

RESEARCH ARTICLE

Open Access



# Transformation from Urban and Rural Planning to Territory Spatial Planning

Shiwen Sun\*

## Abstract

Through reviewed the development process of urban and rural planning in China and other countries, the paper discusses the necessity and inevitability of territory spatial planning and the major changes in the territory spatial plan-preparing comparing to the urban and rural plan-preparing. Urban planners want to do the work of territory spatial plan-preparing must shift thinking pattern and change working method. The paper further reveals the differences between the two planning systems, and the features of territory spatial planning: the system based on the “one map” institution which bands various plans together; the plans covers all elements in a domain and all kinds of space-use activities which need epistemology and values based on the ecological civilization idea; the comprehensive application of transmission mechanism and varied management and control modes which combines the multiple means of governance and public intervention. The planners must learn to adjust the relationship between various space-uses in the real situation to improve and promote its quality and achieve planning goals.

**Keywords** Territory spatial planning, Urban and rural planning, Planning system, Planning thinking pattern

According to the deployment of the Central Committee of the CPC and the State Council, major function-oriented zoning, land use planning, urban and rural planning, etc. previously formulated by different departments will be integrated into an overall territorial spatial planning to achieve “multi-plan integration” and establish a territorial spatial planning system that is nationally unified, scientific and efficient, and features clear division of powers. New competent departments will be formed through the reform of national administrative institutions, and the institutional improvement of territorial spatial planning, the formulation of relevant rules, and the development of territorial spatial planning at various levels will be promoted in an orderly manner (Pan & Zhao, 2020).

In the gradual reforms in previous years, the planning department has accumulated some experience from the transition from urban planning to urban and rural planning, and the establishment of coordinated urban-rural planning, comprehensive planning, and “multi-plan integration” pilot projects. However, in the face of such a systemic transformation and the introduction of new top-level designs, since the specific planning content and mechanism are still unstable, and the interrelationships between planning objects and planning elements urgently need continuous straightening up and integration in the course of work, and the workflow is still being adjusted and designed, the planners do have some confusion, which is understandable. However, it should be noted that, after more than 60 years of development, China’s contemporary urban and rural planning has formed a relatively independent and internally self-consistent planning system and a relatively complete set of working methods. There are inevitably some problems and difficulties, especially some institutional problems, which hinder the continuous improvement of planning work. In this regard, the establishment of the territorial spatial

\*Correspondence:

Shiwen Sun  
shsun@tongji.edu.cn  
College of Architecture and Urban Planning, Tongji University, Shanghai,  
China



© The Author(s) 2023. **Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article’s Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article’s Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

planning system will provide an opportunity for reform and improvement (The UPF Editorial Department, 2019). Therefore, from the practical work requirements of territorial spatial planning, this article compares with the working content and methods formed in the urban and rural planning work previously, revealing that planners need to update their planning concepts and knowledge structure, and reform their working methods, so as to make due contributions to territorial spatial planning.

## 1 A new development stage of planning work in China

Contemporary urban and rural planning in China was originally created to meet the requirements of the projects of Soviet assistance in the 1950s. With reference to urban and rural planning under the Soviet system, it was gradually established with the help of Soviet experts. At that time, under the planned economy system, China implemented a unified central planning, of which the management measures were carried out through the division of labour among various departments. Urban and rural planning was initially created for and served construction; therefore, it has been in charge of the construction department since its inception, which is why urban and rural planning has always been considered as construction planning. And all construction plans are part of the economic plan, so urban and rural planning is also considered as implementation and specific measures of the national economic plan. This is also an important reason why urban and rural planning can hardly function as a comprehensive planning (Sun, 2019).

Since the reform and opening up, on the basis of continuing to learn from the advanced experience and methods of urban and rural planning in developed countries, with the reform of economic system, urbanization and rapid development of urban economy, the types of planning, planning content, and related management and control methods of urban and rural planning in China have been continuously improved, enriched, and perfected, forming an urban and rural planning system with unique Chinese characteristics. However, it should also be noted that since administrative agencies are set up in accordance with the division of labour in professional fields, and planning functions are assigned according to planning objects, with the execution of administrative power, based on the continuous strengthening of existing ideas, methods and technical paths, the extension of planning content has been continuously developed in various plans. Consequently, on the one hand, although urban and rural planning is constantly seeking to break through the limitations of construction planning, it is still constrained by the continued basic functions and structure. Facility layout and construction arrangements are

still its main functions, and the continuous expansion of planning content has only become external embellishments of these works. On the other hand, as the State Land Administration was established in the mid-1980s, and the Ministry of Land and Resources was established in the late 1990s, the content of land use planning has gradually changed from protecting cultivated land to comprehensive management and control of all types of land. After entering the 21st century, starting from the "Eleventh Five-Year Plan," the "Five-Year Plan" was renamed the "Five-Year Plan for the National Economic and Social Development of the People's Republic of China," and indicated the direction of spatial reform, the concept of major functional zone and the planning. These developments have exacerbated the dichotomy in the planning process, including social economy and space, protection and development, urban construction and non-urban construction, etc. Multiple spatial plans targeting different fields and objects also led to crossing over and overlap of various planning contents, and the conflicts of planning results. This has directly led to the proposal of the "multi-plan integration," which later evolved into territorial spatial planning. (Zhao, 2019). Comprehensive governance based on spatial and territorial units is the basic feature of modern governance. Therefore, integrating various planning types that have been split due to different planning objects and establishing a unified planning system is a necessary requirement of realizing the modernization of the national governance system and governance capabilities, and the basis for making planning truly effective.

## 2 Development characteristics of modern planning

The development process of modern urban and rural planning began with the regulation of private development and construction. Represented by the 1848 Public Health Act of the UK, a law on public health promulgated in the 1840s, and the transformations of Paris during the Second Empire (*Transformations de Paris sous le Second Empire*) that began in the 1850s, modern urban and rural planning established construction standards, with direct government participation in construction, to intervene in urban land development and construction and space use. At the end of the nineteenth century, some cities in Germany began to implement urban expansion planning (*Stadterweiterungen*), to pre-arrange and control land development and construction, which was widely spread in European countries. The Housing, Town Planning, & C. Act, 1909 of the UK stipulates that relevant plans must be formulated in advance for new development and construction areas. To prepare a plan for urban function

expansion areas, it is necessary to gradually form a plan that can handle properly the relationship with the existing urban area and covers the entire city. The rise of Modernist Architecture in the 1920s integrated the most basic planning methods and planning expressions for modernist urban planning (Ward, 2002). The Town and Country Planning Act 1947 of the UK established the framework of “development planning” on this basis. Taking the formation and permission of planning as the essential tools, it guides and controls the construction and development of cities through the establishment of future visions, and it is known as the cornerstone of the urban and rural planning system of the world after World War II. Based on the development planning concept, the experience of regional research and regional planning experiments in the 1920s–30s has been summarized. Beginning in the 1950s, some European countries began to establish regional planning systems, and “urban and regional planning” became the most well-known name for urban and rural planning in academic circles. Since then, driven by the application of system methodology, the basic concepts and methods of urban and rural planning have been comprehensively transformed. With the rise of environmental protection movement, sustainable development, globalization and governance theories, the scope of urban and rural planning has extended to metropolitan area planning, land planning, coastal zone planning, spatial strategic planning, and even transnational planning, European spatial planning, etc.

From the perspective of the development process, the development of modern planning presents three major characteristics. First, the planned space is gradually expanding, which extends from the control of buildings to the planning of new urban development and construction areas, and from the control of areas to the planning of the entire city, as well as the planning of regions including urban and rural areas, and even the whole country and the entire continent. The logic behind the expansion is this: the planning and control implemented at all levels need reasons from the higher level. Second, the content of the planning is constantly enriched, which extends from the management and control of urban construction and development to the guidance and control of urban, rural and entire regional development, and then extends to the management of the space changes. As a result, the social, economic, political, cultural, environmental, ecological elements that can cause space changes are incorporated into a unified management and coordination system. Third, planning management and control methods are constantly changing, which has gone from early government regulations, through the guidance and control of

development planning, to today’s public governance. The positioning of planning and its functioning methods and processes are constantly socialized, and the participants in planning are becoming more diverse (Sanyal et al., 2012; Weber & Crane, 2012).

### 3 About territorial spatial planning

The Opinions of the CPC Central Committee and the State Council on Establishing the System of Territorial and Spatial Planning and Supervising its Implementation (hereinafter referred to as “Opinions”) clarifies the positioning of territorial spatial planning: “Territorial spatial planning is a guide for national spatial development, a spatial blueprint for sustainable development, and the basis for various development, protection and construction activities.” The document also explains the significance and overall requirements of creating a territorial spatial planning system on this basis, establishes the overall framework and formulation requirements of the spatial planning system, makes provisions on the implementation and supervision of spatial planning, relevant laws and regulations, and technical support, and puts forward specific requirements for the development of territorial spatial planning.

The “Opinions” also gives a very clear definition of the content of territorial spatial planning: To plan the development and protection pattern of territorial spaces in the new era as a whole, and comprehensively consider factors such as population distribution, economic layout, land use, ecological environment protection, etc., to make a scientific layout of production space, living space, and ecological space. It can be seen that the core of territorial spatial planning is to organize the development and protection of territorial spaces, that is, to make comprehensive arrangements for the use of territorial spaces based on national development goals and strategies. The “five-level and three-category” planning system is established to fulfil from strategic planning to implementation measures, and from overall deployment to specific actions.

According to the requirements and goals set for the system construction of territorial spatial planning in the “Opinions,” here is the kernel and overall structure that the territorial spatial planning must develop. From the perspective of being an integral part of the national governance system and an important means of implementing national governance, territorial spatial planning needs to comprehensively integrate and improve the relationship with various national governance measures and methods, play a fundamental role in the national planning system, and truly become an operational platform to ensure the effective implementation of national strategies and for the comprehensive governance based on regional space; to establish the epistemology of ecological civilization,

as the basic values for understanding the world, various elements of planning and their relationships, for handling relationships of various elements, spatial arrangements and for making various decisions in the planning process; to establish a methodology that puts people first to achieve high-quality development and high-quality life, and to build a beautiful homeland, and perfects the principles and method systems for dealing with and solving various problems in the planning process (Yang et al., 2019).

#### **4 Notable changes in territorial spatial planning**

Based on the above-mentioned overall understanding of modern planning and development and territorial spatial planning, the author, as an urban and rural planner, hereby starts from his own experience to summarize some new situations and new requirements in the work of territorial spatial planning, in the hope of providing some reference for vast urban and rural planners in the work of territorial spatial planning. The discussion here is based on the author's understanding of the existing thinking and working methods of urban and rural planners. Therefore, the author uses some comparisons to illustrate, to better help everyone understands the changes and differences, but it is worth mentioning that these changes and differences are not formed in the comparison. There are other content that the author believes is worth keeping and promoting but won't go into details here to avoid an excessively long article.

##### **4.1 Changes of the planning system**

The "five levels and three categories" system established through territorial spatial planning retains the basic pattern that "A government at a certain level has only the administrative power at this level, and can only do planning for this level," defines the division of labour and the relationship between the overall planning, special planning, and detailed planning, thus clarifying the external structure of territorial spatial planning and providing a basic framework for the development of spatial governance. In terms of the internal structure of the planning system, on the basis of clearly distinguishing levels and categories, vertically, the system qualitatively divides from the perspectives of "strategy," "coordination," and "implementation," and uses the "One Map" Regulatory System of the Territory Spatial Planning established base on the Basic Information Platform of Territory Space to integrate planning at each level; and horizontally, it takes various special plans as an integral part of the overall plans, and coordinates and checks them in the formulation and approval process, and the final results should be put on the "One Map," which ensures that various special plans are consistent with the corresponding overall

plans at all levels. It can be seen that the establishment of the "One Map" Regulatory System of the Territory Spatial Planning provides a foundation for the consistency and integration of plans at all levels and of various types. It should be said that this is a major innovation in the construction of the planning system, and a major change from the previous urban and rural planning system.

Although the urban and rural planning system also emphasizes that lower-level planning should follow rather than go against higher-level planning, there is only a principled requirement and lacks practical and controllable means. Therefore, in the actual work process, the plan formulation of each city basically starts from the city itself to find its positioning. To demonstrate and support such a positioning, it is often necessary to construct a set of high-level strategic patterns and regional prospects. Therefore, even neighbouring cities may adopt different paths, and each county or town under the city is even more so. Regional overall planning and urban coordination are difficult to carry out effectively, and the divorce between the special or detailed planning and the overall planning is even more serious. Under such circumstances, it is only possible to discuss and approve one plan at a time, which is also one of the important reasons for the long approval cycle of various plan formulations.

Of course, the implementation of the "One Map" system ensures the internal unity of the planning system, but it may put constraints on lower-level planning at the same time. This requires that, on the one hand, the constraints of higher-level planning on lower-level planning, and of overall planning on special planning should be strategic and structural; on the other hand, lower-level planning and special planning should respond strategically under basic constraints. In other words, the urban development strategy is a general plan of the city's future development based on the implementation of the national strategy, and special planning is the arrangement of a specific special system for the implementation of the overall strategy of the city.

The "One Map" emphasizes the specific final results. However, there is a lot of work to be done to ensure consistency from strategy to implementation at all levels, which is also the crux in formulating various planning guidelines. In the implementation of management, the key to ensuring the operation of the planning system is to adhere to strategies in the higher-level management and control, and maintain coordination in the middle-level management and control. But in any case, the unified, thorough, and well-organized territorial spatial planning system that has been established requires that plan formulations at all levels and of all types must clarify the positioning of the formulated plan and its relationship with all aspects in the first place. Plans at multiple levels

and of various types have different functions and spatial scales. The objects of planning, the problems to be solved through planning, the content of resource deployment through planning and relevant methods, and the objects controlled through planning and relevant methods are all different. Accordingly, the content and methods of planning also vary. In this regard, planners must have a clear understanding at the beginning of their work (Wang, 2019). As all planning results will be put on the “One Map” and are parts of it, achieving accurate connection and mutual agreement with the planning arrangements in various aspects becomes a very important part for checking and verifying the planning results. It is not enough to ensure that a certain plan is reasonable. And this will greatly affect the way planners think about problems and conduct their work.

#### 4.2 Changes of the planning objects

The changes of the planning objects are what planners see first-hand in territorial spatial planning. Because of this, the discussion of territorial spatial planning previously often focused specially on the impact on planning of various elements that constitute territorial spaces. But the author believes that the complete objects of territorial spatial planning must include the entire administrative area, whole elements and whole action strategies. “Entire administrative area” refer to the spatial scope; “whole elements” refer to the elements that constitute territorial spaces, including natural spatial elements such as mountains, rivers, forests, fields, lakes, grasses, beaches, deserts, islands, and artificial environments such as cities, towns, and villages; “whole action strategies” refer to the different ways of using territorial spaces and their constituent elements, namely, protection, development, utilization, restoration, governance, etc. The objects of territorial spatial planning are not just territorial spaces, but the ways in which territorial spaces are used. Even the protection of primeval forests is also a way of human to use the natural environment. Therefore, the essence of territorial spatial planning is the organization and arrangement of the space use by human. It is an overall arrangement of multiple uses of various spatial elements in the entire administrative area, and not just the spatial delimitation of various natural elements or artificial environments.

In the past, due to the division of departments, urban and rural planning mainly focused on cities, towns, and villages, and regional planning has not developed well in China. To coordinate the relationship among cities, towns, and villages, urban and rural planning uses urban system planning and town-village system planning to make regional arrangements. However, urban system planning and town-village system planning are still

incomplete regional considerations in essence, reflecting the relationship among some “points” and other “points.” In the territorial spatial planning system, regional planning is the substantive work and method of territorial spatial planning at the national and provincial levels and overall planning at and below the municipal level. In the past, urban and rural planning focused on development and construction, while the current regional planning focuses on coordinating and combining the relationship among various elements. Therefore, there are big differences in the thinking and working methods of the two kinds of planning. Comprehensive governance based on spatial and territorial units is the basic feature of modern governance, and also the key to enhancing the spatial governance capabilities of China. In addition, territorial spatial planning is an important institution in the modernization process of national governance systems and capabilities. For urban and rural planners, having the cognitive perspective of regional planning and mastering the theories and methods of regional planning become particularly important for their territorial spatial planning work. At the same time, in the work of territorial spatial planning, it is also necessary for them to distinguish “point” and “region” planning according to different planning types and work contents, and to adopt different planning thinking and methods to avoid dislocation and overstepping.

On the basis of establishing the concept of comprehensive planning, it is necessary to conduct an in-depth analysis of the methods of use and conditions of the elements of various territorial spaces. Compared with the original urban and rural planning, the content of this part has been greatly expanded: in the past, urban and rural planning focused mainly on cities, towns, and villages and seldom on mountains, water, forests, fields, lakes, grasses, beaches, deserts, seas, islands, etc.: paid more attention to development, and only partly or simply came down to protection and utilization; and basically did not involve various ways of using a large number of natural elements. Therefore, in the work of territorial spatial planning, planners need to expand their horizons and supplement relevant knowledge. The knowledge related to various spatial elements have been studied for a long time in geology, geography, ocean, agriculture, forestry and other disciplines. Professional teams from different disciplines are required to participate in the planning work, and work together with planners to complete the work. However, it is worth noting that although these disciplines focus on the content of individual elements and have gained rich research results on the growth and evolution of the elements themselves and the requirements for external conditions, for the planning work, the most important thing is the interrelationship between various

elements and their combined effect. This is the crux of the planning work, and the basis for teams from different disciplines to collaborate with each other in the planning work. This also requires teams from different discipline involved in territorial spatial planning to change their focus and way of thinking from theoretical to practical, and from recognizing problems to solving them.

In short, in territorial spatial planning, we need to form an epistemology of ecological civilization facing a community of life formed by people and nature, and a community of life that includes mountains, waters, forests, fields, lakes, beaches, deserts and islands in natural elements, and establish methods for evaluation of related ecological effects. By doing so, we can understand regions, the interrelationship between these elements and their quality, the interrelationship, mechanism of action, process and output of different behaviours for different elements, and establish values and methods for comprehensively measuring these elements and their use. We will be able to make appropriate arrangements for the use of these elements in the planning process. Urban and rural planners need to pay special attention that in the past, the object of planning work was the man-made built environment. Now, although it is also facing human activities, but now they need to comprehensively think and analyse natural conditions and human factors—as natural elements grow in the natural environment, to use them, human must follow the laws of nature and consider accordingly their evolution and effects. Moreover, the natural environment and conditions vary. The scale, location, combination and distribution of different elements are different in various regions, and these elements do not have a unified ratio or combination relationship, which all require analysis and judgment in specific scenarios (Daly & Cobb, 1994). From a certain perspective, the combination of these elements and the use of various elements need separate study in different plans.

### 4.3 Changes of the planning content

The core content of territorial spatial planning is to make overall arrangements for various uses of the elements that make up the territorial spaces in the entire administrative area. Therefore, the delimitation of the “three control lines” that has received excessive attention in many discussions is only part of the planning work, and part of the planning results, rather than the prerequisites and conditions of planning. Planning is a process of the pre-arranging future action plans to achieve certain goals and solve specific problems, and the follow-up implementation, so it is clearly future-oriented. This round of territorial spatial planning will last until 2035, of which content is about what to do and how to do in the next 15 years in order to achieve the strategic goals of national

development and improve the overall welfare of the society. More specifically, territorial spatial planning is definitely not the zoning or delimitation based on the current situation, but on the basis of a base map, base number, and base floor, to gradually achieve beyond-reality future goals through territorial management, ecological restoration, and urban and rural construction. This is the most basic way of thinking that planners should have in territorial spatial planning, and the most basic requirements of the content and arrangement of territorial spatial planning.

Future changes and is in a state of flux. Planning is the process of managing changes in territorial spaces caused by the different ways humans use them. That is why more attention needs to be paid to the use of space, as mentioned earlier (Tewdwr-Jones, 2012). Different subjects use space for different purposes and with their own logic. They decide their use behaviour based on their own benefits. This may cause two problems: One, the same piece of land can be used for multiple purposes. But when it is used for one purpose, the possibility of using it for other purposes is excluded—there is competition. Then how to decide which way is better? Two, any use has externalities, both positive and negative. The use of a piece of land is not entirely depending on what it can do on its own, but will be decided after consideration of its relations with the surrounding area. Because of these two problems, public intervention in the use of space and land is necessary, and planning is a means of public intervention through pre-coordination. As a means of intervention, planning does not need to control and arrange everything. It only needs to identify, on the basis of understanding the law of development, the evolution process and conditions of these elements, the interaction between different elements and their succession, and the possible external effects brought about by various methods of use if there is no intervention, thus finding out which ones are favourable to the development of a community of life formed by man and nature, which ones are unfavourable, which ones can enhance the common well-being of mankind, and which ones cannot or are even harmful. In order to deal with these unfavourableness or harmfulness, or to make it have a better effect, it is necessary to adopt corresponding countermeasures and measures for correction and modification. This is the real purpose of planning. The correction also needs to follow specific laws, by changing the conditions of the existence and evolution of some unfavourableness or harmfulness to guide them to a more favourable direction that will enhance the common well-being of mankind (Daly & Cobb, 1994).

As the objects of territorial spatial planning are diverse, the elements and the ways of using them are different, the

internal and external relationships and interactions follow different logics. Therefore, in the planning process, we need to adopt targeted and differentiated specific analysis. There may be no unified planning criteria and logic in different territories and different types of areas. This is quite different from urban and rural planning that only focuses on man-made environments. There are several aspects need to be noted: First, at the overall pattern level, absolute artificial urban areas and absolute natural protected areas, as well as agricultural and rural areas with both natural ecological characteristics and artificial characteristics have completely different compositions, organizational relationships and development and evolution paths. In their respective areas, there are production, living, and ecological spaces, and the interaction among them is also worthy of attention. As for the overall pattern, zoning is definitely important, and it is only possible to explain the relationship among them on the basis of zoning. But it is also important to establish the interpenetrating connection among those zones, that is, the organization of various structural elements. In the built environment, road traffic is the skeleton of the urban spatial structure. So, in the territorial spaces of the entire administrative area with both natural and artificial environments, should the ecosystem be the skeleton of the overall pattern? At the zoning level, regions should not be zoned purely based on land-use types, but should be organized by different levels of “biospheres,” “production-life circles,” “life circles” according to different regional categories, etc. organized in different levels of “biosphere,” “production-life circle,” “life circle,” etc. for different land-use types. They can become policy zones combined with various action strategies on this basis. In this way, it is possible to provide correct guidance for the protection, development, utilization, restoration and governance. A zone is also the basic unit for allocating specific elements. Just like allocating jobs, service facilities, infrastructure, etc. in cities, it is necessary to allocate basic and relevant elements for development and evolution that meet the needs of different zones according to their characteristics and their main objects. For example, in agricultural and rural areas, taking account of the close combination of production and life, it is necessary to allocate production and living spaces according to specific production conditions and production methods. For tracts of arable land, it is necessary to allocate corresponding water resources, irrigation and drainage facilities, and taking into account the soil quality and conditions to arrange space for crop rotation, and propose ways to ameliorate and improve. For biodiversity conservation areas, it is necessary to consider the living conditions and needs of the organisms with large populations there, their activity methods and activity spaces, the growth conditions of related animals

and plants and corresponding allocations, the allocation requirements of their habitats, and the growth needs of their natural enemies, and species that have a symbiotic or parasitic relationship with them. On this basis, analysis and integration will be carried out to delimit various control lines. The idea should be established that the “three control lines” are part of the planning results, and are an abstract of the plan formulation results to ensure the management and control during the implementation.

#### 4.4 Changes of the transmission and control methods of planning

The territorial spatial planning system adopts “One Map” as the basis to make the entire planning system rigorous. However, to ensure the synergy among planning at all levels and of various types and the effective management of various implementation measures, it is necessary to have corresponding transmission mechanisms and control systems as a guarantee. The territorial spatial planning system combines the major transmission and control methods of urban and rural planning and land use planning to form a more comprehensive system. In the past, all the transmission and control of urban and rural planning were based on blueprints. Even if the text form was added to the planning results and its importance has been constantly strengthened, it is clear that the expressions featuring schematization still dominates the discourse system, for example, typical expressions such as “one centre, three axes, five zones” and so on. Some digital indicators are actually calculated based on the results of space design. For example, the population distribution in the overall planning is actually calculated based on the designed residential land, while the control targets in the regulatory plan are determined based on the morphological design. In actual management and control, due to the ambiguity of the content or the lack of backward inference from effect to cause, there is no direct guidance for operators and doers, and the use of graphics for comparison, colours and digital indicators becomes the only feasible way.

Territorial spatial planning integrates the “three plans,” and the commonly used transmission and control methods in the “three plans” are also incorporated into territorial spatial planning. Therefore, in the work of territorial spatial planning, multiple transmission and control methods will work together on the same platform. It is particularly worth noting that these transmission and control methods used in the past were all established for a single goal, however, as mentioned above, on the new platform, these methods need to be reorganized and integrated based on the requirements of comprehensive spatial and territorial governance. On the whole, the establishment of the transmission and control system has

the following characteristics: First, the division of labour for planning at all levels and of all types is clear, each with its own responsibilities. That is why transmission is needed. Through the transmission and control mechanism, the synergy of the entire system will be ensured. Because of this, there are different conversions among planning at all levels and of all types, instead of simply communicating plans from a higher level to a lower level or breaking it down generally without distinction. All levels need to undertake corresponding content according to their respective division of responsibilities, and transmit the management and control needs of this level to the lower level through conversion, of which, in addition to the content about continuation and deepening, there will also be great requirements for transfer and capacity increase. Second, higher-level control focuses on things that can be directly judged, and usually simplifies or even abstracts complex things. In order to achieve transmission and actual control, clear guidance is needed; while lower-level planning will be more detailed and complex, and more closely related to specific scenarios. The lower-level planning needs to be more accurate and precise, and fully integrated with internal and external relationships and specific governance methods and means. Third, the control objects of planning at all levels and of all types are also different. There are at least two aspects in the territorial spatial planning system, namely, the control of higher-level government over lower-level government and the control of government over the use of social space. The control of higher-level government is the control of the decision-making on the use of territorial spaces by lower-level government, to which the key is not to overstep the boundary, not to go against the higher-level planning, and not to bring negative impact on the realization of the goals of the higher-level planning. In other words, instead of managing lower-level government according to lower-level planning, the higher-level government should control the decision-making of the lower-level government based on its own planning. Therefore, there must be substantial requirements for limits and their definitions in the planning at this level. The government's control over the use of territorial spaces by the society, market, and government departments involves not only interest relationships, that is, changing the interest pattern and rebuilding new interest relationships on the basis of existing interest relationships, but also the management of its externalities, especially the control of negative externalities. Therefore, the content and methods of these two kinds of transmission and control are completely different (Baldwin et al., 2010).

The ultimate goal of planning is to guide actions and to be implemented. The implementation of planning is

carried out by various individuals, groups, and institutions. Therefore, transmission and control are not only important mechanisms to ensure the linkage between national strategies and specific actions, but also bound up with supervision and monitoring. In other words, all transmission and control content should be able to be supervised and monitored. This requires that every plan, be it a master plan, a special plan or a detailed plan, needs to clarify the content of transmission and control. Various transmission and control methods also need mutual coordination and cooperation, and corresponding policy guidelines must be formulated as well. The policy guidelines point out both the target directions and the limits, leaving room for optimization for planning at lower levels and specific implementation, and providing the basis for relevant supervision and monitoring. This requires planners to integrate various public intervention methods and means on the basis of understanding the content and requirements of management and control at all levels, in order to specifically formulate planning content and transmission and control requirements through policy design and system construction. For them, the tasks and content of policy research will be greatly increased.

#### 4.5 Changes of the ways of planning thinking

After all, territorial spatial planning is still planning. For planners, insisting on planning thinking is still necessary, but some ways of thinking about problems in planning thinking also need to be changed. The core of the changes is to establish what I call the "philosophy of fullness."

In the past, our concept of space was based on this understanding that "the use comes from what is not there." The core of planning is to transform "what is not there" into "what is there," so that "the value comes from what is there." Therefore, whether it is for urban expansion or urban internal transformation, even if there are villages and other uses on the land to be expanded, even if the area to be transformed has dense buildings, when we plan, we first bulldoze all these into "nothing" in our minds, and then draw a new and beautiful picture on "white paper"; The area outside the central city in the city master plan is also blank, filled with colours representing the countryside. I call this the "philosophy of emptiness." But in fact, in today's society, the whole territory is used for various purposes, including landscapes, forests, fields, lakes, and seas. Even unmanned virgin forests and deserts represent a way of using space. Therefore, the area under our planning is fully used, and the planning work is carried out despite various existing uses. In the planning, the changes to various methods of use are adjustments to the existing ones, and it is replacing one method with another. So, why should a certain method of use be replaced, and what is the reason? Is the replaced



method really worthless? Existing peripheral relations will be changed. What are the consequences? These issues will become an important test for those planning arrangements.

From another perspective, in the territorial spatial planning system, planning work at any level has constraints from the upper level planning, such as boundary control, index control, use control, access control, etc., and these constraints are clear in terms of requirements. Therefore, adjustments and changes in use are adjustments based on the current base map, base number, and base floor. Therefore, a replaces method of use may be shifted to another place and change a certain method of use there, which may form a continuous process of shifting. Of course, there is the question of whether this is possible, but this issue will not be discussed in this article. The working method of planning is through continuous adjustments and shifts to improve the relationship among various methods of use, improve the quality of these relationships, and achieve the goals of the planning. In the planning process, the construction of spatial pattern is still important. This is an intermediate link to establish the spatial order and provide guidance and basis for the adjustments and shifts. The realization of spatial pattern construction is based on the adjustment, improvement, and promotion of the status quo, which requires a clear logical link between goals and actions. This is an important manifestation of the rationality of planning, and an important basis for the persuasive organization and deployment of actions.

As mentioned earlier, the “One Map” established by the territorial spatial planning system has made it clear that planning at all levels and of all types is a part or a link of the entire system, and its external world is not “empty,” but full of relationships in all directions. Therefore, it is not enough for any plan to be just self-consistent, as it will be collaged into the whole territorial spaces. In line with this, the changes in planning tools will help planners change their way of thinking. In the past, urban and rural planners were more accustomed to using CAD (computer-aided design) software to carry out their work. This self-oriented graphical thinking is compatible with the design-oriented way of thinking. Today, planners use GIS (Geographic Information System) as a basic tool in the territorial spatial planning process, which will help them pay more attention to geographic analysis and simulation. Through the interaction of spatial data and attribute data, the above-mentioned philosophy of “fullness” will be better put into practice (Zhang et al., 2020).

## 5 Conclusion

As a work, territorial spatial planning integrates major function-oriented zoning, land use planning and urban and rural planning that were previously formulated by different departments. Its core content is to organize and arrange the use of territorial spaces in the future. Therefore, the essence of “planning” remains unchanged, but the scope of planning objects and territorial spaces are merged. From this perspective, territorial spatial planning is a further development of urban and rural planning. But the changes in the scope of objects, territory and space, and the differences in various organizational elements and behaviours confronted bring new content and requirements to the corresponding planning concepts and planning methods. This is something that planners will face and must adapt to in their future work.

For urban and rural planners, it is especially necessary to pay attention to the influence brought by changes in these aspects: entire administrative area, whole elements, all methods of use and whole territory coverage. In the planning work, it is necessary to understand the positioning and characteristics of the specific planning work being carried out, and fully distinguish “point” and “region” planning. In the overall planning work, it is necessary to master the means and methods of comprehensive planning; to understand the law of development of the constituent elements of various territorial spaces and the supporting conditions needed, as well as the symbiosis or dependence among them; to understand the characteristics of different space-use types and the corresponding methods of use; to be clear about their decision logic and possible externalities, as well as the interdependence or competition among various uses; to understand the integrity and rigor of the territorial spatial planning system, the responsibilities and tasks of all levels and types of planning, and the key nodes for integration into the system. In the process of facing such changes, it is necessary to establish the concept of overall planning based on the existing use of the entire administrative area and whole elements in the current situation, that is, to establish the space concept of “fullness”; to establish an epistemology of ecological civilization to understand the various relationships among them, change the world according to the ecological civilization values, and handle various relationships in the planning process. From the perspective of serving the modernization of the national governance system and governance capabilities, planning should be integrated with governance structures at all levels to become an important content and means of achieving comprehensive governance based on spatial and territorial units.

**Acknowledgments**

Not applicable.

**Availability of data and materials**

Not Applicable.

**Author's contributions**

SUN Shiwen conceived the study and wrote the manuscript. All authors have read and agreed to the published version of the manuscript. The author read and approved the final manuscript.

**Funding**

Not applicable.

**Declarations****Competing interests**

The authors declare they have no "competing interests" in this section.

Received: 10 September 2022 Revised: 29 October 2022 Accepted: 30 October 2022

Published online: 10 January 2023

**References**

- Baldwin, R., Cave, M., & Lodge, M. (2010). *The Oxford handbook of regulation, 2017*(song, H. L., Trans.). Shanghai Sanlian Bookstore.
- Daly, H. E., & Cobb, J. R. (1994). *For the Common Good: Redirecting the Economy toward Community, the Environment, and a Sustainable Future, 2017*(Wang, J., & Han, D. Y., Trans.). Central Compilation Publishing House.
- Pan, H. X., & Zhao, M. (2020). On the construction and some technical issues of the national territory development planning system in China. *Urban Planning Forum*, 1, 6.
- Sanyal, B., Vale, L. J., & Rosan, C. D. (2012). *Planning Ideas That Matter: livability, Territoriality, Governance, and Reflective Practice*. The MIT Press.
- Sun, S. W. (2019). An analysis on planning paradigms and the evolution of urban planning in China. *Urban Planning International*, 34(4), 1–7.
- Tewdwr-Jones, M. (2012). *Spatial Planning and Governance: Understanding UK Planning*. Palgrave.
- The UPF Editorial Department. (2019). Symposium on plan making in the context of reforming the national territory spatial planning system. *Urban Planning Forum*, 5, 13.
- Wang, X. Z. (2019). The position and function of territorial master plan of prefecture-level cities. *Urban Planning Forum*, 4, 6.
- Ward, S. V. (2002). *Planning the Twentieth-Century City: The Advanced Capitalist World*. John Wiley & Sons Ltd.
- Weber, R., & Crane, R. (2012). *The Oxford handbook of urban planning*. Oxford University Press.
- Yang, B. J., Chen, P., Dong, K., et al. (2019). Formation of the national territory development planning system under the background of ecological civilization. *Urban Planning Tribune*, 4, 8.
- Zhang, S., Gao, J., & Peng, Z. W. (2020). Discussions on the construction and application of "one base map" of the county-level territory development planning. *Urban Planning Forum*, 2, 10.
- Zhao, M. (2019). On the construction logic and implementation agenda of the territory development planning system of China. *Urban Planning Forum*, 4, 8.

**Publisher's Note**

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.