

URBAN INSIGHT

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ABSTRACTS

GUANGDONG-HONG KONG-MACAO GREATER BAY AREA

Layout Optimization of the Comprehensive National Science Center System: Framework and Practical Strategies 6

LIU Chengliang, MAO Weisheng

Abstract: An orderly development and optimal layout of comprehensive national science centers is of great strategic significance for promoting the optimal allocation of science and technology innovation resources, the optimal restructuring of strategic scientific and technological forces, tackling key problems in the integration of basic sciences and key technologies, and accelerating the establishment of a world science center. Based on the status-quo of constructing science centers, the paper proposes a spatial reconfiguration idea centered on factor scale and flow pattern, creates a spatial configuration with points, axis and plane inter-nesting with one another, and suggests a layout optimization scheme driven by eight or more innovation growth poles, led by four innovation growth belts, and coordinated by four innovation hub clusters, in order to promote the scientific planning and layouts of integrated national science centers in Nanjing, Chengdu, Wuhan, and other Chinese cities. From the perspectives of functional positioning of science centers, layout of strategic science and technology forces, major science and technology infrastructures, and management of science and technology innovation platforms, the authors provide their understandings of how to optimize the layout of the integrated national science center system in an attempt to provide theoretical reference for China to establish a well-bedded system and to build science centers and innovation hubs of global importance.

Keywords: comprehensive national science center; system layout; city cluster; science and technology infrastructure

The Evolution in Network Structural Resilience of Low-carbon Technology Innovation Among Cities Within the Guangdong-Hong Kong-Macao Greater Bay Area 21

LIN Zhuoling, FANG Yuanping, ZHANG Jingdu, Gu Xuedian

Abstract: To achieve the carbon peaking and carbon neutrality goals, it is crucial to improve the innovation capacities of core technologies in key fields for the green and low-carbon circular economic development. By referring to

a comprehensive portfolio of online indicators and based on the spatial data of invention patents jointly applied by cities within the Guangdong-Hong Kong-Macao Greater Bay Area (GBA), an evaluation model for the network structural resilience of low-carbon technology innovation among cities within the GBA urban agglomeration is constructed. The model compares and analyzes the network structural types and spatial-temporal evolution characteristics of network structural resilience, and explores relevant constraints. Results show that the network structure has been changing dynamically from a “single-core structure” to a “multi-core community”, and from a flat mode in an early stage to a three-dimensional one in a later stage over time. It also displays a heterogeneous matching pattern, an N-shaped trend, and a fluctuating resilience level. Based on multi-dimensional perspectives including equilibrium in spatial patterns concerning innovations, differentiation in key fields, and free flow of innovation factors, this study proposes optimization paths for the evolution in network structural resilience of low-carbon technology innovation among cities within the GBA.

Keywords: network structure resilience; innovation network; resilience evolution evaluation; low-carbon technology; the Guangdong-Hong Kong-Macao Greater Bay Area

Research on the Evolution of Innovation Technology Transfer Networks in Guangzhou and Shenzhen Under the Construction of the Guangdong-Hong Kong-Macao Greater Bay Area and the Pilot Demonstration Area of Socialism With Chinese Characteristics 36

ZHENG Shutong, YANG Yulin, LI Wenhui

Abstract: Guangzhou and Shenzhen are the leading forces in constructing the Guangdong-Hong Kong-Macao Greater Bay Area, within which the scope of innovation technology transfer networks has been expanding continuously. Guangzhou and Shenzhen have different development positions. The two cities should work together to create a model of dual-city interaction in technological innovation. Guangzhou and Shenzhen should enhance their potential in technological innovation, form a regional complementarity flow of technological innovation, as well as the development trend of deep integration of innovation and industry, and the mutual promotion of explicit and implicit knowledge. At the same time, private enterprises and science and technology intermediaries should play a positive role in the flow of technological innovation, and promote the establishment of an innovation system in which enterprises play the main role and enterprises, universities and research institutes effectively cooperate and deeply integrate.

Keywords: technological innovation flow; innovation network; the Guangdong-Hong Kong-Macao Greater Bay Area; the pilot demonstration area of socialism with Chinese characteristics

CITY TALKS

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URBAN SPACE

On the “Uniqueness” and “Complicatedness” of National Territorial Space From the Practice of “Integrating Different Plans Into a Single Master Plan” 82

MA Xiangming, YANG Guanghui

Abstract: “Integrating different plans into a single master plan for territorial space development” is a multi-sector collaborative social practice that was developed by addressing competing planning difficulties, based on the actual requirements of urban development and construction, and having gone through a bottom-up perception process. It is also a ground-breaking exploration of system and mechanism innovation, and an application of new technology centered on the notion of “one spatial blueprint”. It has inevitably emerged because of the physical “uniqueness” of territorial space. In this regard, the establishment of the new territorial spatial planning system represents a fresh beginning rather than the end of the practice of integrating different plans into a single master plan. The new planning intends to make clear the spatial management authority of governments at all levels, break down departmental barriers, and integrate the spatial rights and obligations of all departments. It encourages the shift from oversimplified decentralization to collaborative governance in spatial planning, strikes a balance between mandatory and optional plans under the dual dimensions of time and space, and transforms spatial planning in to a dynamic rather than static blueprint. As a result, implementation strategies for dynamically unified and high-quality spatial governance are attained. Such a process, which is intimately tied to the modernization of China’s system and capacity for governance, will not be completed overnight or without perseverance and accumulated efforts from planners in various domains.

Keywords: “integrating different plans into a single master plan”; territorial space; national territorial planning; land development; land development right

The Affordance and Demand of Street Space in Child Friendly Urban Communities 94

GUO Di, SHI Yishan, WANG Zheng

Abstract: Safe and user-friendly urban public space is an indispensable part of child friendly cities. The street is the linear element of urban public space, the external place where children grow and learn, and the most frequently-used public space. Based on the affordance theory of James Gibson, this paper studies the perception-action interactive relationship between children and the community street environment from the perspectives of affordance and demand, analyzes children’s street perception, and their cognitive and behavioral characteristics, and tries to find out the positive affordance of community streets for children and the gaps between children’s needs and the affordance performance of various environmental factors. It explores the potential value of street space in stimulating interaction with users (children), and provides references for the fine management and targeted construction of streets in child friendly urban communities.

Keywords: child friendly; community street; space; affordance and demand; affordance

URBAN GOVERNANCE

Research on the Spatiotemporal Differentiation and Driving Mechanisms of Shrinking Provincial Human Settlements in China 110

TIAN Shenzhen, ZHANG Yue, LI Hang, LI Xueming, YANG Jun, GUO Jianke

Abstract: This paper proposes a definition and elaborates on the theories about shrinking human settlements, empirically studies the temporal and spatial differences, systematic differences and systematic contradictory attributes of human settlements shrinkage in 31 provincial administrative units in China from 2001 to 2020, and discusses its driving mechanisms. The conclusions are as follows: (1) in terms of time difference, since the mainstream trend of economic growth, 11 years out of the studied period have witnessed human settlements shrinkage in the studied regions. (2) In terms of spatial differentiation, most of the shrinkage within the studied period was mild. The occurrence of shrinking cities was restricted by regional economic strengths, and it was not achieved overnight. It usually starts with a contraction point, followed by a continuous contraction period, and finally turns into a cluster of contraction areas. (3) In terms of its driving mechanism, shrinking human settlements are the result of multiple indexes, systems, internal and external factors, as well as the relations of supply and demand.

Keywords: human settlements; shrinkage; spatiotemporal differentiation; driving mechanism

URBAN CULTURE

The Maritime Silk Road and the Co-variation of Languages: A Linguistic Landscape Analysis Based on Guangzhou 123

WU Xili, FAN Lu

Abstract: Linguistic landscape, as a universal linguistic practice in public space, can serve as a significant historical record of social changes. Foreign communication leads to the variation and development of language, which in turn promotes the development and change of foreign communication. This paper examines the co-variation between language and society in different periods of the Maritime Silk Road by tracing the relevant historical materials, and linguistic landscape sourced from the remains of customs, ports, religious interactions in Guangzhou, and Cantonese export paintings. The findings reveal that changes in the linguistic landscape are highly correlated to social contexts. The linguistic landscapes of customs and ports remains including the South Sea God Temple and the Canton Customs, representative of the official discourse, have undergone changes in architectural naming, sign writers, and code selection. Specifically, the language of foreign communication was once briefly changed from Chinese to Chinese-English bilingualism in modern times, which mirrors the development of overseas trade and the evolution of maritime policies in different historical periods. Multilingualism prevails in the Guangxiao Temple, the Huaisheng Temple, the Sacred Heart Cathedral, and Parsee Cemetery, where language choices largely coincide with the introduction of exotic religious cultures to China, reflecting the impact of the Maritime Silk Road on the non-official discourse. Additionally, the linguistic landscape collected from Cantonese export paintings, displays both bilingualism and English localization in the external communication of the Thirteen Hong, which

played a positive and constructive role in the overseas dissemination of China's image. This study provides linguistic evidence for the role of Guangzhou as a hub for Chinese and foreign exchanges along the Maritime Silk Road, and may deepen the understanding of the co-variation between language and society.

Keywords: linguistic landscape; Maritime Silk Road; the Thirteen Hongs; co-variation of languages

SMART CITY

The Information Silos of Operational Failures in Smart Cities and Their Solutions

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ZHANG Xu 'e, XIA Qiu, TANG Zhengxia

Abstract: In recent years, the advancement of leading technologies such as artificial intelligence has rapidly driven the construction of smart cities in China. As the central control of smart city, city brain plays an increasingly important role in generating urban wisdom, innovating urban governance modes, and promoting the efficiency of smart urban governance. However, the generation of urban wisdom is also hindered by the information silos caused by the untimeliness of information collaboration. Based on literature analysis and the static gambling theory of incomplete information, this paper analyzes the action mechanism of the timely information coordination on the generation of urban wisdom through the gambling behaviors of the supply side and demand side of urban information. It is found that the timeliness rather than the state of information coordination is the key factor affecting urban wisdom. On the basis of paying attention to the state of information coordination behavior, urban government should improve the timeliness of information coordination, enhance the wisdom of city brain, and improve the efficiency of smart urban governance from the aspects of policy standards, technical standards, and industry norms.

Keywords: timeliness of information collaboration; city brain; urban wisdom; digital city; smart city

NEW PERSPECTIVES

Urban Hukou Threshold and Gender Wage Gap for the Floating Population

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HU Taowen

Abstract: Research on whether lowering the threshold of settling down in city can narrow gender wage gap is of great significance to promoting gender equality and rationalizing income distribution. By applying the difference-in-differences model, the paper discusses the influences of changes in urban hukou threshold on gender wage gap in floating populations. It is found that raising the urban hukou threshold widens the gender wage gap among the floating populations. A higher hukou threshold obviously reduces women's wage income while increase that of men. Furthermore, such a positive impact for men is significant only in the year and the year after the implementation of the policy. But it poses a long-term negative impact on female floating populations.

Keywords: urban hukou threshold; household registration system; gender wage gap; difference-in-differences model