

Spatial Evolution Characteristics and the Planning Coordination Mechanism of Cross-border Regions in Rescaling

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Abstract: Since 1980s, the transformation of industry production and migration in the process of globalization has triggered the reorganization of “scales”. Furthermore, the space rescaling has spawned the phenomenon of “cross-border area”, which has been a “softer” and flexible functional region. Space and governance are two important attributes to analyze cross-border area. This paper try to sort out the cross-border regional evolution of Hong Kong, Macau and the Pearl River Delta Region. The development of this area could be divided into spontaneous period(1978-1997), transition period(1997-2003) and official period (2003-2019). Research shows that: Firstly, in terms of spatial change, the industrial space were the forerunner, traffic links were followed almost at the same time. The ecology space was not valued until the official period. The social spatial connection, however, has not yet been established. Secondly, the governance has been developed from informal to the formal one. Planning and coordination mechanisms have been adjusted for many times. Formal contacts have been established through inter-governmental relations adjustment and multiple regional planning controls. In conclude, the empirical research proves that the “space-governance” model is efficient. The model might be effective in governing the rescaling region and ensuring coordination between multiple policy levels and administrative units.

Keywords: Rescaling; Regional Coordination; Cross-Border Area

Introduction

“Guangdong-Hong Kong-Macau Greater Bay Area”(GD-HK-MO GBA) is a hot spot in China in recent years. The Central Economic Work Conference and the 19th National Congress of the Communist Party of China regard it as an important strategy to promote coordination between the mainland and Hong Kong and Macau.

For this "cross-border area" formed by space rescaling, this paper attempts to explore two issues: Why does Guangdong, Hong Kong and Macau cross the border and reorganize the spatial scale? Between the three places, what mechanism is used to achieve cross-border restructuring and cooperation.

1 Literature Review: transition in the regional planning

1.1 Rescaling

Since the 1980s, with the deepening of economic globalization, the factors of production have accelerated, and the production mode has shifted from the original Ford system to the post-Ford elastic accumulation model. In this process, there has been a shift in scale and system (Wei et al., 2011). Many countries and regions have established new spatial platforms through rescaling, adapting to new production methods and promoting capital accumulation (Brenner, 2000).

Re-scaling includes two categories, the rescaling of countries and cities (Brenner, 1999). On the one hand, the state has formed a super-national organization such as the EU, the NAFTA through the upward movement of power, and the power has moved down to form a sub-national organization. On the other hand, cities form a world urban system through the capital flows of multinational corporations; new spatial systems such as super metropolitan areas and multi-center urban areas are formed between cities with geographical proximity.

1.2 Cross-Border Area

In the rescaling of countries and cities, a special spatial phenomenon occurs: a transborder region, that is, a spatial unit composed of two or more neighboring countries or subnational regions (Perkmann, SUM.NL, 2002).). In different contexts of discussion, it needs to be interpreted from different political and economic perspectives.

1.2.1 Interpretation from a global perspective

In the process of globalization, different transnational capitals, countries and local societies generate complex games. In the 1990s, cross-border areas emerging in the European Union and North America were super-national or national (Perkmann, 2003). After the Asian financial crisis in 1997, regionalization in East Asia increased, and the integration paradigm shifted (Liu, Regnier, 2015), cross-border integration in sub-national regions (Hall, 2002), and more objects and activities in cross-border areas emerged.

1.2.2 Interpretation in the context of Chinese

With the reform and opening up and accession to the WTO, China's entry into the global capital system has also undergone scale reorganizing and cross-border areas emerging.

China's traditional urban development takes place within a relatively closed administrative district. Due to the intensification of the flow of production factors, the region has developed and transformed its demands, and the phenomenon of integration between urban areas has emerged (Peng Zhenwei, Qu Niu, 2011). Under the promotion of cross-border industrial cooperation and transfer, cross-border collaboration, reconstructed cross-border areas such as the Hong Kong-Shenzhen area (Yang Chun, 2008) and even the Guangdong-Hong Kong-Macau Greater Bay Area, and the cross-border areas such as the Nanchong Economic Belt. Economic corridor (Wang Lei et al., 2012).

1.3 Regional Coordination

The transformation of the system and the reorganization of spatial scales have brought new problems to regional development: how can cities that are closed to open, how to coordinate various contradictions in industries, transportation, and ecology? Especially for cross-border areas with different systems, such contradictions are more acute.



In this context, regional coordination (especially urban space coordination coordinated by the government) has become an important means to promote the scale restructuring region from conflict competition to orderly competition and cooperation and win-win. Different from the Western “new regionalism” through the horizontal cooperation of the department and the comprehensive administrative and market role, China has adopted more forms of regional planning to promote regional coordination (Fang Wei, Zhao Min, 2013).

It can be argued that in China's rescaling, “*space conflict and coordination*” and “*government governance and planning*” are a core set of regional coordination, which have an important impact on the development of cross-border areas and are also the focus of this study.

2 Research framework: “space-governance” model

2.1 Basic inference: two characteristics of cross-border regional coordination

2.1.1 Spatial characteristics: reconstruct regional spatial organization, release factor flow

“Space” refers to spatial changes and conflicts in cross-border areas due to rescaling. This feature can be divided into regional spatial organization patterns and changes in spatial linkages and elements between cities.

- Regional space: The cross-border area in the rescaling will reshape the urban agglomeration relationship and rank of the region, break the original administrative district economy, and promote the relatively closed region from a single central structure to a multi-core and networked development.
- Urban space: The linkages between cross-border areas usually begin with economic and trade flows and ultimately establish cultural identity (Brunet-Jailly, 2005). This promotes the establishment of inter-city linkages between industry, transportation, and ecology, and the release of information, technology, capital, and talent.

2.1.2 Governance characteristics: multi-level governance, promote the coordinated development of space

“Governance” is the means of coordination adopted by the government when the development of the region changes. By adjusting inter-governmental relations, organizing multi-departments consultations, and issuing regional plans, the government implements multi-level governance to ensure coordinated regional development. Governance research includes two aspects.

- The inter-governmental relationship. This includes the vertical inter-governmental relationship between the lower and upper levels of government and the inter-governmental relationship between local governments (Xie Qingkui, 2000);
- The regional planning as the specific means of governance . It is an important medium and means adopted by the government, combining economic, administrative and legal aspects.

2.2 Research framework design

Based on the above inference, a research framework is established from the two aspects of “space” and “governance”. Firstly, through historical research, we sort out the development process of cross-border areas, and study the regional spatial organization of each period and the evolution of urban industrial space, transportation space and ecological space. Second, analyze the changes in governance methods from inter-

governmental relations and regional planning. As is shown in Figure 1, a “space-governance” analysis model for cross-border areas is established.

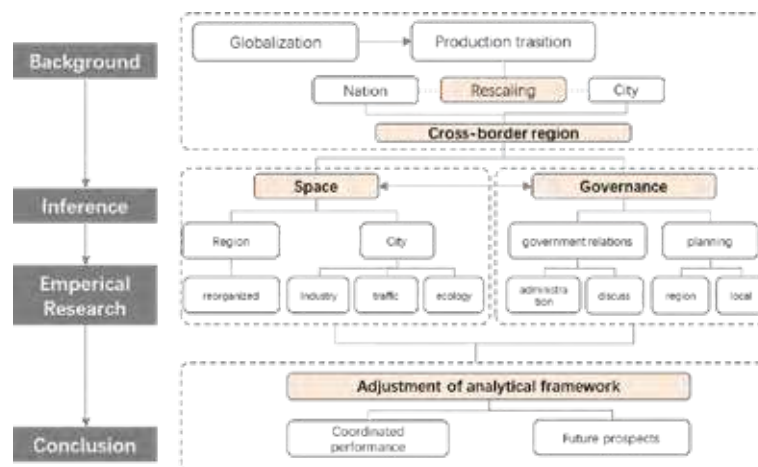


Figure 1 Research framework

2.3 Time and space range

The space includes Hong Kong (HK), Macau(MO) and the nine cities in the Pearl River Delta (PRD) region.

The time ranges from 1978 to 2019. It is roughly divided into three historical stages. From 1978 to 1996, it was a bottom-up, informal spontaneous communication period (spontaneous period). 1997-2002 was the transitional period (transition period) after Hong Kong and Macau returned. CEPA was signed in 2003, which marks the beginning of formal regional collaborative development period (official period) (Luo, Shen, 2012).

3 Spatial Evolution Characteristics of the Cross-border Areas of Hong Kong-Macau-Pearl River Delta

The border between Hong Kong and Macau and the Pearl River Delta includes both land and sea boundaries, and border inspection is required at the port through the border. Some of the Hong Kong-Shenzhen borders are still "forbidden zones" - although they have been reduced from 2,800 hectares to 400 hectares.

Since the reform and opening up, border space has been indirectly crossed – including cross-border industries and cross-border transportation. This has led to the reorganization of regional relations and the strengthening of urban spatial links. Some of the border space will even be directly crossed, and the restricted area will become a cooperation area.

3.1 Regional space: spatial organization relationship is reconstructed

1. In the spontaneous period, Hong Kong and Macau are relatively free from the Pearl River Delta region, and the interior of the Pearl River Delta is centered on Guangzhou.
2. With the tortuous fluctuations in the Hong Kong-Shenzhen relationship during the transition period, the central structure became loose. Hong Kong and Shenzhen formed a new economic core. The economic and transportation links between cities strengthened, driving the development of regional networks.
3. In the official period, Hong Kong and Macau integrated into the Pearl River Delta. Guangdong-Hong Kong-Macau Greater Bay Area initially presented a networked regional spatial structure.(Figure 2)

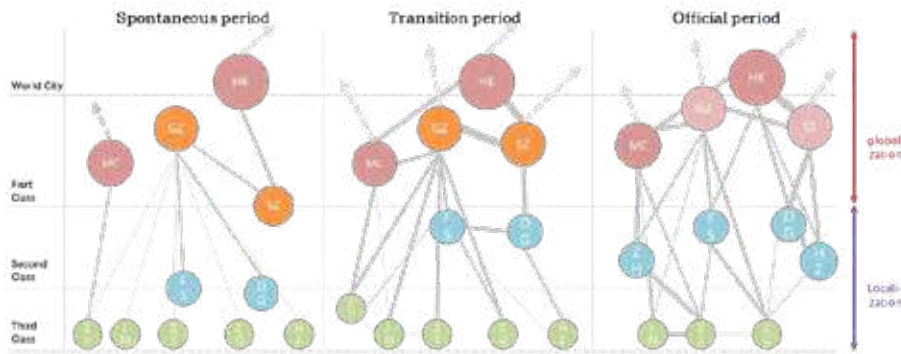


Figure 2 Regional spatial organization relationship in cross-border areas

3.2 Urban space: urban linkages strengthen and promote the flow of factors

3.2.1 Industrial space

1. Spontaneous period: “Before and after the factory” is the main feature of the cross-border industrial space. This model is the result of changes in the internal and external environment: on the one hand, the production costs of ASEAN countries are reduced, the trade protectionism tends to be in the West, and the development of Hong Kong's manufacturing industry is constrained. On the other hand, the reform and opening up policy has pushed the closed Pearl River Delta to cross economic isolation. Therefore, Hong Kong businessmen and foreign investors cross the border to use the cheap labor and land resources of the Pearl River Delta to reduce product costs (Xu Jiang, 2008). The main undertakings of Hong Kong capital are Dongguan, Huizhou and Shenzhen in the eastern part of the Pearl River Delta, and most of them are concentrated along the Guangzhou-Shenzhen Expressway. Hong Kong capital will accelerate the expansion of the space in the Pearl River Delta cities and promote the rapid development of professional towns, laying the foundation for cross-border links.
2. Transition period: The category and value chain of industrial transfer began to upgrade. The economic pressure brought about by the Asian financial crisis has forced some service industries in Hong Kong to transfer their operating bases. Secondly, the manufacturing transfer was upgraded from the toys and clothing industries in the 1980s to electronic components and electronic appliances and smart toys with high added value. However, it is still based on OEM production and assembly, and lacks its own brand (Chen En, Li Jiahong, 2011).
3. Official period: The connection of industrial space is strengthened and new trends appear. In the transfer and acceptance of global capital, Hong Kong and Macau are not the only “portal” and trade intermediaries. Guangzhou and Shenzhen can undertake foreign investment relatively independently. The global financial crisis in 2008 further promoted the manufacturing industry and industrial transformation of the Pearl River Delta. (Figure 3)

At present, the Pearl River Delta is no longer a “post-factory” for the passive development of Hong Kong and Macau's transfer industries. The regional production relations and spatial pattern are developing in a flat manner. The industrial space of each city has both cross-border cooperation areas and considerable autonomy, from relative subordinates to equal cooperation. In space, there is a tendency to gather in the Bay Area.



Figure 3 Evolution of the main agglomeration space of cross-border industries (from left to right: spontaneous period, transition period, official period)

3.2.2 Traffic Space

1. Spontaneous period: There are few cross-border traffic spaces, but industrial demand drives Hong Kong companies to invest in the Pearl River Delta infrastructure. For example, Hong Kong's Hehe Industrial Subsidiary will build the Guang-Shen Expressway and Huo Yingdong to build the Humen Bridge with the private construction and operation transfer mode to eliminate the space barrier of capital circulation and attract more investment. Cross-border transportation investment during this period was concentrated on the east coast of the Pearl River Delta.
2. Transition period: The government incorporates cross-border transportation into its planning strategy. Hong Kong proposes a regional express route scheme for Lok Ma Chau and Lo Wu. It will lead directly to the Kowloon Southern Link and the Island Line. The Pearl River Delta has built roads such as the Guangzhou-Macau Expressway, and the regional traffic has been further improved.
3. Official period: The cross-border communication has really arisen, the east-west connection has been strengthened, and the transportation mode has been diversified. In 2007, the Hong Kong-Shenzhen Western Corridor was completed and docked on Highway 9 in Hong Kong. In 2017, the Hong Kong-Zhuhai-Macau Bridge cross-border road was opened. In addition, the northern section of Guang-Macau and the second line of Guangzhu West Line, which were completed during 2005-2013, were linked to the east and west coasts. More closely. In addition, it also includes different modes of transportation such as intercity railways and port transportation.(Figure 4)



Figure 4 Cross-border traffic space evolution (from left to right: spontaneous period, transition period, official period)

3.2.3 Ecology Space

The cross-border cooperation in the ecological space appeared late, and there was no clear guidance until the official period.

In 2008, the "Plan of the Pearl River Delta Reform and Development Plan" encouraged the establishment of a pollution prevention and prevention joint prevention mechanism, the implementation of environmental pollution control, the construction of cross-border ecological protection zones, and the protection of reservoir catchment areas, thereby promoting the establishment of a cross-border quality life in Guangdong, Hong Kong and Macau. ring. (Figure 5)

In 2012, in the "Livable Bay Area around the Pearl River Estuary", based on the overall layout of the Pearl River Delta Green Island Network, the "Green Network" and "Blue Net" of the Pearl River Estuary Bay Area will be further proposed to protect the cross-border ecological space. Encourage the integration of cross-border leisure life.



Figure 5 Cross-border ecological space cooperation planning (from left to right: ecosystem, green network action, blue network action) (Adapted from official planning file)

3.3 Cross-border node

After formal and comprehensive cooperation, Hong Kong and Macau and the Pearl River Delta have carried out research on several cross-border cooperation nodes, which can be divided into two types: the adjacent type geographically adjacent to the border, and the non-geographically adjacent "enclave" type. The construction of cross-border nodes is a new round of comprehensive space cooperation after the close connection between industry, transportation and ecological space. This marks a new phase of cooperation between the three places.

3.3.1 Adjacent type

There are three adjacent types: the Zhuhai-Macau Cross-border Cooperation Zone, the Shenzhen-Hong Kong Lok Ma Chau Loop and the Zhuhai Hengqin New District.

The Zhuhai-Macau Cross-border Cooperation Zone is the country's first cross-border industrial park. It develops functions such as high-end logistics, exhibition and sales, and transit trade. The purpose is to support the diversified development of Macau's economy and is also an important modern logistics business park on the west bank of the Pearl River. In addition to economic cooperation, the cooperation zone reflects the ecological governance of cross-border cooperation. The ecological management of the Yayong River is carried out in Zhuhai and Macau, including controlling pollution discharge and improving greening in the waterfront.

3.3.2 "enclave" type

There are four types of enclaves: Guangzhou Nansha New District, Shenzhen Qianhai New District, ShenZhen-DongGuan Harbor New City, and ZhuHai-ZhongShan Binhai New City, which are concentrated near the Pearl River Estuary.

Among them, Nansha New District, as a new national district, assumes the function of “one district across three cities”. The construction of the enclave once triggered concerns among Hong Kong people, fearing that the further transfer of the industry would trigger the hollowing out of Hong Kong's local industry. Therefore, in addition to economic, people's livelihood, transportation, social innovation and other functions, the most important thing in Nansha New District is to explore a new mode of cooperation between the three places – how to establish a new mechanism of cooperation and diversified cooperation channels to achieve a win-win situation.

4 Multi-level governance and regional planning

4.1 Adjustment of inter-governmental relations

At present, Hong Kong and Macau are special administrative regions. The administrative structure of the Pearl River Delta includes sub-provincial cities, prefecture-level cities, county-level cities, counties, and municipal districts. It is a cross-border area with multiple administrative structures. In different economic stages, it has also undergone several adjustments such as the withdrawal of the county to set up the city and the withdrawal of the county.

In the evolution of cross-border areas, the inter-governmental relations have undergone several adjustments, including two sets of relations: the relationship between Hong Kong and Macau and the Pearl River Delta, and the administrative adjustment within the Pearl River Delta.

After the reform and opening up, Hong Kong, Macau and the Pearl River Delta changed from the "three-country division" diplomatic relationship to the "market-led" economic cooperation relationship, driving the cross-border evolution of industry and transportation space.

However, since the three are divided into interest groups of different political entities, cross-border cooperation pays less attention to areas outside the economy, such as social security and environmental protection. During this period, in the Pearl River Delta, in order to promote capital accumulation, the government implemented a series of decentralization measures, including the withdrawal of townships in 1985 and the establishment of cities in 1993 (Guo Yan et al., 2017).

After the return of Hong Kong and Macau, the attitude of the Hong Kong and Macau government's "cross-border protectionism" hindered regional cooperation to a certain extent. It was only in 2001 that the attitude was changed and the areas of cooperation were initially expanded, including improving cross-border traffic and calling for the establishment of a free trade zone (Shen Jianfa, 2002). At the same time, the Pearl River Delta region, which is restricted by the economics of the administrative region, has adopted the district (county-level city) to integrate the inter-governmental relations, forming a pattern for the development of the surrounding areas.

After the signing of CEPA in 2003, the local governments of Guangdong, Hong Kong and Macau entered a period of comprehensive cooperation. Although administratively divided into one province and two districts, in recent years, regional concepts such as “Guangdong-Hong Kong-Macau Greater Bay Area” and “Guangdong-Hong Kong-Macau Greater Bay Area” have received increasing attention, and collaborative development has become the mainstream.

The multiple adjustments of the relationship between the two groups have promoted the cross-border relationship between Hong Kong and Macau and the Pearl River Delta and established a networked inter-governmental cooperation relationship.

4.2 Changes in regional planning

With the adjustment of inter-governmental relations, the spatial scope and planning content of regional planning in the Pearl River Delta region are also changing, which is shown in Figure 6.

During the spontaneous period, Deng Xiaoping's southern tour strengthened the influence of Hong Kong-owned overseas Chinese capital on the economic development of the Pearl River Delta. In 1994, Guangdong Province promulgated the "Pearl River Delta Economic Zone Urban Group Planning", which covers 9 cities in the Pearl River Delta (excluding Zhaoqing's peripheral number).

There is no regional planning during the transition period. The official period is to improve the content of regional planning with the expansion of the cooperation level between the three places.

In 2004, a more comprehensive Plan for the Coordinated Development of the Pearl River Delta Urban Agglomeration was promulgated. In 2008, the Outline of the Pearl River Delta Reform and Development Plan was first added to the coordination with Hong Kong and Macau. In 2012, the scope of the "Livable Bay Area around the Pearl River Estuary" was planned. Formally adding Hong Kong and Macau, it is a construction plan jointly prepared by the three governments. It is also a planning open to consult the public.

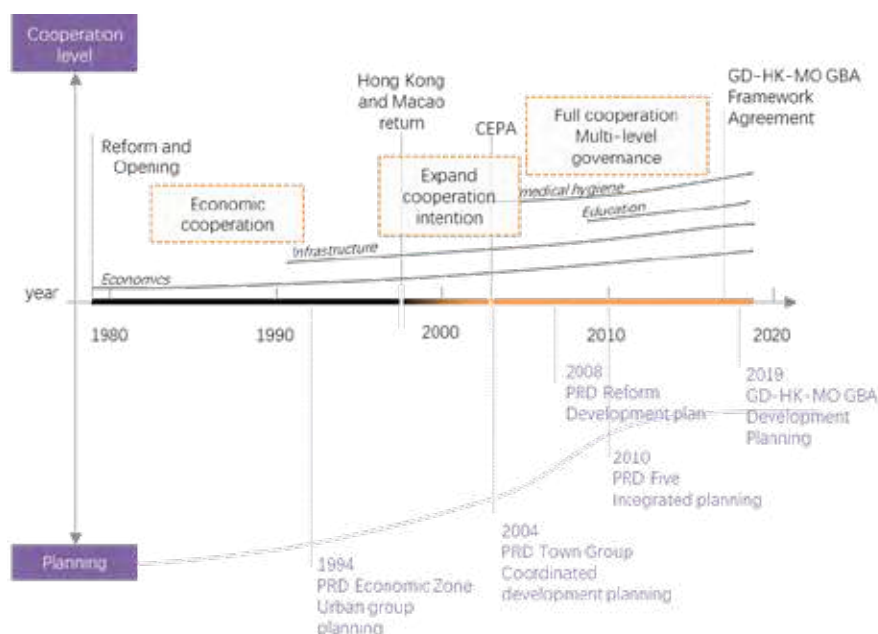


Figure 6. Evolution of cross-border cooperation levels and regional planning

The level of cooperation between the three places has been deepened. In 2017, the Guangdong-Hong Kong-Macau Greater Bay Area framework agreement was established. In February of 2019, the development plan for the Guangdong-Hong Kong-Macau Greater Bay Area was issued. This indicates that cooperation between Hong Kong, Macau and the Pearl River Delta will truly cross the border and formally become a multi-level cooperation area.

5 Conclusion and Discussion

5.1 Conclusion: The relationship between Hong Kong, Macau and the Pearl River Delta from the perspective of "space-governance"

In the past, the study of cross-border areas adopted a relatively single perspective of space or governance research. This study analyzes the characteristics and mechanisms of cross-border areas through the dual perspective of "space-governance". Studies have shown that spatial evolution and governance mechanisms are interrelated (Table 1), and the "space-governance" analysis model is effective.

1. In the spontaneous period, the capital of Hong Kong and Macau entered the Pearl River Delta across borders, triggering the reorganization of regional and urban space. The inter-governmental relations between the three places are led by economic cooperation. The series of administrative measures taken by the Pearl River Delta to adapt to the entry of foreign capital has led to the fragmentation of inter-governmental relations. In terms of regional planning and regulation, there is no formal cross-border planning, and only the urban agglomeration planning based on the economy within the Pearl River Delta.
2. During the transition period, with the return of Hong Kong and Macau, the three countries were fluctuating due to the shackles of "cross-border protectionism". Under the leadership of market capital, the cross-border relationship between industrial space and transportation space is still strengthening. The relatively developed economy of the Pearl River Delta began to integrate inter-governmental relations, enhance the status of cities such as Guangzhou, and lay the foundation for network cooperation in the next period. During this period, no plans were issued within the Pearl River Delta, but in the early analysis of regional planning, the awareness of cross-border cooperation has sprouted.
3. In the official period, the signing of CEPA marks the formalization of the partnership. Under the government's promotion, cross-border space has broken through the market economy, and carried out ecological governance and construction of integrated cross-border nodes. The inter-governmental relations between the three places have entered the multi-level governance stage, and through a series of initiatives such as joint meetings, the level of cooperation has been continuously deepened. In terms of regional planning, the content is more comprehensive, and the scope of space and participants are more diverse. Cross-border areas try to break through the shackles of borders and institutions, and truly build a new platform for multi-level and equal cooperation in economy, transportation, ecology and society.

Table 1 Evolution of the relationship between Hong Kong, Macau and the Pearl River Delta from the perspective of "space-governance"

	Space research		Governance research	
	Region space	City space	Adjustment of inter-governmental relationship	Changes in Regional planning
Spontaneous period	The PRD is a single center. HK and MO are relatively independent.	The industry first appeared in contact, and HK businessmen invested in the PRD traffic.	Divided governance and market-led cooperation. The PRD has broken down due to the establishment of the city in the county.	1989 Planning of the urban system 1994 PRD Economic Zone Urban group planning
Transition period	HK and SZ reconstructed into a core, breaking the structure of "central geography".	The industry shifts and the government considers cross-border traffic engineering.	The return of HK and MO, "cross-border protectionism" has hindered cooperation. The Pearl River Delta integrates inter-governmental relations.	2003 CEPA
Official period	GZ-FS and HK-SZ are the main cores. ZH-MO is the secondary core. The region is moving towards networking.	The industry has moved from subordinate to cooperation, and there has been an enclave/adjacent cooperation area. Cross-border traffic is increasing. Carry out ecological and environmental cooperation.	Comprehensive cooperation, under the premise of one country, two systems, carry out multi-level networked collaboration. Establish a joint meeting.	2004 PRD Coordinated development planning 2008 PRD Reform Development plan 2010 PRD Five Integrated planning 2014 PRD Planning 2016 PRD Space Planning
Future	Mature networked structure, Extend to the Pan-PRD.	From the physical space to the cultural space with a sense of belonging.	A new model of multi-faceted, cooperative and efficient.	2019 GD-HK-MO GBA Development Planning

5.2 Discussion: Future trends

According to the analysis model of "space-governance", Hong Kong, Macau and the Pearl River Delta have entered a relatively mature stage of cross-border regional evolution. According to Brunet-Jailly's hypothesis, cross-border areas will eventually establish cultural identity and ownership.

Although citizens in the Mainland and Hong Kong and Macau now have relatively consistent recognition of economic and trade cooperation, there is still a certain distance in cultural identity and attribution (Shen, 2014). With the deepening of the Guangdong-Hong Kong-Macau Greater Bay Area, the three governments should invest more in social and cultural exchanges and public service sharing to promote cross-border areas to a deeper level.



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