Exploring the innovative path of urban governance in the new era

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Abstract: *Urban governance is an important part of national governance, and it is a specific requirement to promote the modernization of governance system and governance capacity in line with the characteristics of cities to help modernize the national governance system. In view of the value orientation of urban governance in the new era, the dilemma of urban governance is analyzed, and it is pointed out that there is an imbalance in the current urban governance mainly in the capital control, governance system and governance rights. On the basis of this, specific innovation paths are proposed, including the change of governance thinking, coordination of governance subjects and digital construction, aiming to promote the path innovation of urban governance in the era of big data.*

Keywords: *urban governance; innovation paths; big data; social risk*

1. Introduction

Smart city governance is different from the traditional governance model and is dedicated to integrating "fragmented" public service blocks, but there are still many problems in the progress. In the traditional governance system, the government as the only subject management approach is direct and unidirectional, and the five problems prone to city governance have not been able to meet and adapt to the development of modern cities. From the technical point of view, smart cities are based on the Internet, Internet of Things and other technologies as the core, with connectivity as the main feature, while smart cities have been further upgraded to a new generation of intelligent technologies such as "artificial intelligence" as the support, with the addition of intelligent algorithms and decision-making kernel[1] . That is, smart cities still need a lot of human resources to serve technical statistics and decision-making, while smart cities can already realize technology-assisted human decision-making activities. Smart cities should provide more intelligent, connected, and efficient infrastructure and public services through advanced smart technologies, making the city more sustainable, economic, and high-quality development. Smart technology not only connects various information units together to achieve compatible integration of urban information, bringing more thorough perception and wider connectivity to the city, but also enables intelligent processing of urban affairs, bringing deeper integration and more region-wide innovative applications to the city. In terms of action, smart cities are both a continuation and transcendence of traditional cities, and a description and vision of the future direction of cities.[2] . Smart cities, as "city brains", aim to achieve city-wide connectivity and holistic governance, while smart cities, based on holistic connectivity, further point to the concrete implementation and promotion of holistic governance. Smart City is not a simple superposition of city and information technology, but a new stage of urban governance characterized by high application of smart technology, rapid development of smart industry and high quality of smart services for the people. It is a new stage of urban governance characterized by high application of smart technologies, rapid development of smart industries, and high quality and convenient smart services for the people. Its landing point is to continuously improve urban living standards and promote urban economic development according to the dynamic changes of the city through algorithm adjustment and deep learning, and finally realize good governance of the city[3]. On the one hand, the smart city is a superposition of automation and urbanization, with the intelligent technology represented by artificial intelligence as the ecological core, and the algorithm to control and manage the urban system. On the other hand, the smart city attaches more importance to the subjective status of people and the well-ordered development of the city, pursuing both holistic and individual governance, and both holistic "thinking" and "unitary action". Smart city governance is an innovative governance model with vertical extension and horizontal development of intelligent technology. Compared with smart city governance, smart city governance pays more attention to the interaction between people and

intelligence, and is more holistic and open. Its advantages are mainly reflected in: supported by artificial intelligence, algorithms and other advanced technologies, with grid-based "sensors" to achieve urban governance information feedback, intelligent technology to analyze urban living standards, intelligent industries to develop urban economy, and intelligent services to provide convenient urban life. Smart City Governance focuses on creating a sustainable "urban ecosystem" with hardware and software, internal and external coordination, and multi-sectoral collaboration.[4] .

2. Value orientation of urban governance in the new era

Smart technology, as an important part of smart city governance, is a discipline where the present and the future coexist. At the macro level, smart technology essentially aims to achieve automation. In order to liberate the labor force, humans have created a variety of tools to achieve various production activities, but the tools need to be operated by the subject of labor, and with the expansion of production activities, the tools become more complex, which requires the subject of labor to acquire more skills, which is contrary to the initial demand, so people want to have tools that can operate on their own. Nowadays, intelligent technology has been initially automated and its future development will integrate with more fields and challenge traditional human perceptions, as shown in Table 1[5].

Table 1 Trends in the integration of smart technologies

Type	Existing Base	Future development direction
Big Data Intelligence	Knowledge representation technology, big data-driven knowledge learning	Connecting multi-domain knowledge centers for cross-border integration
Cross-Media Intelligence	Auditory, visual, textual and other sub-types of data processing technologies	Establishing and developing intelligent perception, cross-media autonomous learning and reasoning models
Human-Machine Hybrid Augmented Intelligence	Intelligent robots	New computing form of hybrid augmented intelligence to achieve human-machine and brain-machine cooperative scenario understanding

At present, the interaction between the new generation of intelligent technology and urban governance has begun to emerge. Relying on the powerful analysis ability, precise logical reasoning and rapid information flow feedback of intelligent technology, the relevant elements and weights of urban governance are presented in an unprecedentedly clear form, and these factors are analyzed and synthesized through model construction. We can realize the intelligence and modernization of cities through big data, cloud-based algorithms and intelligent networks, and give new vitality to urban governance with the help of intelligent technologies[6] . Accordingly, based on the application feedback and further demand of urban governance, the new generation of smart technologies will also realize the transition from simple intelligence to complex intelligence in repeated practice, providing a series of technical support for future smart urban governance. Thus, the smart city governance model is both a demand for realistic development and a future-oriented trend, and its development will combine more current trends and future elements under the impetus of smart technologies to introduce these new factors, such as intelligent government, intelligent transportation system, intelligent medical team, and lifelong education system, into the framework of urban governance.

Industrial production, as an important module of urban development, stimulates economic development, raises the level of productivity and provides the city with abundant material resources. The abundant resources stimulate the consumption demand of citizens, which in turn promotes the further development of industry, forming a two-way promotion relationship between production and consumption. However, due to the limited raw materials for industrial production and the ecological destructive power of industrial activities, unplanned production and development will eventually lead to the destruction of human beings themselves. Therefore, the objective need for good urban governance is to maintain the vitality and sustainability of cities by planning for the long term. [7]

Traditional urban governance tends to focus on a single design, focusing on the results but neglecting the process, and even lacking scientific explanation on why and how to achieve the goals, not to mention coordinating the various elements of urban governance to achieve a sustainable virtuous cycle. In addition to the inherent physical space, the smart city governance model has a "virtual space"

shaped by new technologies such as the Internet of Things, the Internet, cloud-based design, and big data, and the city governance system can be abstracted as a complex network model in which reality and the virtual interact. Under this model, the distribution of resource nodes is almost clear at a glance, and the deployment of material resources, governance resources and industrial resources will be more intelligent and efficient, so that the paradox of economic development and ecological maintenance has the possibility of breaking through. For example, one of the accompanying products of smart technology is the concept of sharing, the core of which is sustainability. Shared bicycles, shared cars, shared rechargeable batteries, shared washing machines and other products involve all aspects of social life, realizing the conservation and effective use of resources. Deep learning of machines can extract and summarize laws from urban data and complex phenomena, analyze the elements, dynamics, phenomena and results of urban governance with indicators and build new data and models. For example, by predicting the urban dynamics model of urban development, the complex relationship between urban systems is dissected, the mechanism of change is extracted, and the nodes and elements in it are simulated and deduced by intelligent technology and corresponding historical laws to replicate the complex ecology within the city and provide assistance for the sustainability of urban governance. In conclusion, smart city governance encompasses the utilization of smart technologies and resource allocation from various stakeholders to drive transformation in industrial structure and promote industrial upgrading. This facilitates integrated development between urban and rural areas, ecological coordination, and sustainable urban growth[8] .

3. Analysis of urban governance dilemma

Although urban spatial governance has made many brilliant achievements in recent years, the scale of cities has been expanding and the appearance of cities has been renewed. However, there is still a certain distance from the modernization of urban spatial governance, and we should realize that the upgrading of urban spatial governance is not a work that can be done overnight, but a long-term and arduous work process. The current dilemma of upgrading urban spatial governance still exists in many aspects, such as system, capital and rights, and has yet to be solved.[9] .

3.1 Inadequate capital control

Spatial production originally originated from the search for ways to survive capitalism. Capital production was initially narrow and local, and as production and exchange produced more and more surplus, capital needed to expand and reproduce in order to absorb the excess surplus. According to Marx's insight, an unabsorbable surplus would lead to an inevitable crisis of capitalism, and so, when the expanding capitalism was no longer satisfied with surplus value being produced only in a "closed" area, it became an irresistible temptation for capitalists to participate in inter-regional trade and leverage profits from unequal exchange. The need to constantly expand the market for new products and to constantly replenish the labor force drives the bourgeoisie to travel around the globe, where it must settle, develop and establish contacts. By constantly "occupying space," "producing space," and incorporating space into the logic of capital accumulation, capitalism is able to revive itself and save itself from extinction after each crisis. [10]

The ineffective control of capital is specifically manifested in the production of urban space at the micro level. It is the dynamic accumulation of capital that shapes urban space in a paradoxical way. The natural logic of capital itself to chase profits leads capital to choose scarce locations with high spatial efficiency for investment. Therefore, the centers and prosperous areas of cities tend to attract and concentrate many commercial centers and political institutions, and the wealthy also use their wealth and power to occupy superior geographical locations in the urban space. Wealth becomes one of the decisive factors in allocating space and prescribes the order of urban space through segregation, dispersion, and class solidification according to its principles and needs, making space a commodity easily possessed by only a small number of affluent people and compressing the urban living space of most people.

3.2 Inadequate governance system

The democratic decision-making system of urban spatial governance is also inadequate, and the organizational structure of urban spatial governance subjects is a closed model, which prevents urban residents from participating in the process of urban spatial governance and realizing their spatial rights. At the early stage of the founding of the country, the main decision makers of the urban spatial

governance system were government commissioners and urban design developers, and the development and construction plans of cities were directly decided by the government. After the reform and opening up, the people and the government were still under the inertia of this system and did not recognize the importance of people's participation in urban spatial governance, so this closed model of spatial governance still continues in the present[11] . With the increasing awareness of people's rights, a conflict arises between the demands of various interests for open, fair and equitable planning decisions and the inherent deficiencies of the current urban planning commission. At a time when urban residents are increasingly demanding more spatial rights, people's participation in urban spatial governance is far from adequate, and with nowhere to complain about their legitimate rights, they are prone to spreading untrue statements through the Internet and endangering social stability.

3.3 Imbalance of governance rights

The right to urban space is an important element of civil rights, but there is still an imbalance of urban space rights in China, which is manifested in the imbalance of spatial rights caused by the gap between rich and poor within cities, the regional imbalance of spatial rights and the formation of a dual structure between cities and villages. It is worth noting that the imbalance of urban spatial rights in China is both global and universal, and also has the special stage and regional nature of China's urban development and governance, which is a complex combination of general and special.

The first is the imbalance of spatial rights caused by the gap between rich and poor within the city. As the core sector of space production, China's intra-city space also faces many uneven development phenomena. The rapid development of the real estate market has made the right to use urban space greatly subject to capital interference, and spatial products are labeled with wealth. The wealthy class often occupies the center of urban space and prosperous areas, while the poor class is relegated to the periphery of the city, with inconvenient transportation, as well as the distance between their residence and workplace, and the noise and dust problems caused by the frequent traffic of goods vehicles in residential areas near the main roads of the city. Such injustices have sparked a strong social revolt among urban dwellers, and the "right to the city" was proposed to fill this gap. The essence of protecting the right to the city is to "restrain power with power" and to reshape the centrality of people in the urbanization process. [12]

Second is the regional spatial rights imbalance. The current structural imbalance of urban rights in China is mainly characterized by a dual structure regionally, with large differences between the eastern coastal urban space and the western inland cities in terms of education, medical care, transportation and other infrastructure. Guided by the concept of obeying the country's first rich to drive the latter rich, the nation's development resources such as talents, capital and policies are gathered to the first city and its region, forming a dualistic regional structure with the first city and the non-first city as the poles, resulting in regional equivalence differences in urban rights.

Finally, a dual structure was formed between cities and villages. In order to rapidly develop productivity and solve the problem of feeding the masses, China adopted a strategy of focusing on urban development and heavy industry. The raw materials and capital for heavy industries and the population for urban jobs were provided by the countryside. This development strategy in favor of cities did achieve a great development of productivity in the short term, but at the same time, it also created an imbalance between urban and rural areas in China. The development of our cities is supported by the countryside, but the fruits of development are not fed back to the countryside.

4. Exploration of urban governance path innovation

4.1 Transformation of urban social risk management mindset

The era of big data provides brand-new conditions for urban social risk governance model. The main body of urban social risk governance should first change its own thinking mode, establish the awareness of big data, realize that the society has entered the 5.0 era, and big data technology gradually penetrates into all aspects of urban social risk governance and promotes the transformation of traditional urban social risk governance technology to modern technology, so it should consciously and actively use big data technology Carry out urban social risk management[13] .

Each city is composed of various elements, and these elements flow rapidly and efficiently in a limited space and time, and the city is prone to many types of social risks. With big data technology, the

flow of various urban elements can be dynamically collected, stored in real time, timely analyzed and scientifically calculated, and these data can be applied to the prevention, identification, analysis and prevention and control of urban social risks; on the basis of accurate analysis of data, it provides scientific decision basis for decision makers to deal with urban social risk governance, so as to achieve the purpose of effective governance of urban social risks. Therefore, we must ideologically realize the importance of building and improving big data platforms, bravely apply big data to urban social risk management, base on big data technology, establish the "digital intelligence concept", use digital thinking to deal with the challenges brought by urban social risks, and gradually find an intelligent path for risk management. The system is as follows The multi-dimensional life circle system is shown in the figure 1 below[14] .
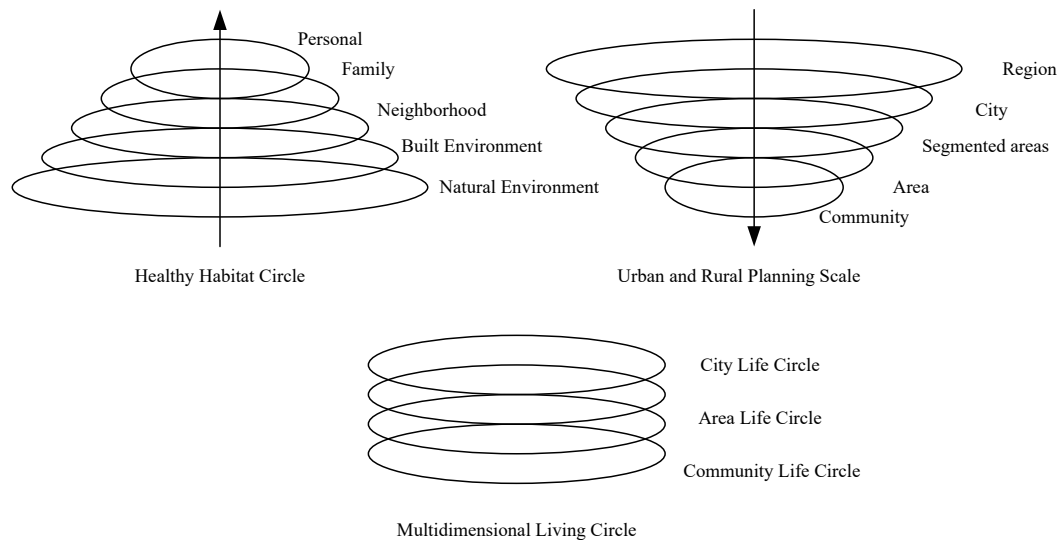

Figure 1 Multidimensional life circle system

As a strategic guide to the long-term development goals of cities, the planning and governance of healthy living areas is a universal and local planning process that can enrich and deepen the nature and functions of cities and contribute to the top-level design of urban governance. In the planning and governance process, not only ecological safety (ecological sector), equity and justice (social sector) and production efficiency (economic sector) are taken into consideration, but also different scales at different levels of planning should be focused and coordinated to ensure the best integrated ecological, economic and social benefits and maximize public interests, and to implement the concept of sustainable urban health governance.

4.2 Strengthening digital construction

In the era of big data, in order to promote the scientific and effective urban social risk management, the primary premise is to strengthen the construction of big data and play the supporting role of science and technology. First of all, we should start from establishing and improving the urban information database platform, establishing digital and information sharing mechanism, making all kinds of urban data resources open and transparent, breaking the phenomenon of "data silos", realizing the collaborative governance of government, enterprises, market and people, etc., and providing a solid big data information platform for urban social risk governance. Secondly, on the basis of improving the urban information database, we will establish a big data social risk monitoring and early warning system as soon as possible, and incorporate the key areas of the city such as environment, traffic, public safety and health care into the risk monitoring system, so that each system platform can monitor the data in real time and make scientific and accurate risk prediction to effectively prevent and reduce the occurrence of urban social risks and ensure the safe and stable operation of the city. Finally, on the basis of effective monitoring and early warning of urban social risks, a risk "cloud governance" platform should be built, and when urban social risks cannot be avoided, big data should be used to timely research and judge urban social risk information, and Internet of Things technology should be used in the "cloud governance" platform to strengthen the screening of social risks. The "cloud governance" platform should strengthen the screening and analysis of social risks, create real-time monitoring and response systems for different types of urban social risks, and promote more intelligent

and wise urban social risk management[15]. The support structure of big data for holistic urban governance is shown in the figure 2 below.
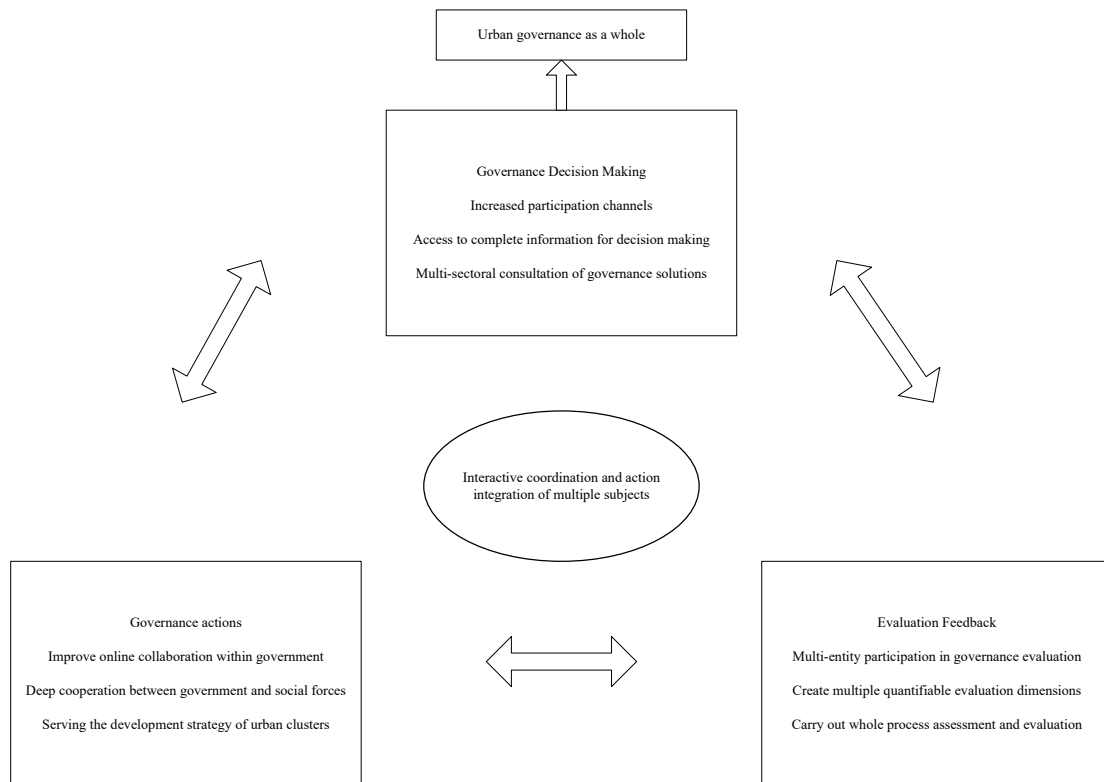

Figure 2 Support structure of big data for holistic urban governance

At the present stage, big data technology is developing rapidly, but the current information infrastructure supporting it is not perfect, which largely limits the application and development of big data technology. As a product of the deep integration of the innovative application of information technology and urban transformation and development, smart cities need to use modern technology to promote governance innovation. Therefore, the process of smart city construction needs to strengthen the construction of information infrastructure, so that managers can access timely and comprehensive information and provide a data basis for overall urban governance. Simultaneously, the integration of big data technology and information technology creates a comprehensive and functional information system that focuses on the city's development. This system aims to provide equitable and universal services to the city while also serving as a supportive platform for smart city construction. To strengthen the technological innovation of wisdom, strengthen the research and development, application and evaluation of wisdom technology, the efficient processing and analysis of big data is the key to improve the level of China's information technology and promote the construction of wisdom city technology platform. In addition, in the process of governance, attention needs to be paid to the realization of data linkage, that is, on the basis of data fusion, the data of different departments are correlated to truly realize cross-sectoral information sharing and cooperative decision-making.

4.3 Collaborative Governance Subjects

In the process of rapid urbanization, the structure of each subject has been drastically differentiated and integrated, making the differences between the interests of different subjects more and more obvious, and the conflicts between different interests have led to the existence of competition for spatial resources, thus forming serious urban problems. Therefore, effective means must be adopted to restrain excessive interest demands, satisfy reasonable interest demands, and compensate groups with damaged interests, so that all interest subjects can cooperate with each other. The development of the city cannot rely on the government's efforts alone, but the market and citizens are also important participants in the urban space, and the mutual synergy of the three can promote the stability and progress of China's urban society.

Government, market and citizens together constitute the "iron triangle" of urban spatial governance,

and the interests of any party should not be compromised in the process of governance because of the blind pursuit of efficiency or performance. It is necessary to actively seek a way to balance and complement each other, to truly "shift the fundamental purpose of space production from capital accumulation to social demand, to promote social equity and justice through space production, and to realize social equity and space sharing". We will make all the stakeholders "dare to say and demand", but also "can negotiate and make concessions", and voluntarily do their part for a harmonious society with coordinated spatial interests. The governance structure needs to shift from a hierarchical "pyramid" model to a more inclusive "concentric circles" model. In this model, the government takes direct responsibility for public affairs, while the market, citizens, and social organizations actively participate in the governance process. This broader approach expands the scope of governance and allows for better coordination among different governance actors, enhancing collaborative governance. It not only enables the government to play a leading role in governance but also strengthens the interconnections between various stakeholders.

The process of returning spatial production to the public good and sharing requires that it should implement the principles of equality, equity and publicness. "Urban networks may have hierarchical levels, but they must not be monocentric; they are associationist, but they are also democratic, egalitarian and horizontal." By regulating contractual behavior in the production and reproduction of space, specific laws and regulations are enacted to restrain the market and provide a strong guarantee for the implementation of spatial justice through law to increase the spatial power of urban residents. For example, before space is produced, reasonable planning can be made according to people's basic spatial needs and public spatial needs, and the remaining spatial resources can be given to the market economy on the basis of satisfying people's basic needs. In other words, the housing problem of urban residents is satisfied and the problem of hierarchy and marginalization is solved, and the remaining spatial resources can flow in the market.

As the owner of the country, people should enjoy the right to own housing space and public space resources, and the original purpose of urbanization is to satisfy people's desire for a better life. Therefore, regulating and guiding the market with the value goal and principle of spatial justice, overcoming its greedy nature, promoting a more rational and orderly production of urban space, and returning space to its use value are the prerequisites for achieving balanced urban and rural development.

5. Conclusion

Modern urban social risks are variable and complex, and risk treatment is also more complicated and cumbersome. If we cannot deal with the risks scientifically, the city will face the erosion of social risks. Therefore, we should start from big data technology, establish big data thinking, strengthen big data construction, cultivate big data talents and improve big data legal and regulatory system to scientifically and effectively govern urban social risks. At present, the research of urban social risk governance focuses on the scientific mechanism of risk governance with the help of big data, and we believe that with the progress of big data technology in China and the modernization of national governance system and governance capacity, the research of thinking mode and path of urban social risk governance will gradually achieve greater effectiveness.

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