



Historic Conservation Area Policy and Partial Shrinkage in an Expanding Megacity in China: Microscale Study of 9 *Jiedao* with 14 Historic Conservation Areas in Old Liwan, Guangzhou, China

Rui Li¹ and Jiang Feng²

Abstract: Historic conservation is closely connected with the phenomenon of partial shrinkage in the rapidly developing megacity of Guangzhou. Nine *jiedao* (subdistricts) including 14 historic conservation areas in old Liwan were selected to observe the shrinkage phenomenon from four aspects, namely, the population growth rate, population aging, economic growth, and vitality of public life. The relationships between old Liwan and changes in the city's development strategy and between conservation policies and urban renewal operations were explored by tracking three stages of shrinkage. Findings show that shrinkage in *jiedao* with HCAs in growing megacities was not caused by historic conservation but one of the results of complicated relationship. This study played a vital role in clarifying the partial shrinkage in the historic conservation areas in developing Asian megacities at the microscale while providing a reference for urban planning and policy making. DOI: [10.1061/\(ASCE\)UP.1943-5444.0000667](https://doi.org/10.1061/(ASCE)UP.1943-5444.0000667). © 2021 American Society of Civil Engineers.

Author keywords: Partial shrinkage; Historic conservation area (HCA); Old Liwan; *Jiedao* (subdistrict); Conservation policy.

Introduction

The *shrinking city* phenomenon is widely observed at multiple urban scales, including individual parts of a city (Martinez-Fernandez et al. 2012). Shrinkage in historic centers is considered as a typical form of partial shrinkage. The relationship between such shrinkage and historic conservation has gradually attracted the attention of scholars worldwide (Haase et al. 2016). In the 1960s, threats to historic centers or urban quarters triggered protective actions (Dorati 2005). The phenomenon of the decay, vacancy, and abandonment of old buildings in historic urban areas (HUAs) has increased. Many historic centers in cities worldwide are at the brink of deterioration or even total destruction (Barvika et al. 2018) and in a drastic urban transformation (Koramaz 2018). *Recommendation Concerning the Safeguarding and Contemporary Role of Historic Areas* (UNESCO 1976) emphasizes that the safeguarding of historic areas and their integration into life in contemporary societies should be the fundamental goals of town planning and land development. Moreover, *Charter for the Conservation of Historic Towns and Urban Areas* (ICOMOS 1987) stated that the protection, conservation, and restoration of historic towns and areas are related to their development and harmonious adaptation into contemporary life. These guidelines

have since become the foundation for the protection of HUAs in the Western world.

Researchers recently focused on the effects of historic conservation on and its role in the revitalization of shrinking cities (ACHP 2014; Ryberg-Webster 2016), as well as the approaches for right-sizing planning, neighborhood reconstruction, selective demolition, and land use in shrinking cities (Mallach 2011; Hackworth 2016; Ryberg-Webster 2016; Tintèra et al. 2018). Compared with shrinkage in the Western world, shrinkage in China has distinct causes and proceeds through stages (Großmann et al. 2013; Long and Gao 2019). A total of 798 shrinking cities are identified in China, and only 5% of which can be classified as complete shrinkage (Jiang et al. 2020). Growth dominates in the Pearl River Delta (PRD) region, where urban shrinkage is an issue at the regional scale (Lang et al. 2020). Megacities in China continue to be rapidly urbanization are encountering "overall growth, local shrinkage" (Shan et al. 2020). A proportion of partial shrinkage can be ascribed directly to state-run planned resettlement programs (Li and Mykhnenko 2018). Many areas experiencing partial shrinkage overlap with HUAs. However, the literature on microscale partial shrinkage in growing cities is lacking, and studies on the relationship between historic conservation and partial shrinkage are scarce. Consequently, the extent to which historic conservation and changes in urban development strategies affect partial shrinkage in growing Chinese cities remains unclear.

A three-tier hierarchy exists in China's conservation system for National Historic Cities, that is, HUA, historic conservation areas (HCAs), and protected buildings, including cultural relics and historic buildings (CPGPRC 2008). Most HUAs in China are incomplete morphologically, and the conservation regulations for HUAs are not strongly enforced. Meanwhile, preserved buildings are too small and too widely scattered to play a role in halting partial shrinkage in cities. Therefore, HCAs have become the most effective protection mechanism for the conservation of entire historic sites. In studies on the relationship between historic conservation and shrinkage in cities in China, HCAs and *jiedao* (subdistricts) are closely matched in terms of scale.

¹Ph.D. Candidate, School of Architecture, South China Univ. of Technology, No. 381, Wushan Rd., Guangzhou, 510640 Guangdong Province, China. Email: lrleexh@outlook.com

²Professor, School of Architecture & State Key Laboratory of Subtropical Building Science, Research Center of Architectural History & Culture, South China Univ. of Technology, No. 381, Wushan Rd., Guangzhou, 510640 Guangdong Province, China (corresponding author). Email: jfeng@scut.edu.cn

Note. This manuscript was submitted on October 16, 2019; approved on November 9, 2020; published online on February 18, 2021. Discussion period open until July 18, 2021; separate discussions must be submitted for individual papers. This paper is part of the *Journal of Urban Planning and Development*, © ASCE, ISSN 0733-9488.

Guangzhou (formerly Canton), which is the most important city in the PRD that continues to experience rapid growth and known as a megacity in the developing world, is experiencing partial shrinkage in the *jiedao* located in the HUA, namely, Lingnan, Shamian (also known as Shameen), and Beijing Road (Li et al. 2015). As a basic administrative unit, the *jiedao* is useful for analyzing the political dimension of China's urbanization (Wu et al. 2015). Moreover, *jiedao* examinations are indispensable in the full microscale interpretation of partial shrinkage in HUAs in the country. HUAs in Chinese metropolises have undergone varying degrees of destruction owing to urbanization in the past 40 years and cannot be regarded as a whole; thus, in this study, the 9 *jiedao* with 14 HCAs in the Liwan District of Guangzhou are considered to constitute the basic unit for discussing the relationship between historic conservation and partial shrinkage in HUAs in Chinese megacities.

First, studies on partial shrinkage and historic conservation conducted internationally and in China are introduced. Next, the study area and its historical background are described. Thereafter, the demographics, economic data, maps, and aerial images of the 9 *jiedao* with 14 HCAs in old Liwan are analyzed during three periods (1982–1999, 1999–2010, and after 2010), and the dynamic relationship between partial shrinkage and historic conservation in this growing megacity is revealed. Finally, conclusions and discussions, as well as suggestion on revitalizing the HCAs, are provided.

Literature Review

Partial Shrinkage in Historic Centers of Megacities

A shrinking city can be defined as “an urban area—a city, part of a city, an entire metropolitan area or a town—that has experienced population loss, economic downturn, employment decline, and social problems as symptoms of a structure crisis” (Martinez-Fernandez et al. 2012). Previous definitions focused more on the overall magnitude of population loss (Bernt 2016) than the spatial levels of its occurrence. Thus, in these definitions, the rapid development of megacities may conceal the partial shrinkage phenomenon in historic centers. In studies on shrinking cities in China, scholars noticed the occurrence of partial shrinkage in multiple cities, including in the Beijing–Tianjin–Hebei region, the Yangtze River Delta (Shan et al. 2020), and the PRD (Lang et al. 2020; Du et al. 2019; Li et al. 2015).

In China, shrinkage, especially partial shrinkage, is heavily influenced by the government policies and decisions. Li and Mykhnenko (2018) classified the shrinkage phenomenon in China as complete shrinkage and partial shrinkage. Partial shrinkage, *with some sections of the city shrinking and others growing*, is the most widely encountered urban shrinkage morphology in China. Partial shrinkage in rapidly expanding megacities, including the Chongwen and Xicheng Districts of Beijing, the Heping District of Tianjin, and the Luwan, Jing'an, and Hongkou Districts of Shanghai, is led by local government policies related to dedensification, population structure adjustment, and the functional upgrading of city centers. In the future, the shrinkage trends will be promoted by urban development plans.

The aforementioned districts are located in historic centers and occupied by numerous HCAs, such as Dongcheng (including Chongwen, 18.5 HCAs), Xicheng (14.5 HCAs), Heping (8 HCAs), Luwan (1 HCA), Jingan (3 HCAs), and Hongkou (3 HCAs). Intervention resettlement policies and programs causing partial shrinkage are accompanied by the demolition of many historic centers and rapid changes in urban spaces. However, the

population, economy, and urban vitality of these areas have yet to be analyzed and elucidated at the microscale.

Meanwhile, Guangzhou experienced continuous economic and population growth since the reform and opening-up in 1978. Nevertheless, the historic center, specifically, several *jiedao* of the Liwan District, such as in the Shamian and Lingnan *jiedao* mentioned previously, experienced significant population shrinkage in the recent decades (Li et al. 2015). The jurisdictions of both *jiedao* contains HCAs, but few analyses of the phenomenon are reported.

In summary, the partial shrinkage phenomenon of megacities is often concealed under rapid overall growth. Meanwhile, the social and spatial effects of shrinkage caused by various government policies have yet to be fully understood. Further analysis and explanation on the relationship between partial shrinkage and HCAs can help us to reunderstand shrinkage as a dynamic process rather than a static state.

Historic Conservation in Shrinking Cities

Historic conservation can offer opportunities for redeveloping shrinking cities (Ryberg-Webster and Kinahan 2014). Nevertheless, reversing the degradation cycle of historic centers is extremely difficult (Pipa et al. 2017). At the same time, the *growth machine* strategy of urban economic redevelopment poses challenges to conservation (Saito 2009). Discussions on historic conservation dilemmas in shrinking Western cities focus mainly on dealing with vacant historic buildings caused by the imbalance in housing supply after population shrinkage. Reduced tax receipts make providing funds to protect historic buildings difficult (Ryberg-Webster and Kinahan 2014). Vacant historic buildings can easily become magnets for crime, and their state of disrepair poses high safety risks (Hackworth 2016). Therefore, the choice between the preservation or demolition of historic buildings remains under debate (Tintèra et al. 2018; Hackworth 2016; Mallach 2011), as urban planners aim to achieve *rightsizing* in these areas (ACHP 2014). Ryberg-Webster (2016) noted that although “shrinking cities also have rich heritages and historic fabric that can support revitalization,” the traditional preservation approaches may not be appropriate for shrinking cities.

As discussed previously, shrinkage in Western cities raises a dilemma for historic conservation and differs from the outcomes of the rapid development of cities in China. Since the enactment of the *Law of the People's Republic of China on Protection of Cultural Relics* and establishment of the National Famous Historical and Cultural Cities conservation system in 1982, the conservation of entire historic cities in China has become possible. Conservation implies increased restrictions on development, redevelopment, and construction. In the growth context, redevelopment activities led by local governments and private developers to *maximize economic returns* pose challenges to conservation (Zhai and Ng 2013). Although the concept of HCAs was first introduced in 1986 to establish a balance between conservation and redevelopment (Whitehand and Gu 2007), the regulation legally establishing the conservation of certain unspoiled HUAs in Guangzhou was passed until 1999.

Tintèra et al. (2018) noted that “conservation alone cannot be seen as a driver of shrinkage or as the complete solution for urban regeneration of shrinking cities,” and Bernt (2016) called for an understanding of shrinking cities as “ensembles of historically changing socio-spatial relations.” The case of *jiedao* in Guangzhou can provide an effective observation unit for understanding the dynamic relationship between partial shrinkage and

historic conservation in rapidly growing cities, which is a common phenomenon in China.

Study Area and Historic Background

HCA and Nine Jiedao in Old Liwan in Guangzhou

Guangzhou [Fig. 1(a)], with 14.49 million residents in 2017 within a 7,434.40 km² administrative area and a 1.90% annual population growth rate from 2000 to 2017, is among the first batch of 24 National Historic Cities in China. As a typical case of modern Chinese urbanism, involving the introduction of a housing market, urban spatial restructuring, gentrification, and historic conservation, Guangzhou has received extensive attention (Lu and McCarthy 2008; He 2012; Zhang et al. 2014; Tan and Altrock 2016).

The HUA in Guangzhou spans three districts, Yuexiu, Liwan, and Haizhu Districts [Figs. 1(b and c)]. Among the 26 HCAs in Guangzhou, 14 are distributed within the 6 *jiedao* in old Liwan,

namely, Shamian, Lingnan, Hualin, Fengyuan, Duobao, and Changhua (Table 1 and Fig. 2). Old Liwan, which covers nine *jiedao* (the six mentioned previously and Longjin, Jinhua, and Caihong), has the most HCAs in Guangzhou, with a total area of 234.42 ha, accounting for 30.37% of the total land area of its *jiedao*. Therefore, old Liwan is a representative study object for investigating the relationship between HCAs and partial shrinkage.

Source

Although the definition of a shrinking city has many variations, population loss is the most common characteristic. In addition, economic downturn and social problems are among the signs of shrinkage (Martinez-Fernandez et al. 2012). This study uses both population data from the censuses and statistical yearbooks and the benchmark land value as criteria to indicate the economic development of the *jiedao*. Meanwhile, the aging population and vitality of public life serve as observable indicators of social problems.

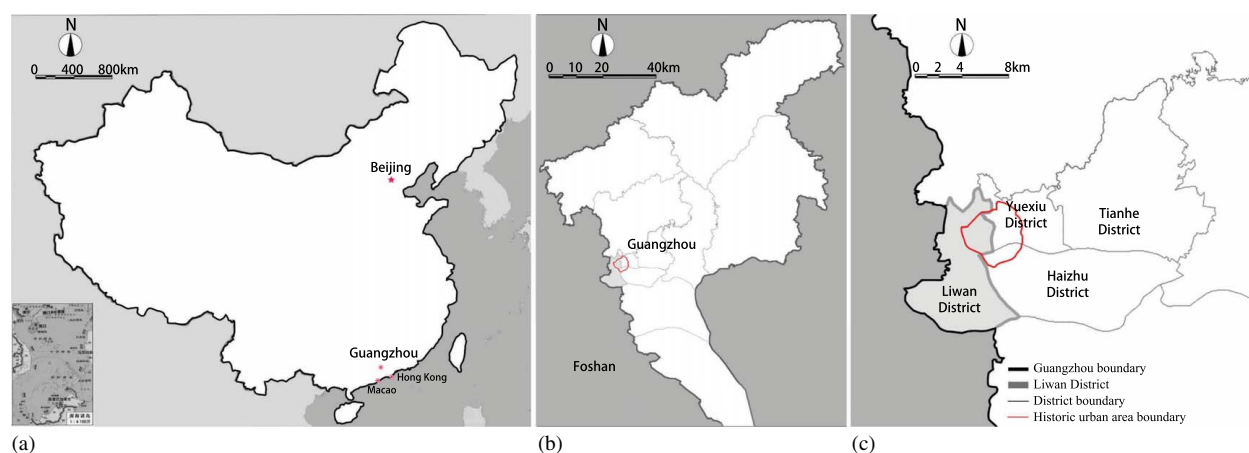


Fig. 1. Location of Guangzhou and Liwan District: (a) location of Guangzhou in China; (b) location of Liwan District and historic urban area of Guangzhou; and (c) scope of historic urban area in Liwan, Yuexiu, and Haizhu Districts.

Table 1. HCAs in Liwan

Number	HCA		<i>Jiedao</i>	
	Name	Area (ha)	Name	Land area (ha)
1	Shamian HCA	38.62	Shamian	30
2	Shangxiajiu and Dishu Fu HCA (16.29 ha)	16.29	Lingnan	75
			Hualin	72
3	Yaohua Street HCA	8.28	Lingnan	75
4	Renmin Nan HCA	39.57	Fengyuan	72
5	Fengyuan Street–Liwan Lake HCA	51.95	Lingnan in Liwan, Renmin, Shishu, and Daxin in Yuexiu	
6	Changhua Street HCA	6.05	Changhua	162
7	Baoyuan Road HCA	9.53	Fengyuan	72
			Changhua	162
			Fengyuan	72
			Duobao	86
8	Duobao Road HCA	11.94	Duobao	86
9	Baohua Road HCA	7.93	Hualin	72
10	Hualin Temple HCA	9.08	Hualin	72
11	Heping Zhong HCA	9.14	Lingnan	75
12	Guangfu Nan HCA	17.07	Lingnan	75
13	Guangfu Zhong HCA	8.04	Hualin	72
14	Enning Road HCA	16.00	Changhua	162
			Duobao	86

Source: Data from GLDBS (2018) and BUPGM (2014).

Note: The Shamian HCA includes water bodies, which are not included in the land area of Shamian.

The administrative boundaries of the *jiedao* in old Liwan were adjusted during the 1980s and 1990s; thus, older divisions are inconsistent with recent statistical data. Therefore, relevant studies and aerial images are used to understand the historical processes. In this study, the shrinkage phenomenon in the examined HUAs mainly includes the annual growth rate of the population, the proportion of the aging population, economic growth, and the vitality of public life.

Annual growth rate of the household population (HP: R_h) and resident population (RP: R_r): Shrinkage is defined as $0\% > R_{h/r}$, and long-term shrinkage is defined as $-0.719\% > R_{h/r}$ (Weaver et al. 2017). In addition, $R = (\sqrt[p_i/p_0]{p_i/p_0} - 1) \times 100\%$, where p_0 = initial population; and p_t = population after t years. HP refers to citizens with an official registration (also known as the *huj*i population) in the Ministry of Public Security. RP refers to citizens staying in a city or town for more than six months in a year (also known as the long-stay population).

Aging HP proportion (A_h) and aging RP proportion (A_r): A is the proportion of the population older than 60 years. A high probability of shrinkage is inferred when A in $Y_t > A$ in Y_0 . Moreover, Y_t is the year after Y_0 .

Economic growth: Benchmark land values and rents are introduced as auxiliary indicators because GDP data are unavailable at the *jiedao* level.

Vitality of public life: This factor depends mainly on the allocation and use of public facilities and public spaces. Maintenance standards of streets and buildings are related to investments in and management of municipal facilities.

Shaping of Old Liwan (before the 1980s)

In the past, old Liwan, where the nine *jiedao* are located, was generally called *Sai Kwan* in Cantonese. Historically, the urban morphology of *Sai Kwan* developed mainly from the Ming (1368–1644) and Qing (1644–1911) dynasties to the Republic of China period (1912–1949). Old Liwan continued to expand westward from the western wall (presently the route of Renmin Road). During the *Canton system* (1757–1842), Guangzhou was the only port in China open legally to Western foreign trade. Along the Pearl River outside the western wall of the city, the Thirteen Factories were established. Commercial districts were developed in the north, and near the West Canal, textile factories were gradually built. Baohua, Baoyuan, Yaohua, Fengyuan, and Duobao were inhabited by rich merchants, whereas the Puntoon area remained dominated by private gardens, rice fields, ponds, and villages [Fig. 3(a)]. After numerous interruptions and substantial remodeling, the urban background and the spatial structure of the current HCAs in old Liwan were established by the end of the Republic of China and at the beginning of the People Republic China era. Fig. 3(b) shows the boundaries of the built area in 1955.

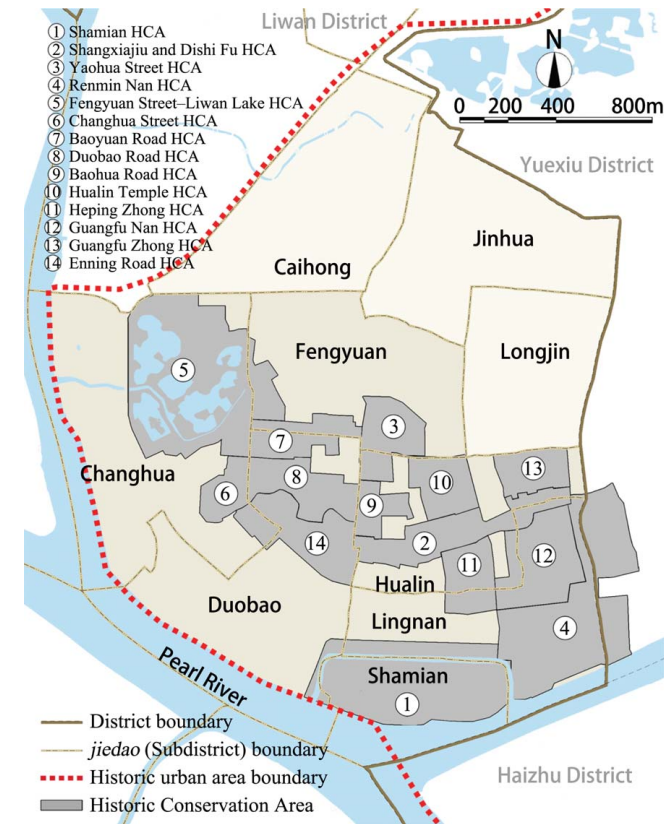


Fig. 2. Distribution of historic conservation areas and *jiedao* in old Liwan. (Adapted from BUPGM 2014.)

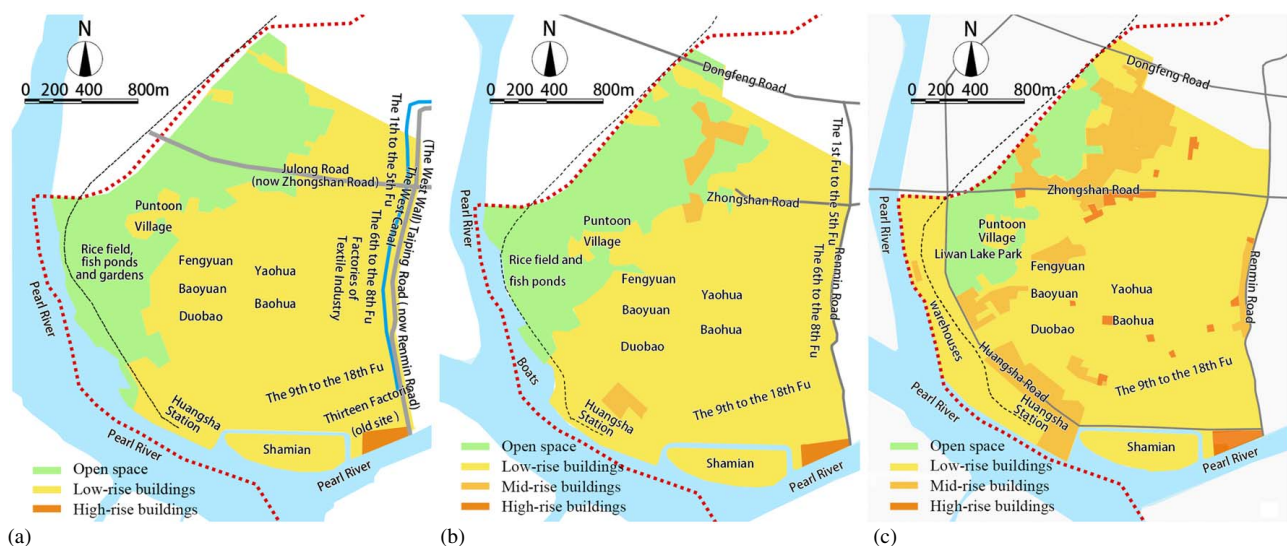


Fig. 3. Scope of old Liwan built area in (a) 1937; (b) 1955; and (c) 1978. (Adapted from GUPB and GUDA 2010.)

From the 1950s to the 1980s, rice fields and ponds in the plains of old Liwan were taken over for construction. The area along the riverbank beside Huangsha Road was occupied by factories and warehouses. Liwan Lake Park was built in 1958, which contributed to the vibrant urban life. Fig. 3(c) presents the southern end of Zhongshan Road, which was nearly entirely covered by urbanized construction by 1978.

Relationship between Shrinkage, Conservation, and the Urban Development Strategy during the Three Periods

First Stage: Beginning of Shrinkage and the Absence of Conservation Measures (1982–1999)

Guangzhou was listed as a National Famous Historical and Cultural City of China in 1982. Before the *Regulation on the Protection of the Historic City of Guangzhou* was promulgated in 1999, no dedicated department and practical measures based on accepted conservation policies existed to protect old Liwan. Demographic studies showed that the issue of population shrinkage in several *jiedao* in old Liwan emerged during the 1980s and 1990s (Zhang 1994) before the establishment of the HCA policy in Guangzhou. By this time, population aging in these areas has emerged. The population of old Liwan began to show sustained negative growth in the 1990s. According to population census data, the R_r of old Liwan was -2.30% (Table 2), and the R_r of the six *jiedao* with HCAs was -3.13% from 1990 to 2000. The RP density of old Liwan was 56,570 people/km² in 1990 and 44,842 people/km² in 2000 (OPCGLD 1991, 2002). Although the density declined, the RP density of Fengyuan still remained 75,040 people/km² in 2000 (OPCGLD 2002). Per capita living space was far below the comfortable level. Moreover, most buildings had only two to four floors, with space seeming overcrowded.

Since the reform and opening-up in 1978, the focus of Guangzhou's overall urban construction has moved eastward to the Yuexiu and Tianhe Districts. In the face of factors such as excessive building density, overcrowding, and saturated construction land, depopulation occurred in certain areas, especially in the *jiedao* including HCAs. Compared with Guangzhou, in the city of Foshan, which is adjacent to Guangzhou and listed among the third batch of National Historic Cities in 1994, the progress of the conservation of its HUA (2.21 km²) stalled before 2000 owing to frozen preservation. Its streets and buildings have

Table 2. RP of Nine *Jiedao* in 1990 and 2000

<i>Jiedao</i>	RP		R_r (%)
	1990	2000	
Shamian	6,235	4,456	-3.30
Lingnan	60,939	34,699	-5.48
Hualin	94,249	48,404	-6.45
Duobao	27,055	37,035	3.19
Changhua	35,149	33,327	-0.53
Fengyuan	67,685	54,029	-2.23
Longjin	55,743	39,517	-3.38
Jinhua	54,458	49,803	-0.89
Caihong	35,210	44,911	2.46
Total	436,723	346,181	-2.30

Source: Data from OPCGLD (1991, 2002).

Note: *Jiedao* in 1990 are adjusted according to information from 2000. RP = resident population; R_r = annual growth rate of resident population; and R_r calculated by authors.

gradually declined, and the vitality of its HCA continued to weaken. Unlike Foshan, Guangzhou did not immediately suspend development and construction in its HUA when it became a National Historic City. In the 1990s, the construction of Metro Line 1 and widening of Kangwang Road commenced. Accordingly, high-rise buildings were erected above the metro stations and along Kangwang Road. The process of demolition and reconstruction processes did not reverse population shrinkage in Longjin, Hualin, Lingnan, and Fengyuan through which Kangwang Road and Metro Line 1 pass. On the contrary, the high-rise buildings destroyed and changed the topography and texture of the HUA, leaving the old, high-density buildings behind them in sunken land with serious waterlogging problems. Moreover, many high-rise building projects were abandoned by private developers owing to bankruptcy, thereby becoming rundown and crime-ridden. Fig. 4 shows the high-rise buildings along Kangwang Road and Metro Line 1. Most of the high-rise buildings were built before or under construction in 2000. Some buildings were built after 2000 despite their sites being approved for construction before that year.

The potential risk of population shrinkage in old Liwan was first raised in the 1980s. As trends accelerated, the population began to shrink in the 1990s. Data on population changes and images show that the shrinkage in old Liwan is related to the scarcity of construction land. The demolition of historic buildings and construction of new high rises were the chosen urban development strategy. During the 1990s, the Guangzhou government attempted to use metro construction to drive redevelopment in old Liwan. However, these strategies did not prevent the occurrence of decline and shrinkage in old Liwan. The real estate redevelopment model for promoting the transformation of the HUA in Guangzhou was abandoned in 1999.

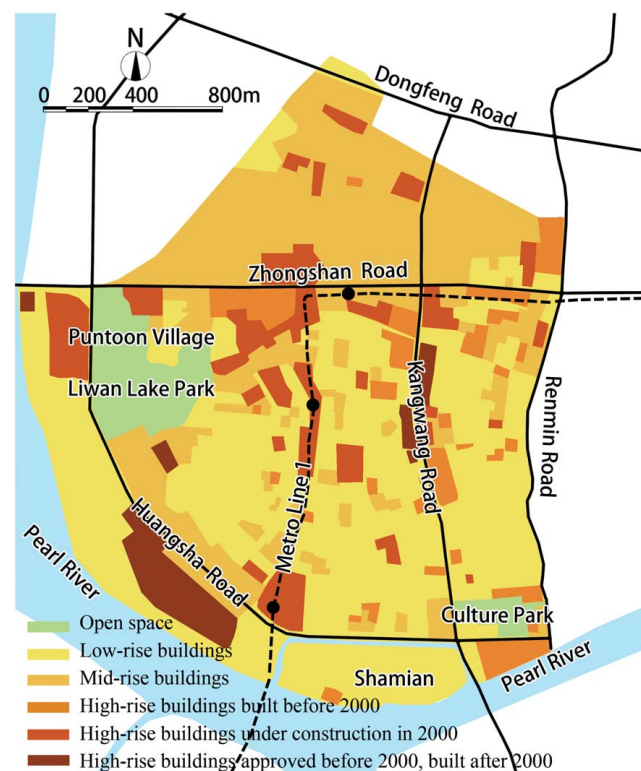


Fig. 4. High-rise buildings along Kangwang Road and Metro Line 1. (Base map data ©2020 Imagery ©2020, CNES/Airbus, Landsat/Copernicus, Maxar Technologies.)

Second Stage: Aggravation of Shrinkage by the Development Strategy and Frozen Preservation (1999–2010)

Census data from 2000 to 2010 (OPCGLD 2002; GLDBS and OSPCGLD 2012) indicated overall shrinkage in old Liwan. The total HP of the nine *jiedao* was larger than the RP, but the shrinkage in the R_h (-0.78%) was more severe than that in R_r (-0.34%). R_h and R_r of the six *jiedao* with HCAs were -1.10% and -1.15% , respectively. Lingnan (R_h : -1.87% , R_r : -3.14%), Hualin (R_h : -2.12% , R_r : -1.11%), and Duobao (R_h : -1.32% , R_r : -2.16%) experienced long-term shrinkage in the HP and RP. Shamian (R_h : 0.15% , R_r : -3.54%), Changhua (R_h : 0.64% , R_r : -0.69%), and Fengyuan (R_h : -0.45% , R_r : 0.41%) also experienced shrinkage. In terms of the three *jiedao* without HCAs, Caihong (R_h : 1.64% , R_r : 1.69%) maintained its population growth, whereas both Longjin (R_h : -1.29% , R_r : 0.23%) and Jinhua (R_h : -0.53% , R_r : 0.49%) experienced HP shrinkage problems. Table 3 demonstrates that the population of the nine *jiedao* in old Liwan experienced slow growth, stagnation, and even shrinkage. Meanwhile, the six *jiedao* with HCAs experienced the most pronounced shrinkage.

Simultaneously, the nine *jiedao* experienced accelerated population aging. As per the United Nations population age structure criteria, if the proportion of the population older than 60 years exceeds 10%, then an area is identified as an aging society. From 2000 to 2010, the proportion of China's aging population increased from 10.3% to 13.3%. In Guangzhou, the corresponding increase was from 8.75% to 9.74%. The degree of aging within the nine *jiedao* in old Liwan was highly significant, with A_r accounting for 16.74% in 2000 and 17.81% in 2010. A_r of six *jiedao* increased from 17.16% in 2000 to 17.88% in 2010. Meanwhile, A_r of Shamian reached 20.53% in 2010 (OPCGLD 2002; GLDBS and OSPCGLD 2012).

In terms of the value of commercial land in old Liwan relative to the benchmark land value of Guangzhou as a whole in 2007 and 2009, old Liwan was divided into two parts separated by the Datong Road, Baohua Road, and Huagui Road. Fig. 5 shows that the eastern side, with a concentrated commercial area (e.g., Shangxiajiu Pedestrian Street), was classified as Level II, and the western side was classified as Level V. During the 2008 economic crisis, the commercial land value of old Liwan continued to increase. However, the growth rate was unbalanced. Land value on the eastern side rose from 12,758 to 14,626 yuan/m², with a growth rate of 14.64%, whereas that on the western side increased from 5,373 to 5,466 yuan/m², with a growth rate of 1.73% (GMBPNR

Table 3. HP and RP of Nine *Jiedao* in 2000 and 2010

<i>Jiedao</i>	HP			RP		
	2000	2010	R_h (%)	2000	2010	R_r (%)
Shamian	4,831	4,904	0.15	4,456	3,108	-3.54
Lingnan	49,228	40,752	-1.87	34,699	25,221	-3.14
Hualin	61,663	49,774	-2.12	48,404	43,292	-1.11
Duobao	45,506	39,829	-1.32	37,035	29,784	-2.16
Changhua	30,166	32,138	0.64	33,327	31,087	-0.69
Fengyuan	62,956	60,206	-0.45	54,029	56,275	0.41
Longjin	53,573	47,060	-1.29	39,517	40,419	0.23
Jinhua	55,456	52,585	-0.53	49,803	52,297	0.49
Caihong	34,504	40,600	1.64	44,911	53,119	1.69
Total	397,883	367,848	-0.78	346,181	334,602	-0.34

Source: Data from OPCGLD (2002), GLDBS and OSPCGLD (2012).

Note: HP = household population; RP = resident population; R_h = annual growth rate of household population; R_r = annual growth rate of resident population; and R_h and R_r calculated by authors.

2019). The growth rate of the consumer price index (CPI) of Guangdong Province was 5.6% in 2008 and -2.3% in 2009 (SONBSG 2010). The CPI growth rate difference between 2007 and 2009 was 3.2%. The land value growth rate of the western side of old Liwan was lower than the CPI growth rate, which indicates shrinkage.

Owing to the lack of available construction land and new infrastructure, public facilities in this region can only be built by appropriating the original public land used by schools and government agencies. Before 2010, public green spaces and public buildings were scarce in this area. The HCAs included nearly no public green spaces other than Shamian Island, Liwan Lake Park, and Guangzhou Culture Park. Therefore, despite population and economic growth in Guangzhou and the Liwan District, the *jiedao* in Liwan in the HUA, especially those with HCAs, display multiple signs of shrinkage, including depopulation, an aging population, unbalanced economic development, and reduced environmental investment.

Since 2000, Guangzhou's urban development strategic planning can be condensed to the four-direction strategy of *expanding southward, optimizing northward, enlarging eastward, and linking westward*. The principle states that: *new district construction drives the transformation of old urban areas*. In 2003, Zhujiang New Town in the Tianhe District was officially designated as Guangzhou's new central business district. In 2005, as part of Guangzhou's comprehensive planning process, the city adopted a *leapfrog* development model by planning a new town in eastern Guangzhou to protect the historic city and shelve the constructions in old Liwan. In 2006, the new *Central Region Adjustment* strategy was introduced into the established policy to *make better, higher, stronger, and vigorous improvements*, thereby reincorporating the regeneration of the HCA into the overall development plan for the whole of

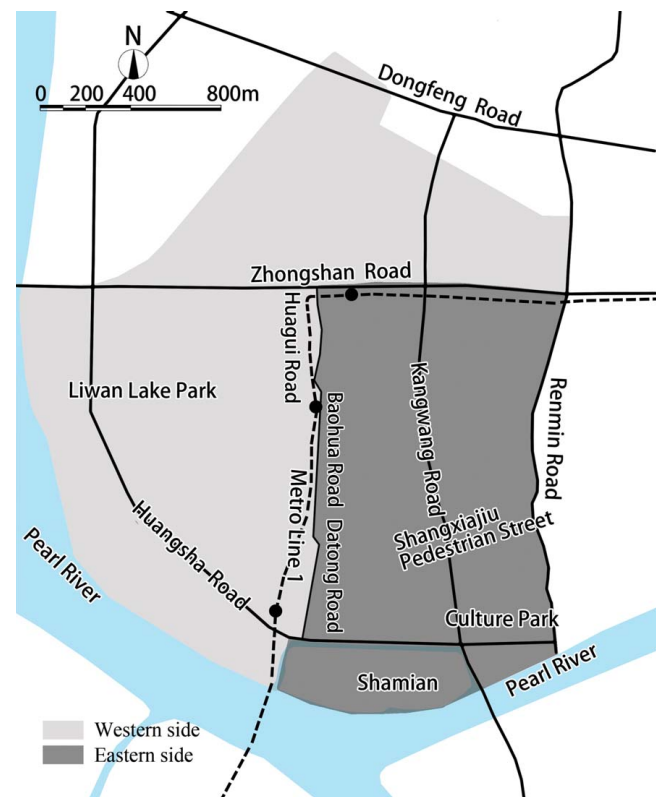


Fig. 5. Grade of commercial benchmark land value in old Liwan. (Adapted from GMBPNR.)

Guangzhou (He 2012). During this period, the issue of population decline and aging in old Liwan, which has a strong connection with social structure and space, became increasingly prominent. Reforms in the housing market enabled private developers to offer housing (Li et al. 2010). However, complex ownership and population problems caused old Liwan to fall further into dilapidation.

The Historic City Conservation Office of Guangzhou was established in 1999. The Office promulgated the *Regulation on the Protection of the Historic City of Guangzhou* and launched the Conservation Planning of the Historic City and delimitation of historic conservation districts. In 2000, 16 Historic Conservation Districts and 21 candidate areas were identified by the Municipal Government of Guangzhou (PGGM 2000). These 37 conservation areas were the basis of the HCAs in conservation planning published in 2014.

Two main problems were encountered during this period. First, the regulations defined the concept and scope of Historic Conservation Districts but failed to outline conservation plans or specific conservation policies and supporting measures. Second, conservation was assigned to multiple government offices working collaboratively, with no dedicated department taking the lead role. Thus, the distribution of responsibilities for conservation was unclear.

As of 2010, nearly all HCAs had adopted the frozen preservation strategy to postpone demolition. The protection of HCAs accelerated shrinkage. Throughout the process, the development of old Liwan was deliberately circumvented to prevent extensive reconstruction, and new real estate development activities moved to the new districts.

Third Stage: Revitalization of the HCAs in 2010s

By taking the HCAs involved in two projects, that is, the Fengyuan Street–Liwan Lake HCA and Enning Road HCA, as the study object and considering the changes along these routes, we can witness economic growth and burgeoning regional vitality under the new conservation policy.

Since the *Three Olds* (also known as *sanjiu*, including the old factories, villages, and towns) regeneration policies proposed in 2009, the HCAs confronted incremental development opportunities and are no longer regarded as frozen preservation objects but resources that can support revitalization. The 2010 Asian Games in Guangzhou presented the local government with an opportunity to put its cultural and economic invigoration strategy into practice. The systematic rejuvenation project for the Litchi Bay Canal was launched to restore the historic landscape. The canal was

uncovered, and the pagoda was revealed. Its surrounding environment was renovated, and public spaces were revitalized (Feng and Chen 2019), providing a venue for traditional activities and improving the vitality of the area. In the Fengyuan Street–Liwan Lake HCA, several public facilities were erected, such as the Sai Kwan Food Museum and the He Xiangning Art Center. In addition, some warehouses and residential buildings were modified and transformed into antique markets. Fig. 6 shows the activities and daily life along Litchi Bay Canal.

Subsequently, the conservation strategy shifted to microregeneration. In 2007, the Enning Road Project was launched as a pilot project for Guangzhou's *Central Region Adjustment* strategy, and a project for rehabilitation of dilapidated houses was also initiated. In 2008, the government started expropriation and demolition. At the same time, the state promulgated the *Regulation on the Protection of Famous Historical and Cultural Cities, Towns and Villages*. The renovation of Enning Road aroused controversy over the conservation and development of HCAs (Tan and Altrock 2016).

In 2015, Guangzhou promulgated the *Urban Renewal Measures*, which emphasize that historic sites should not be the target of comprehensive demolition and reconstruction. The document states that partial renovation, or *microregeneration*, is ideal to maintain the overall urban pattern. Yongqing Lane, as the experimental site of the Enning Road HCA renovation project, was the first to adopt microregeneration initiatives. In 2018, General Secretary Xi Jinping visited Enning Road, which aroused an active societal interest in historic city regeneration and conservation of historical memory. The Cantonese Opera Art Museum in the Enning HCA opened in the same year. At the beginning of 2019, daily traffic in Yongqing Lane reached 10,000 people.

Another case of microregeneration is Puntoon Wuyue Village in the Fengyuan Street–Liwan Lake HCA. This project to improve the infrastructure, market, and open spaces of the community was realized owing to cooperation between the government and the villagers. In contrast to other regeneration programs, the Puntoon Wuyue Village relied on public capital for substantial spatial intervention. The Puntoon Wuyue Village Joint Creation Committee promoted the community-initiated adaptive reuse of historic buildings through the residents' participation in planning and design (Rui 2019). Although this regeneration process was long, it effectively improved the living environment of the residents and increased their participation.

As the vitality of the surroundings has improved, the population shrinkage trend of the *jiedao* around Litchi Bay Canal and Enning Road has begun to level off. The R_h value of Duobao and Fengyuan



Fig. 6. Images of Litchi Bay Canal: (a) locations of photos; (b) activities on Litchi Bay Canal during Dragon Boat Festival; (c) daily life on the Pagoda Plaza; (d) activities along Litchi Bay Canal during May day; (e) daily life along Litchi Bay Canal; and (f) daily practices on the Cantonese Opera Stage. [Images (b–f) by authors.]

was 0.24% from 2010 to 2017 (GLDBS 2011, 2018). This value contrasts with the 2000–2010 R_h values of -1.32% for Duobao and -0.45% for Fengyuan (OPCGLD 2002; GLDBS and OPSGLD 2012). However, Table 4 shows that shrinkage in Shamian, Lingnan, and Changhua aggravated during the same period.

The aging population remains a stubborn problem. Data on the A_r of the *jiedao* after 2010 are unavailable. Thus, the A_h in 2015 and 2017 is analyzed. The A_h of Guangzhou reached 17.27% in 2015 and 18.02% in 2017 (GBS 2016, 2018). The A_h accounted for 27.18% in 2015 and 30.43% in 2017 in the nine *jiedao*. In 2017, the highest percentage was 33.18% in the Lingnan *jiedao* (GLDBS 2016, 2018).

Economic growth can be reflected by the benchmark land value. From 2009 to 2015, the difference in land value between the eastern and western sides of old Liwan decreased. The commercial land value of the eastern side was upgraded from Level II to Level I and that of the western side jumped from Level V to Level II. In 2015 and 2017, the eastern side was classified as Level I, and the western side was classified as Level II. Specifically, the land value on the eastern side increased from 27,091 yuan/m² in 2015 to 33,186 yuan/m² in 2017, with a growth rate of 22.50%. Moreover, the land value on the western side increased from 21,996 in 2015 to 26,599 yuan/m² in 2017, with a growth rate of 20.93% (Table 5).

The benchmark land value reflects the economic status of an area along the entire length of a road, and rent prices can reflect the situation at the microlevel, thereby enabling the comparison of different areas along the same road. Therefore, indicative rent prices in 2015 and 2017 are also selected for comparison. Overall, the rent increased steadily but was heavily dependent on the location. The closer to the old commercial district on the eastern side, the higher the rent. For example, in 2017, the monthly rent was 130 yuan/m² on Baohua Road in the Fengyuan *jiedao*, 350 yuan/m² in the Doubao *jiedao*, and up to 450 yuan/m² in the Hualin *jiedao*. However, a different scenario emerged around Litchi Bay Canal. With an increase in open spaces in the Fengyuan *jiedao* owing to the regeneration of the HCA, the monthly rent in the Litchi Bay Canal area increased from 206 yuan/m² in 2015 to 217 yuan/m² in 2017,

whereas that in the Changhua *jiedao* declined from 150 yuan/m² in 2015 to 93 yuan/m² in 2017 (BHURDG 2015, 2017).

The Guangzhou government designated the first batch of Historic Buildings in 2012. Two years later, Guangzhou issued *Measures for the Protection of Historic Buildings and Historic Districts and Historic City Conservation Planning of Guangzhou* (BUPGM 2014), which delineated an HUA of 20.39 km², including 26 HCAs and 19 Historic Districts. A general requirement in HUAs is that the height of new buildings cannot exceed 30 m. Each HCA has a proprietary conservation plan, a delineated scope of protection, and specific provisions on the pattern, texture, style, and height of new buildings as well as prescribed measures for the preservation and renovation of existing buildings.

The frozen preservation strategy adopted during the period of 2000–2010 accelerated shrinkage in HCAs; thus, the strategic direction turned to value-centered and dynamic conservation. Value-centered preservation is an effective way to deal with the distinction between technical issues and strategic decision-making processes. Therefore, diverse values, including social and economic issues, must be incorporated into the practice of historic preservation (Mason 2006). According to the value-centered preservation theory, historic preservation and economic value are not binary opposites. Although measures and conservation planning ostensibly restrict construction, the HCAs could be renewed under the premise of conservation.

Although the value-centered and dynamic conservation strategies cannot rapidly reverse population shrinkage in this area, it is conducive to the recovery of economic and social vitality. In the age of incremental development in historic areas, HCAs are regarded as a new type of cultural, land, and commercial resource. The functional transformation and revival of intangible cultural heritage in linear or areal areas can be promoted together with the fostering of public life by rejuvenating the historical landscape, launching extensive microregeneration, increasing the allocation of public facilities, and introducing innovative and entrepreneurial spaces, thereby constituting driving forces for resisting partial shrinkage. The popularity of e-commerce exerts a considerable impact on traditional commercial zones, but HCAs provide in spatial experiences that cannot be replaced by virtual spaces. With the gradual introduction of highly effective incentive policies, the HCAs have become scarce *scenic* resources with innovative and entrepreneurial spaces catering to young people.

Table 4. HP of nine *Jiedao* in 2010 and 2017

<i>Jiedao</i>	HP		R_h (%)
	2010	2017	
Shamian	4,897	4,437	−1.40
Lingnan	40,523	34,871	−2.12
Hualin	49,488	43,656	−1.78
Duobao	39,671	40,337	0.24
Changhua	31,841	31,299	−0.24
Fengyuan	60,023	61,054	0.24
Longjin	46,896	44,778	−0.66
Jinhua	52,424	51,455	−0.27
Caihong	40,434	42,557	0.73
Total	366,197	354,444	−0.46

Source: Data from GLDBS (2011, 2018).

Note: HP = household population; R_h = annual growth rate of household population; and R_h calculated by authors. HP in 2010 differs from that in Table 3 owing to different statistic sources.

Conclusions and Discussion

This study introduces the *jiedao* dimension, which matches the characteristics of HCA and measurable parameters at a microscale, to discuss partial shrinkage in Chinese megacities by considering the case of Guangzhou. In this study, shrinkage can be measured using four indicators, namely, population growth rate, population aging, economic growth, and vitality of public life.

Through the microscale analysis of the development processes in old Liwan, three stages various dynamic relationships between partial shrinkage and historic conservation in Guangzhou are found. (1) The shrinkage phenomenon in old Liwan emerged before the area was designated as an HCA, and this emergence was

Table 5. Benchmark land value of eastern and western sides of Old Liwan in 2007, 2009, 2015, and 2017

Location	2007	2009	Level	Rate (%)	2015	2017	Level	Rate (%)
Eastern side	12,758	14,626	II	14.64	27,091	33,186	I	22.50
Western side	5,373	5,466	V	1.73	21,996	26,599	II	20.93

Source: Data from GMBPNR.

Note: Rates calculated by authors.

related to the lack of construction land and overcrowding. Without effective conservation laws and strategies, old Liwan underwent demolition and redevelopment, which did not effectively improve urban vitality or reverse the shrinkage. (2) Frozen preservation as a component of an urban development strategy curbed excessive construction and accelerated decline and shrinkage in which HCAs played an important role. (3) HCAs were considered as resources that can support revitalization through the use of value-centered conservation approaches with the *Three Olds* regeneration policy, urban renewal policy, and microregeneration projects, revitalizing HCAs and eliminating shrinkage gradually by improving living environment and reusing historic buildings under the premise of conservation.

Furthermore, three factors are found to cause shrinkage in HCAs. (1) Urban development strategies: In the period of incremental development, the development of new districts was accorded considerable priority in the process of urban sprawl. In government strategies and developers' choice of opportunities, HCAs were consciously ignored. (2) Conservation policies: The decline in the vitality of public spaces and aging of infrastructure and public facilities occurred when the frozen preservation of HCAs was adopted. (3) Reconstruction programs: Without careful consideration of HCA's characters, demolition and reconstruction isolated the *jiedao* with HCAs from the new buildings, thereby accelerating shrinkage. Heritage conservation alone cannot be considered a driver of shrinkage (Tintěra et al. 2018). This study concludes that shrinkage in *jiedao* with HCAs in growing megacities in China was not caused by historic conservation but a result of development strategic choices, conservation policy changes and regeneration project implementations.

To resist shrinkage in HCAs, there are four aspects that can be further considered: preventing overcrowded, improving the living environment to resist population loss; introducing industries suitable for young people to prevent the long-run population aging; achieving economic growth based on satisfying the demands of communities; and stimulating the potential vitality of HCAs to the public by reusing historical resource. The study provides a reference for urban planning and public policy setting related to historic center shrinkage in the megacities of developing countries.

Data Availability Statement

All data, models, and codes generated or used in the study appear in the published article.

Acknowledgments

This study was supported by the second batch of "Fundamental Research Funds for the Central Universities" (Social Sciences). We thank the anonymous reviewers and Mu Qi of Politecnico di Torino for their comments. In addition, we thank Zhu Jinglu and Li Junjun of Guangzhou Lingnan Architecture Research Center for their investigations and Li Xinheng of Guangzhou Municipal Bureau of Planning and Natural Resources for providing information and population data.

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