has become filled with many glamorous buildings and famous multinational corporations. ZGC thus signifies riches and fame for the district, which in turn has driven district governments and universities to join the high-tech and speculative game. One of our informants said very clearly that "once the ZGC label is used, the price of real estate

TABLE 1 Economic Zones of ZGC.

<i>Year</i>	<i>Zone</i>	<i>District</i>	<i>Specialization</i>
1988	Haidian Zone	Haidian	ICT, all high-tech types
1991	Fengtai Zone	Fengtai	Headquarters
1991	Changping Zone	Changping	All types, including biotechnology
1997	Electronic Town	Chaoyang	Electronics and others
1997	Yizhuang Zone	Daxing	Manufacturing for all types
1999	Desheng Zone	West City	Cultural creativity
2006	Yonghe Zone	East City	Cultural creativity
2006	Daxing CBP	Daxing	Biotechnology, pharmaceutical
2006	Tongzhou Zone	Tongzhou	Electro-optical industry and others
2007	Shijingshan Zone	Shijingshan	Media and cultural creativity industry

SOURCE: ZGC administrative office website: <http://www.zhongguancun.gov.cn/>.

jumps.”³ This echoes what He and Wu observed in Shanghai, where district governments have a strong incentive and high degree of discretion in land development to pursue instant returns and visible achievements, “of which property-led redevelopment is the most common form” (2009, 298). This property-led redevelopment project, bearing the label ZGC, is best illustrated by the Fengtai District’s “headquarter economy project,” discussed next.

ZGC as a Form of Representation: Fengtai’s Headquarter Economy

The Fengtai Zone was established by the Fengtai District government in 1991 and was included in BEZ in 1994. It is located in the southwest area of Beijing city, where five square kilometers of land is allocated to BEZ. Developing this area into ZGC was mainly motivated by the efforts of the district government in promoting this area’s economic development. Owing to its historical legacy, the southwest end of Beijing city was described as one of its poorest areas, just as the popular statement “The East is rich, the West is prestigious, the North is poor, and the South is despicable” (*dong fu xi gui nan pin bei jian*, 東富西貴南貧北賤) sums up. The competition among districts drove local governments to use the special economic zone approach to stimulate economic growth.

The first stage of the development of the Fengtai Zone was initiated in 1992, when much of the local land was converted for either industrial or residential use. However, within a few years of the land's development, as a result of rising rents, most manufacturing activities moved to Hebei Province or to the outskirts of Beijing city, and the industrial land was once again converted into office buildings. In the second stage of Fengtai Zone's development, starting in 2002, the district government gave up developing manufacturing land, due to the failed attempts in the former stage, and instead stressed the importance of office buildings. At this stage, the district government collaborated with a British company (Daofeng, which was actually a company led by an overseas Chinese) to develop this area into a so-called advanced business park. However, it might have been due to this term having too obvious a connotation of real estate development that it was later changed by the Fengtai District government to "headquarter economy." The business park consisted of over five hundred office buildings, thousands of apartment buildings, a six-star hotel, and other related recreational facilities and shopping centers. The whole park was obviously a huge property-led project that intended to use the ZGC label to promote local economic development.

The district government worked very closely with the Daofeng Company to clear the land, pave roads, and overcome many related administrative barriers so that the development of this "headquarter economy" could proceed smoothly. All of the expenses were covered by the district government, and the company devoted very few resources at this stage.⁴ Even more interesting was the fact that the district government granted the Daofeng Company the manufacturing land, whereupon the company developed this area into luxurious residential and office buildings at an enormous profit. Moreover, the Fengtai District government granted the Daofeng Company the right to use ZGC's tax incentives to attract firms to the park, including tax exemption for the first three years of investment, and reduced the tax rate from the fourth to the sixth year to 7.5 percent annually. In addition, it also granted Daofeng the privilege of paying half of the utility fees and granted residence permits to professionals from other provinces.

The example of the Fengtai Zone clearly shows how the district government used the ZGC label to develop the real estate sector in the name of an HTIP. The real content of Fengtai Zone is in fact company headquarters that have little relationship with the high-tech industries.⁵ Currently, the

headquarter economy has attracted many companies, most of which had been Beijing-based state-owned companies, some of which were big state-owned companies from other provinces, and only a very few of which were multinational corporations (Zheng 2010, 150). As a result, the originally very small Daofeng Company became a giant real estate developer in the process.⁶

ZGC as a Contested Space

As has been shown above, HTIPs have been regarded by different levels of the state in China as promoting both local economic development and technological innovation. ZGC in the Haidian District, due to the concentration of R&D institutes and the state's support, achieved a successful increase in high-tech industries, especially in the IT sector, and then the ZGC label was expanded to other districts. Now ZGC has become a real estate label that has sometimes outpaced the value of developing high-technology industries. This is because technology learning and innovation need time to be nurtured, whereas the real estate sector can generate an immediate capital return for both investors and local government.

The booming of the real estate sector, however, has had its downside in terms of the development of technology, because it has pushed up rental costs to a level that has not been conducive to the survival of start-ups or smaller firms in the Haidian area in recent years. According to our informant, the rental rate in the core area of the Haidian District (the area in front of Tsinghua University) was about 7 dollars per square meter in 2008; by 2010, it had risen to about 12 dollars in the same area.⁷ Many smaller start-ups have already moved out of the expensive area in Haidian District and sought cheaper places on the outskirts of the city in order to survive.⁸ The booming of the real estate sector in ZGC has in fact created an economy that is favorable to large firms and stifles the spirit of entrepreneurialism that brought ZGC about in the first place.

SHANGHAI'S YANGPU: TRANSFORMATION OF THE OLD INDUSTRIAL SPACE

Shanghai demonstrates a counterpoint to Beijing's ZGC. The rebirth of Shanghai began with the Pudong redevelopment project after Deng Xiaoping's southern tour in 1992. Integrated with the Pudong project to construct

Shanghai's service and financial center, the Zhangjiang HTIP was developed to promote new fields of manufacturing and design, such as IT, semiconductors, and biotechnology. A more recent attempt to imitate the HTIP development method but adopt a bottom-up approach to rejuvenate urban space is the Yangpu case. In contrast to ZGC's nurturing of new non-state-owned enterprises based on the IT industry, the Yangpu case demonstrates the district government's efforts to renovate and upgrade the heavy, old industries, such as steel, that were embedded in the old urban center. Similar to district governments in Beijing, the Yangpu District government fully utilized the HTIP banner to reterritorialize its urban space.

Yangpu as a Fresh Model of Space Reproduction

The start of the new Yangpu project began with the release of the "Guideline of the Yangpu Knowledge Innovation District" document in 2004. In this guideline, the Shanghai metropolitan administration reconfirmed its policy to integrate three development elements into this district: university campuses, high-tech parks, and local communities. It was dubbed the "tri-party cooperation."⁹ After less than a decade of development, the new project of rejuvenating Yangpu did not stop at "breeding" or "building" a high-tech center. It had a much more comprehensive goal of urban redevelopment and space utilization. The master design could be realized by Yangpu's project of establishing the developmental framework of "one center, one city, one river, three quarters." According to the design, "one center" refers to the suburban center of the Wujiaochang-Jiangwan area; "one city" refers to the new Jiangwan Township; "one river" refers to the creative and cultural center on the north bank of Huangpu River; and "three quarters" refers to the Fudan-Tongji University science zone, Dalian-Kongjiang Road's modern service zone, and the modern textile industry clusters along the Huangpu River. The urban renovation project was implemented by branding the old area with a knowledge-based economy. As demonstrated in the example of ZGC, the Yangpu case also provided proof of the active participation of the entrepreneurially oriented local government. It reflected the important factors of territorial formation and space adjustment in the process of rebuilding a fresh Yangpu. Figure 2 shows the geographic location of the Yangpu District of Shanghai.



FIGURE 2 Location of the Yangpu District of Shanghai City. Sources: Drawn by the authors. Map on left adapted from Wikipedia entry on Yangpu.

Among the various actors in urban development and space rejuvenation, the district government of Yangpu played the key role in leading and coordinating. Being in charge of the distribution of urban land, the district government shouldered the tasks of land replacement, reservation, and capital accumulation. The newly established Yangpu Knowledge Innovation Region was a major vehicle for “branding” the old district with new content. Our interviews with local residents in Yangpu indicated that in the early stage of Shanghai’s development in the 1990s, Yangpu was totally neglected. Even the public transportation system of urban overpasses did not provide access to the Yangpu District. Yangpu was more or less isolated from the booming urban service sectors in Puxi and Pudong. This situation did not accord with Yangpu’s potential as an area where major universities would be located. Well-known universities, such as Fudan and Tongji, also suffered from outdated urban district infrastructure. These universities thus established visible and invisible walls to separate themselves from the surrounding decaying environment.¹⁰

Yangpu's HTIP Branding Strategies

The Yangpu case shows how a local government engages in space production in entrepreneurial ways. In 1996, Shanghai established the Center for Land Development, which was to function as a land bank for the city. The land bank would purchase land-use rights, negotiate a profit-sharing plan with current users, and put the land parcels in a reserve for resale on the market in open-land auctions or through public tender. A successful land bank could help municipal governments centralize land supplies and coordinate land management and planning (Hsing 2010, 48). In the case of Yangpu, the main body of land banking has been the Yangpu Land Development Center (YLDC), under the direct supervision of the Housing and Land Management Bureau of Yangpu District. YLDC regained state-owned lands under the urban development plan and put them into reserve. In the process of Yangpu's transition toward a knowledge-based region, YLDC has played a pivotal role in promoting the transformation of the territory through land-use policies. YLDC controls most of the industrial lands, which represent 17.6 percent of the total land of Yangpu. YLDC has also established cooperative ties with the Management Committee of Yangpu High-Tech Park (MCYHTP) in utilizing newly acquired land. The major function of such ties is to link policies of land use with the purposes of industrial upgrading and service enhancing.

Through the process of institutional linkages and branding, the Yangpu District government has successfully transferred a great deal of industrial land to both service and commercial usages. According to 2010 statistics, the growth rate of Yangpu's service sector reached 76.5 percent, while the knowledge-related service business grew by 23 percent.¹¹ Tax revenue rose from 3.5 billion Yuan in 2003 to 10 billion in 2008, while the disposable finance of the district government increased from 1.6 billion in 2002 to 7 billion in 2008 (Chen 2009, 5).

This transformation has indeed brought about lucrative economic benefits to the district government. In addition to the transformation of the university region and surrounding areas, the new Jiangwan Town in the north and a new creative and business district in the east have become the focus of development. For instance, the last case of land bidding in 2010 reflected the ambition of the Shanghai Seventeenth Cotton Textile Company to transfer

the idle factory house on the northern bank of the Huangpu River into a fashion and creative center. Such efforts have been promoted collectively by the textile company and by the Yangpu District government.

The University City project promoted by the Yangpu District government is another illuminating case. Different from other University City projects like Songjiang University City, the Yangpu project did not start the construction from scratch. Land clearing, road construction, and resettlement are all crucial challenges to policy makers and developers. According to various estimations, the total investment amount of the Yangpu University City for land use has reached 100 billion yuan (Wan 2004, 94). The rise of the real estate market in Yangpu has been significant since the release of the “knowledge Yangpu” project.¹²

Almost all the actors involved in the Yangpu project, especially those from the universities located in this area, have served as engines of land development in the region. For instance, Tongji Technology, a Tongji University holding company, established Tongji Real Estate Management Corporation (TREMC). Under TREMC, there are more than fourteen branch companies engaging in various land development projects. These projects in the Yangpu District include Tongji Square, containing four-star hotels, restaurants, and shops outside the main gate of Tongji University. Other projects include residential housing units under the brand name of Tongji in surrounding areas.

The District Government and Real Estate Market

The Yangpu District government itself also controls several real estate-related development companies. For instance, companies like Weibaixin and Xinyangpu mainly undertake the business of developing residential housing areas. Even the Yangpu Knowledge Innovation Investment Company is engaged in various fields of real estate development, including hotels, restaurants, and other recreational facilities (Chen and Yu 2005, 57).

As Du Jiahao, the former party secretary of Yangpu, argued, knowledge-based clusters are closely related to the improvement of the investment environment in Yangpu. The attempt to establish a fresh image for Yangpu has provided opportunities for developers to promote real estate markets. College parks around Fudan, Tongji, and other famous universities, along with the green lands of Huangxing Park, provide amenities for better living in

the region. The Wujiaochang business district and New Jiangwan Township project will also enhance the urban function and livability of Yangpu. Together with the relocation projects to move 4 million old housing units and reconstruct 4.35 million square meters of land, the Yangpu project is a social engineering project that requests the participation of all parties involved.¹³

Expansion of the land used by the universities has become a major strategy for the Yangpu District government to promote new brands of a university and knowledge-based science park. The Yangpu District government released land around major universities for the purpose of building university high-tech parks and new branch campuses. As indicated in table 2, each university has its own research specialties and concentrations. The land coverage of university campuses in Yangpu has expanded from 4.2 square kilometers to 6.54 square kilometers. Fudan has expanded from 1,600 acres to 4,000 acres, and Tongji has expanded from 1,500 to 2,500 acres. The Yangpu District government has shares of stock in most of the university-affiliated scientific parks. Our interviews show that in the case of Fudan Scientific Park, the district government relocated the existing residents and sold the land to Fudan at a very low price. Due to the recent booming of the Wujiaochang area, the market price of the real estate of Fudan Scientific Park has been soaring.¹⁴

The district government has also actively renovated the area surrounding Wujiaochang, and has promoted and named it as the Knowledge and Innovation Community (KIC). Wujiaochang, located in the heart of Yangpu District, was an outdated urban commercial center surrounded by major universities and public facilities. Since the very beginning, the reconstruction of the Wujiaochang project has not merely been a research park project. The main investment and development body of the Central Intelligence District (CID) is Yangpu Knowledge Innovation Investment Company, which is in charge of the tasks of relocation, land procurement, and public administration. The Hong Kong partner Sui-On Group undertakes the tasks of financial management, business operation, and planning (Wang and Tian 2008, 53–55). This partnership is similar to the Xintiandi project in the urban center of Shanghai. The major difference with Wujiaochang is the “branding” of a knowledge-intensive center within a university town. The

TABLE 2 Specialities of University Science and Technology Parks in Yangpu District.

	<i>Item 1 (%)</i>	<i>Item 2 (%)</i>	<i>Item 3 (%)</i>	<i>Item 4 (%)</i>	<i>Item 5 (%)</i>
Fudan Scientific Park	IT/Electronics (45%)	Consultation Services (17%)	Bio-Medicine (8%)		
Tongji Scientific Park	Architectural design (46%)	IT/Electronics (22%)	Consultation Services (17%)	Bio-Medicine (2%)	
Yangpu Technology Innovation Center	IT/Electronics (40.9%)	Creative Industries (17%)	Machinery & Electricity (13.2%)	Bio-Medicine (12%)	Environmental Protection (9.6%)
University of Shanghai Scientific and Technical Park	Manufacturing Industries (64.1%)	Technology (24.8%)	Commercial Facility (2.6%)		
Shanghai Ocean University Scientific Park	Aquatic Products (58.3%)	Creative Industries (12.5%)	Machinery & Electricity (8.3%)	Construction (4.2%)	
Shanghai Intellectual Property Park	Technology (50%)	Consultation Services (27%)	Culture communication (13%)		
Shanghai University of Finance and Economics	Technology (42.8%)	Finance (31.4%)			

SOURCE: Revised from Wang (2008: 148).

current price of housing in the CID is about 4,000 yuan per square meter, or 50 percent higher than the average prices of surrounding areas.¹⁵

The KIC project is a typical example of the collaboration between the district government and private companies. During the field trip, the authors found out that the main concern of the local government in the KIC project was to attract private investments to reconstruct the old district. Located in the Wujiaochang District of northern Shanghai, the KIC is surrounded by around fourteen universities, including the prestigious Fudan and Tongji Universities. The goal of KIC is to utilize the attractiveness of major universities and transfer the old Wujiaochang circular area into a service hub. The KIC thus serves as a mediator between the universities, district development, and private enterprises. During our interviews in the Wujiaochang area, one senior manager at KIC indicated that the idea of reconstructing the Wujiaochang area is promoted and implemented mainly by the Yangpu District administration. It is totally different from the Zhangjiang model in Pudong in the 1990s.¹⁶

In brief, the northern Yangpu area, with KIC as its core, has gradually been transferred into a multifunctional business district. The “scientific park” is embedded within a reconstructed auxiliary urban center. In addition to the Wujiaochang-Fudan area, the Yangpu District administration has also signed agreements with Tongji University to promote the “Tongji Knowledge Economic Circle.” Located in the south of the Wujiaochang District, the focus of such a new initiative is to promote new service clusters, such as architecture, environmental protection, machinery, and other related business pertinent to Tongji’s specialties (Leng and Wang, forthcoming).

As demonstrated in the previous sections, both the Yangpu and district governments in Beijing are attempting to use symbols and labels of high-tech development to boost urban development. In terms of high-tech clustering, Yangpu has achieved a certain degree of success, as demonstrated by the Wujiaochang project. Since 2006, Wujiaochang and the surrounding areas have formed clusters of IT- and service-oriented domestic as well as multinational corporations. However, such achievements have been accompanied by space reproduction and branding of HTIP. Transferring space and combining it with new brands of high-tech zones have become rational decisions of Yangpu leaders to pack major urban areas with an integrated package of scientific parks.

The intervention of the real estate developers, however, creates a dilemma in promoting talent flows and a knowledge-based economy. Under the branding of major universities and knowledge innovation centers, the prices of housing and office spaces have escalated. Start-ups and even research faculty can no longer afford to live in the neighboring areas. In other words, the original idea of knowledge-intensive clusters was distorted due to the commercial and real estate development of the region. Scholars and experts have also raised sharp criticisms, arguing that many scientific parks have already become real estate parks. In this respect, both ZGC and Yangpu face a similar dilemma of urban development and technological innovation.

DISCUSSION AND CONCLUSION

This article regards developing an HTIP as a territorial project through which both central and local states seek to promote economic growth by reorganizing the spatial structure in their territories so as to facilitate capital accumulation. In this territorialization process, the central state, the municipal government, and especially the district government have played important roles in reshaping the landscape of each city for the purpose of economic upgrading. Differing from other property-led development projects in China, this HTIP plan has involved not only local states and developers but also universities and R&D institutes. These actors have collaborated to develop the territories in the name of high-tech development and knowledge innovation. Thus, the planned areas, regardless of whether they are agricultural or established urban settlements, have had to be reshaped for hosting foreign and domestic firms or for office buildings. Through this process, territorial places have been transformed into globalized spaces where capital is able to move more freely to engage in manufacturing and commercial activities.

In both the cases of Beijing and Shanghai, we have seen how historical sediments affected territorial development in time (Massey 1984). Beijing's Haidian District was home to China's most prestigious universities and R&D institutes, enabling it to become the core innovative area of ZGC at the earlier and later stages of development. Nevertheless, due to its city center status, which limited its manufacturing activities, many district governments in Beijing later had the opportunity to establish and use the label of

ZGC to boost local economies. Thus, by observing the success of the Haidian District in promoting economic growth through HTIPs, the Fengtai and other district governments in Beijing followed suit to uphold the HTIP in affiliating it with the label ZGC.

In contrast to Beijing's case, Shanghai's Yangpu District, where the most prestigious universities in Shanghai resided, was almost totally ignored by the municipal government in its ambitious Pudong plan in the 1990s. It was the Yangpu District government that observed the success of ZGC and tried to utilize the banner of HTIP to collaborate closely with those universities to regenerate its local economy. Innovation centers and high-tech parks have thus become symbols for district governments to promote the construction of office buildings and lure commercial activities into the area. In the process, the real estate sector, along with the construction of HTIPs, has brought about the growth of the local economy. The Yangpu District government's efforts, however, seem to have had a greater effect on real estate than they did on the so-called knowledge-based economy.

The main factors that enable us to differentiate Yangpu from ZGC are timing and the effect of HTIPs. With regard to timing, it is obvious that Yangpu learned from the former success stories of the district governments of ZGC. Yangpu was discriminated against in Shanghai's ambitious Pudong project before 2000. Thanks to institutional reforms in the 1990s that gave district governments the power to develop their local economies, the Yangpu District government was able to utilize the HTIP banner to develop the local economy. This was very different from ZGC, which the city and central states supported from an initial stage.

Second, with regard to social and economic effects, the development of ZGC combined technological innovation more fully with the booming of the real estate sector than did the development of Yangpu. ZGC's development has been an evolutionary process through which various district governments in Beijing have been able to learn from the successful economic growth of the Haidian District by way of establishing an HTIP. Nevertheless, while the Haidian District has been a dynamic region in terms of technological innovation (Zhou 2005, 2008), its followers have not necessarily been able to achieve the same level of technological development. For example, in 2007, the revenues of the semiconductor chip design and software industries in ZGC contributed about one-third of the income of these two sectors in China

(ZGCAO 2008, 13–14); In addition, in the past five years, ZGC owned over 20 percent of the granted patents in the whole country; in which, Haidian District alone contributed almost 61 percent of this portion.¹⁷ Indeed, compared to ZGC's excellent performance, the Yangpu case is simply an example of a district government intending to develop the local economy by using the HTIP label. Until recently, the development of the real estate sector has been much more successful than that of technological innovation. Most of the technological development in Shanghai continues to be concentrated in Zhangjiang as opposed to Yangpu, in which Wujiaochang KIC has looked more like a property-led project than a real innovation center.

Currently, the HTIP label is an attractive commodity, and a label that can be sold. An interesting development in China now is that the ZGC label has been extended beyond the territory of Beijing city. Currently, the ZGC administrative office is working with the Hebei and Liaoning provincial and Tianjin city governments to create more ZGC zones in those places in order to generate economic value based on the label and to enhance technological development in those places.¹⁸ ZGC as China's Silicon Valley has now become a symbol in campaigning for economic development all over the country. Shanghai's district governments have also established affiliated HTIPs in other provinces to promote economic development. The HTIP label has become a fictive commodity that can be sold and extended to the rest of China to lure district governments to join the high-tech-led development game.

However, there are dim sides to the dazzling HTIP phenomenon. First, the booming of the real estate market has created an environment in which it is difficult for small- and medium- sized enterprises to survive. This is because the district governments have been more interested in luring multinational corporations' or big companies' headquarters to inhabit the zones, and the rents and prices of the land have been escalating so that small venture firms have been forced to escape from the city centers where the universities and R&D institutes are concentrated. This in turn has enhanced the image of the HTIP as creating good business environments rather than constructing innovation milieus. The booming of the real estate sector is similar to other high-tech industrial parks in other places of the world—for example, Silicon Valley in the United States or the Hsinchu Science Park in Taiwan. Nevertheless, whereas in the latter cases abundant venture capital is available

to help emerging small science firms survive and even become technological leaders in the world market, ZGC lacks this type of linkage, a type of innovation milieu that has not yet been established in China (Zhou 2008, Leng and Wang, forthcoming). Second, the resettlement of the inhabitants in the planned areas has often created resentment on the part of the local population toward the zones because the district governments' compensation fees were too low for local people to survive. As shown in the Fengtai case, many local people are still living in slums where the land was planned but has not yet been developed.

Indeed, HTIPs have become a branding competition. However, as we have shown, this branding game has been favorable to the property-led development of urbanization. As long as the branding of the HTIP, regardless of whether it is ZGC or the headquarter economy, can effectively generate successful economic growth for the local economy, space will be produced and reorganized along with the property-led development approach in China in the foreseeable future.

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NOTES

1. The number of nationally recognized HTIPs has increased over the years; there were 88 zones as of 2011.
2. There are 68 universities (including China's most prestigious universities, Peking and Tsinghua); 213 state-sponsored R&D institutes (including the Chinese Academy of Sciences); and over 300,000 students in Beijing (ZGCAO 2008).
3. Interview with Beijing officer, May 9, 2011.

4. Data adapted from http://www1.ce.cn/cysc/fdc/fc/201009/19/t20100919_20505782.shtml. Accessed on September 19, 2010.
5. Data adapted from http://www1.ce.cn/cysc/fdc/fc/201009/13/t20100913_20501044.shtml. Accessed on September 13, 2010.
6. H. Chen (2007).
7. Interview with Beijing official, January 20, 2011.
8. Interview with Beijing manager, November 15, 2008.
9. For a more detailed analysis of institutional innovation and tri-party interaction, please refer to Leng and Wang (forthcoming).
10. Yangpu interview, February 11–13, 2009.
11. See <http://www.cqcb.com/cbnews/instant/20110-1-08/800765.html>. Accessed on April 11, 2011.
12. In June 2007, a piece of land in the New Jiangwan Township reached the price of 12,509 yuan per square meter. The price was 6,677 yuan seven months earlier. See <http://news.sina.com.cn/c/2007-07-04/093113372324.shtml>. Accessed on April 10, 2011.
13. Data adapted from <http://news.eastday.com/epublish/gb/paper224/1/class022400001/hwz778163.htm>. Accessed on April 10, 2011.
14. Yangpu interview, February 12, 2009.
15. Data adapted from <http://sd.zhaoshang-sh.com/zsdt/133550822.html>. Accessed on April 5, 2011.
16. Yangpu interviews, January 15, 2011.
17. *Beijing News*, August 15, 2011, http://big5.xinhuanet.com/gate/big5/www.bj.xinhuanet.com/2011-08/15/content_23459532.htm. Accessed on November 5, 2011.
18. Data adapted from <http://report.qianlong.com/33378/2011/03/05/1060@6694853.htm>. Accessed on March 5, 2011.

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