

On the Planning of “Food” Landscape in Rural Revitalization

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Abstract: With the steady and rapid development of new urbanization, urban-rural integration and rural revitalization, agricultural production, especially the land for food production, has increasingly become an important element in national land and space planning. Compared with the internationally used food concept, China's food concept has special historical and practical significance. Its planting area is huge, and it is inseparable from the security of the country and social development. But as a special landscape, its theoretical research and planning practice are relatively lacking at present. Based on the above-mentioned reasons, this article makes a preliminary analysis of the feasibility of special agricultural crops such as “food” as objects of landscape planning. First, clarify the definition and classification of the concept of food in China's agricultural economy, so as to establish the research scope of this article. Through its important role in different aspects of Chinese history and current social and economic development, the importance of landscape planning is proposed. Finally, through a comprehensive analysis of China's geography, climate, policies, etc., the idea of establishing a two-level plan of National Park and Urban Park for food is proposed. At the end of the article, the preliminary conceptual planning of Urban Park is discussed with reference to classic European case.

1. Introduction

For many years, the No. 1 Central Document has paid great attention to the issue of rural development. The report of the 19th National Congress of the Communist Party of China first proposed the rural revitalization strategy and incorporated it into the party constitution. It has become one of the seven strategies that need to be firmly implemented to win the decisive victory in building a moderately prosperous society in all respects. The “*Proposal of the Central Committee of the Communist Party of China on Formulating the Fourteenth Five-Year Plan for National Economic and Social Development and the Long-term Goals for 2035*”, which was reviewed and approved by the Fifth Plenary Session of the 19th Central Committee of the Communist Party of China, have made overall arrangements for prioritizing the development of agriculture and rural areas and comprehensively promoting rural revitalization in the new development stage^[1]. In February 2021, the “*Opinions on Comprehensively Promoting Rural Revitalization and Accelerating Agricultural and Rural Modernization*” put forward urgent requirements for county-level territorial spatial planning, urban-rural integrated development within the county, and rural characteristic planning and construction.

The “*Key Tasks for New Urbanization and Urban-Rural Integration Development in 2021*”, issued by the National Development and Reform Commission in April 2021, puts forward basic requirements for urban and rural planning and construction, completes the task of compiling territorial spatial plans at the provinces, cities and counties levels within a time limit, and points out that “the three control lines of ecological protection red line, permanent basic farmland, and urban development boundary should be coordinated and delineated”, accelerating the integration of urban and rural areas^[2]. In economically developed areas such as the Yangtze River Delta, urban and rural lifestyles continue to merge, and the geographical boundaries between cities and villages are

gradually blurred. The relationship between them is denser and inseparable. From the perspective of the development trend of new urbanization, the planning and utilization of agricultural land has become an important focus in the development of urban-rural integration and rural revitalization. Among them, the area of arable land for “food” crops occupies an absolute advantage, and its role in national and social security is also extremely important, but its value as a landscape has not been fully studied and developed.

2. China's Definition and Classification of “Food”

In the "*National Food Security Medium and Long-term Planning Outline (2008-2020)*", drafted by the National Development and Reform Commission and approved by the State Council in November 2008, it is explained the specific content of the concept of "Food" in Chinese context and the corresponding types of agricultural products, pointing out that the “food” only refers to grains (including wheat, rice, corn, etc.), beans and tubers^[3]. In 2013, the National Bureau of Statistics published a series of handbooks titled "*Statistical Indicators Around You*". In the book "Food Crops", some definitions related to basic “food” production were explained, including statistical data on major “food” varieties in China and the type chart (Figure 1)^[4].

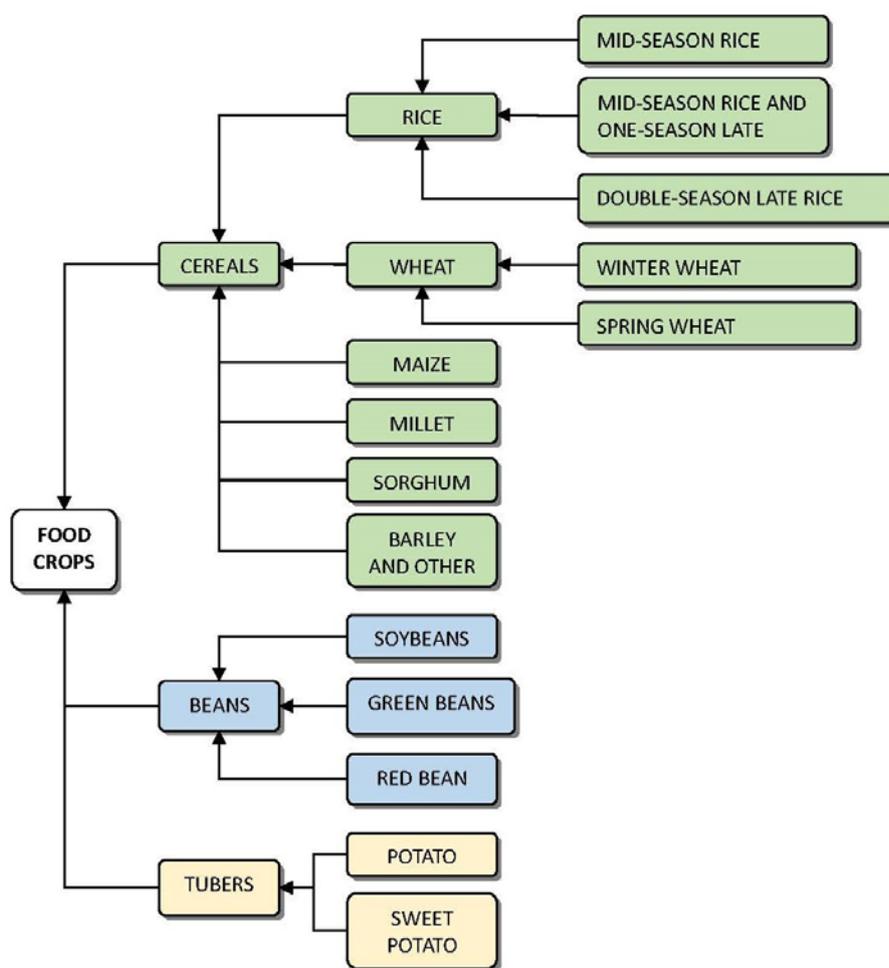


Figure 1 Statistical data and type chart of China's main grain varieties.

However, there are still some differences between the Chinese concept of the word "food" and the definition and classification of international organizations that use English as the main term. For example, in the translation of the name "Food and Agriculture Organization of the United Nations", the term Food has a very broad meaning. According to the contents listed in the "*Food Composition Tables*" in the "*Food Balance Sheets (2001)*", published by the FAO, "Food" actually contains 16 categories and more than 480 sub-categories classes^[5]. There are also some related words often

used in international contexts that are more or less different from which in Chinese.

It can be seen that the conceptual scope of the word "food" commonly used in Chinese in China is much narrower than the internationally used term. But this has also contributed to the unique attributes and important roles that 'food' crops have in China's social and economic development.

In fact, in the Chinese phonetic system the spelling method of the above-mentioned "food" is "Liangshi". In order to reflect the unique meaning of this concept in China, the term Liangshi is used when referring to this concept in the subsequent content.

3. The Important Role of Liangshi

There are not many types of Liangshi crops in China, but its planting area is huge. The arable land area required for Liangshi production accounts for about 80% of the total arable land in China^[6]. This is determined by the important role of Liangshi production in maintaining national security and stability.

3.1. The Important Security Role of Liangshi

The history of China has always reminded the importance and necessity of independence. Self-sufficiency in basic production and living materials is the prerequisite for this independence, and Liangshi production is the top priority. In the above-mentioned "*National Food Security Medium and Long-term Planning Outline (2008-2020)*", it is clearly pointed out that China's Liangshi self-sufficiency rate should be at least 95%, rice and wheat should be fully self-sufficient, and corn should also be fully self-sufficient.

To this end, the Party and the central government have put forward a series of policies such as the 1.8 billion mu red line (Mu is a Chinese municipal land area unit, one mu equals approximately 666.667 square meters.), basic farmland protection, and permanent basic farmland protection to ensure the land area and quality requirements for Liangshi cultivation. The cultivated area of 1.8 billion mu is about 1.2 million square kilometers, accounting for one-eighth of China's land area, and the amount is considerable. Taking such a huge area of Liangshi production as a carrier and presentation method of the landscape has certain research and utilization value.

3.2. The Social and Psychosocial Representation of Food

Food self-sufficiency also has a strong symbolic meaning, and it also plays an important role in Chinese social psychology. As a unique concept, Liangshi reflects the long history of Chinese culture and traditions that endow people with daily basic food security and is closely related to Chinese political culture and social psychology. The recurring terrible famines in history, the constant encroachment of modern China by foreign powers, and the various unfair treatments that contemporary China often encounters on a global scale, etc., have made the spirit of independence deep in the hearts of the Chinese people.

Regarding Liangshi production as a landscape allows everyone to recognize the important character of food and have a high respect for the country dedicated to its production. At the same time, this is also a huge landscape that has established a "localized" Chinese social psychology and it is a large agricultural park all over the country. The food security policy and the ever-increasing production efficiency put agriculture at an important position in Chinese society, making it a symbol of the prosperity of the country and the prosperity and happiness of the people. And it can arouse its position in young people's career aspirations, continuing to provide endless motivation and enthusiasm for Liangshi production and rural revitalization.

4. Assumptions of Liangshi Landscape Planning

In view of the uniqueness and importance of concept and production of Liangshi in China, integrating the planning requirements of China's new urbanization planning and rural revitalization, two different forms of Liangshi landscape planning models can be considered: National Liangshi Park and Urban Liangshi Park.

4.1. National Liangshi Park

The concept of agricultural space as a "park" is being practiced in various countries around the world. While creating new landscape space, it also strengthens the social and technical support of natural resources.

However, in China, the agricultural space, especially the Liangshi production space discussed in this article, has a special scale. Unlike other known experiences, the use of the term "park" as a limited regional unit and reference to existing planning and management systems both are incompatible with reality. Therefore, according to the characteristics of natural conditions in China, the Liangshi production areas suitable for a new type of landscape planning can be divided, that is, the National Liangshi Park. The factors initially considered in its planning include the following aspects.

4.1.1. Factors of China's Topography

China's land area is approximately 9.6 million square kilometers, including all five basic topography: plateaus (33.3%), mountains (26.04%), plains (18.75%), hills (9.9%) and basins (11.98%). The terrain of the country slopes from west to east, forming a three-scale sequence (Figure 2). There are four main plateaus on the first and second scale sequences, the highest of which is more than 4000 meters above sea level. The four main catchment areas are distributed in the second sequence; the three main plains are distributed in the third sequence, connected from north to south, and due to their fertile soil resources, they have become the most important agricultural areas in China.

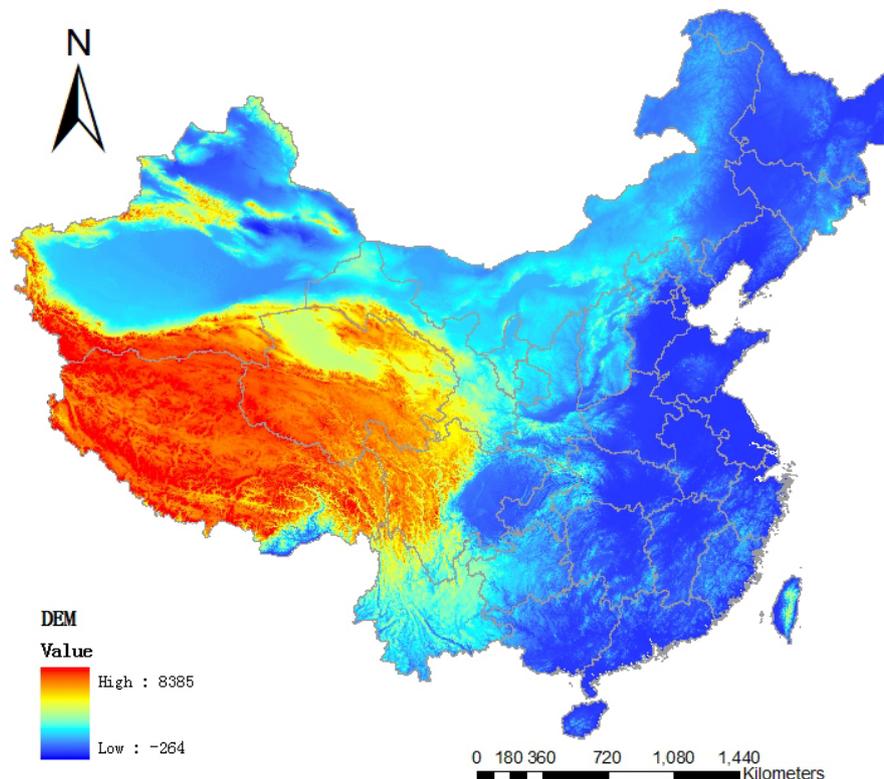


Figure 2 The spatial distribution of China's altitude DEM. (30m)

Note: Figure 2 and Figure 5 are from the Resource Environment Science and Data Center, Institute of Geographical Sciences and Natural Resources Research, Chinese Academy of Sciences. Figures 3 and 4 are re-edited and drawn based on the image data of the data center.

From the perspective of the difficulty of crop cultivation caused by the topography and the accessibility of the area, the vast plains in the third scale sequence can be given priority as the core of the national liangshi park.

4.1.2. China's Climate Factors

The distance of Chinese territory from east to west is about 5,200 kilometers, and the distance from north to south is about 5,500 kilometers. Under such geographical conditions, the temperature difference in winter is huge: the lowest temperature is about -30°C; the highest temperature is above 20°C. The average temperature in most areas in summer is about 20°C, and the average temperature in the southern region exceeds 28°C, but it is not much different from that in the north.

When the average daily temperature is around 10°C, most crops can grow. Therefore, the number of days when the average daily temperature is higher than or equal to 10°C is called the growing period of the crop. The sum of the daily average temperature during the entire growth period is called the accumulated temperature, which reflects the heat condition in a certain area. According to the distribution of accumulated temperature, China is divided into five temperature zones from south to north: tropical, subtropical, warm temperate, medium temperate, cold temperate, and a special Qinghai-Tibet alpine zone. These five temperature zones can be further subdivided (Figure 3). Different temperature areas have different accumulated temperature values, which determine the different lengths of the growth period, so there are significant differences in the types of agricultural systems and crops.



Figure 3 Schematic diagram of the division of temperature zones in China.

At the same time, dry or humid conditions are an important factor in determining climate characteristics. The humidity of a place depends on the difference between precipitation and evaporation. When precipitation is greater than evaporation, the area will become humid, and vice versa. Or dry or humid environment is closely related to natural vegetation and agriculture. These conditions vary greatly in different regions of China. The country is divided into four regions in terms of dry humidity: humid, semi-humid, semi-arid, and arid zones (Figure 4).

Schematic diagram of China's humidity zone division

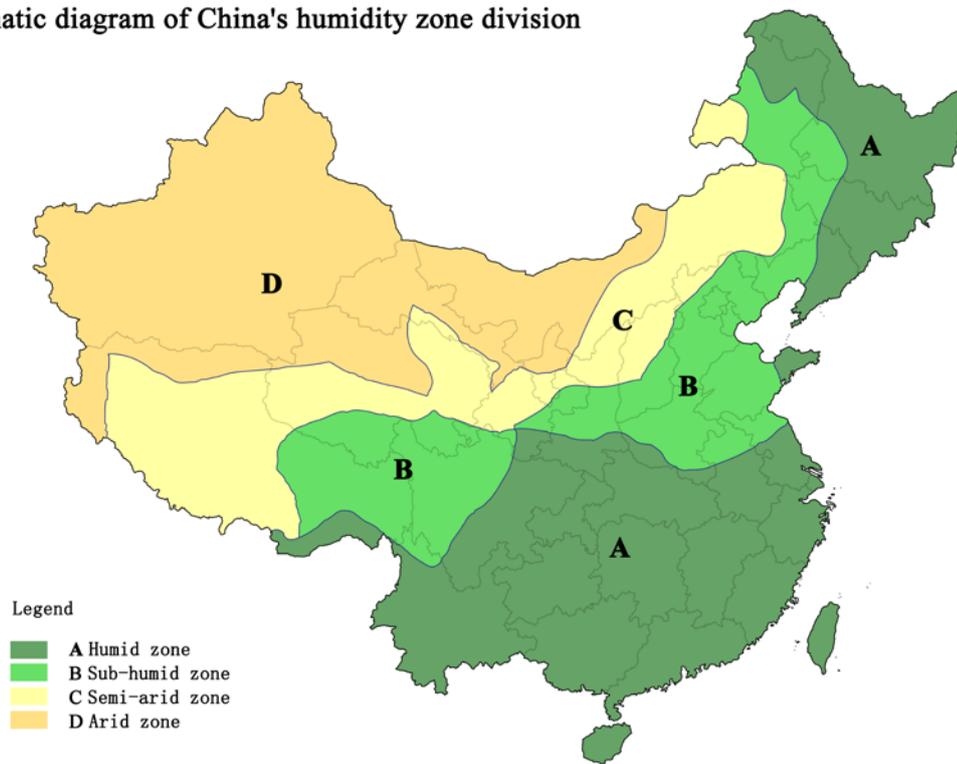


Figure 4 Schematic diagram of the division of humidity in China.

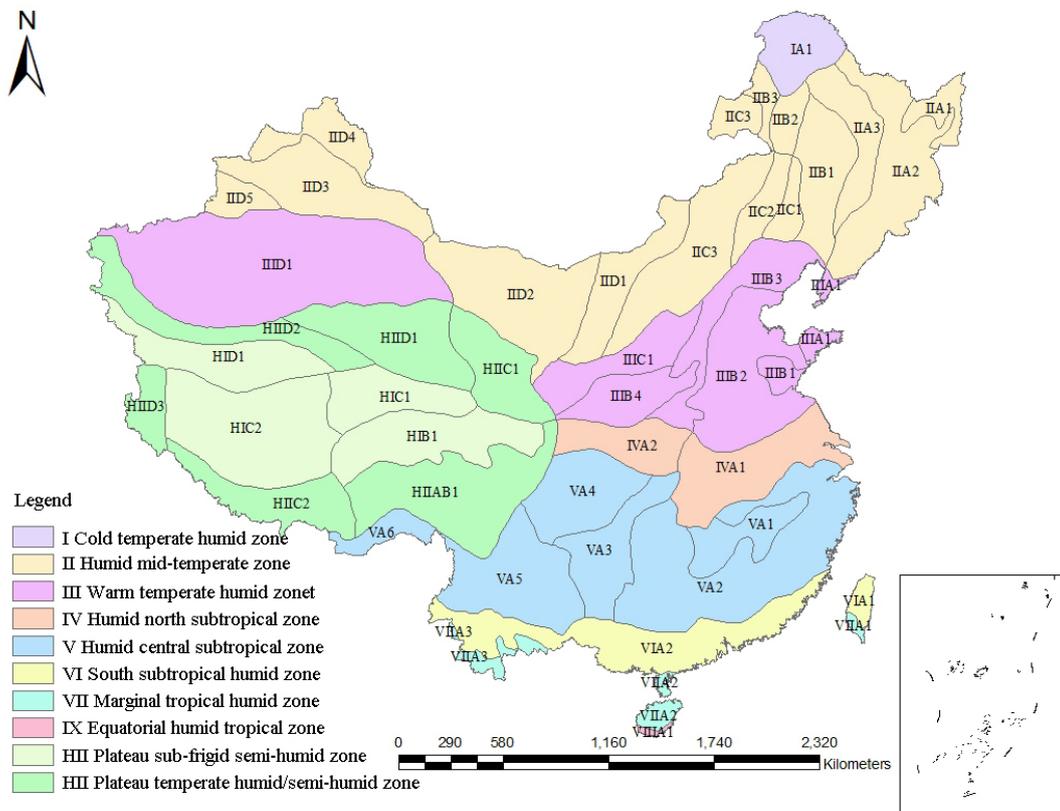


Figure 5 Eco-geographical regions of China.

By graphically superimposing the above two regional divisions, it is possible to obtain the ecological geographic regions of China, which can be divided into 11 temperature zones (marked with Roman numerals), 21 humidity zones (marked with Latin letters) and 48 natural areas (marked

with Roman numerals-Latin letters-Arabic numerals) (Figure 5). In this way, each of the 48 natural areas corresponds to the comprehensive characteristics of temperature, humidity, and a certain topography.

The ecological geographical area obtained through the above comprehensive superposition method can be used as a natural reference index for the positioning and division of the National Liangshi Park. The type and scale of crops can be effectively controlled and planned. At the same time, the methods and content of tour and leisure can be defined and designed with these conditions.

4.1.3. Experience Factors of National Liangshi Park

The National Liangshi Park can initially distinguish the fundamental differences in experience that people made in different environments on a macro-scale. It can be said that it constitutes a geographical area for future social development policies through knowledge tourism.

What is mentioned here is not only the visual perception of the landscape, but also the overall human sensory system, as well as the perception system that is more or less imposed on the physiological changes by China's wide climate range.

The construction of the National Liangshi Park obviously also requires other types of social knowledge approaches, such as attention to Liangshi safety, attention to cultivation techniques, exploration of environmental protection or recycling equipment, interest in the application of artificial intelligence to agricultural industrial experiments and practice, etc. These aspects have now or are becoming the new development focus of Chinese society.

Obviously, all these aspects related to the development of Liangshi production and other agricultural production are closely linked to the goal system of national social transformation, and are inseparable from the policies of new urbanization, urban-rural integrated development, and rural revitalization.

4.2. Urban Liangshi Park

If the National Liangshi Park is feasible, it will be an important national planning work, and it will take a long time for research, preparation and implementation. However, according to the climatic and geographical conditions and socio-economic development of different regions, a more compact, personalized and implementable urban liangshi park planning can be carried out first.

4.2.1. Social and Economic Development Conditions for the Construction of Urban Liangshi Parks

The guarantee of liangshi production and the determination of development policies involve the reorganization of land in the field of production, the decisive construction of farms of various nature and scales, and the large-scale use of the most advanced production factors^[7]. However, in the process of land reorganization, due to the rapid construction and development of the cities, some high-quality liangshi farmland that originally belonged to the surrounding areas of the city was relocated to more remote areas, even ignoring the quality of the newly established farmland. In order to avoid some problems in the new urbanization, the Ministry of Land and Resources and the Ministry of Agriculture jointly issued the "*Notice on Further Improving the Permanent Demarcation of Basic Farmland*" in 2014. The notice stipulates that when dividing the boundaries, priority must be given to high-quality cultivated land that is also located in the periphery of the city and along the main roads to prevent it from being easily occupied by other purposes. This new classification standard gives priority to 14 cities with a population of more than 5 million (in 2014). The classification method is in the order from large cities to small cities, from the closest part of the city to the part far away from the city and considers the arrangement of cultivated land quality from high to low. The work was completed in 106 major cities before December 2015 and completed nationwide by the end of September 2016. The result entry work was completed before December 2016^[8].

Through this work and the formulation and implementation of relevant policies before and after, liangshi production is no longer all in large-scale agricultural areas far away from cities, and some have gradually become an organic part of urban agglomerations in the development of new

urbanization plan.

This change in the pattern is bound to bring about a change in the paradigm of liangshi production and agricultural production in the development of the new era.

Therefore, as mentioned above, the Urban Liangshi Park is an integral part of the National Liangshi Park and is a subdivision or a more detailed district of the National Liangshi Park. However, the urban park in the more developed cities along the eastern coast already has some mature social, economic and cultural conditions, and can give priority to the discussion and implementation of policies and actual planning. Such urban liangshi parks need to conduct a careful geographical analysis of the metropolitan environment and emphasize the new context of the integration of "agricultural land and cities", which can be regarded as an important background and feature of urban international culture in the new era.

4.2.2. Brief Analysis of Reference Cases

The ideas of the National Liangshi Park and the Urban Liangshi Park are different from the previous landscape concepts and planning and design methods. This is a landscape that combines actual production and real life, a landscape that combines the history of the country and society with the memory of the people, and it is also a new direction for active exploration of new landscape paradigms in the future.

Forming a future-oriented landscape is also a common assumption in contemporary landscape planning and design. However, a large part of it is related to urban landscape, especially in the field of landscape design and teaching in China.

Contemporary European culture has also put forward suggestions for the planning and design of "future agricultural land", but they do not seem to be a phenomenon rooted in the history and current situation of European agriculture but are derived from a long-existing "design dream" gene in his culture. This dream in today seems to be more suitable for the needs of China's urban liangshi landscape.

Due to space limitations, this article only lists one case for reference, a master plan made by Andrea Branzi in Eindhoven in 2000: Strijp Philips. This has a certain reference effect for the planning of the park system in the large-scale crops-growing area of the metropolitan area, especially the strengthening of the unprecedented interweaving relationship between agricultural production and the metropolitan environment (Figure 6, Figure 7).

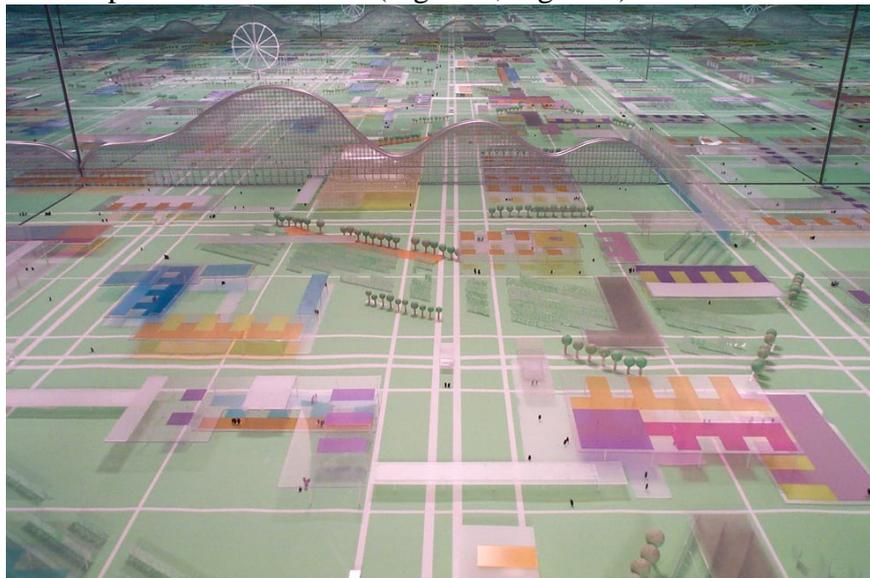




Figure 6 and Figure 7 Andrea Branzi's Strijp Philips planning model.

In this plan, Branzi tried to bring pure social life enjoyment through agricultural production under the new technology, and achieved a clear expression of the design purpose by placing some "game tools" in the agricultural landscape: Ferris wheel, flying Railways, beautiful and harmonious geometric spatial projections created by the production and planting areas in the horizontal direction, etc. These include the main means of transportation that quickly connects the city and the agricultural production areas, as well as the new way of experience that the agricultural production areas bring to the city. At the same time, it also can be noticed the appreciation of the visual effects brought by such a large area of production: those movable "viewing facilities" in the air let people feel the "Mondrian"-like design created by agricultural production. But unlike the paintings placed on the wall, people can move at high speed in these vast agricultural paintings and enjoy different visual and spiritual pleasures.

In this plan, some poetic opposing elements and techniques are used to create a park: production and entertainment, vertical and horizontal, static visual and motor senses. This park also has basic teaching functions: the cultivation of crops, animal shelters, and visitors' dwellings, etc., all have simple research equipment, or more precisely, they all have simple equipment for thinking about natural cycles and new agricultural technology procedures.

5. Conclusion

As mentioned above, the integration of Liangshi production into the urban development space is unique to China. It is the result of a methodology that regards the planning and construction of space and territory as an absolutely necessary tool for solving self-sufficiency. It is a new type of urbanization and urban-rural integration in the system. It is the results and manifestations of changes in the system. The historical memory and value system widely spread on the social scale endow this land phenomenon distributed across the country with an absolute emotional power, thus making it a different kind of "landscape."

How can landscape architects make the understanding of this kind of landscape universal? How do they pass on its positive and life-giving meaning to the new generation that is increasingly lacking in the memories of their ancestors, and how do they display and interpret it to the international community that cares about China's development? This is an important issue that needs to be considered in the process of Liangshi landscape research and practice.

From a practical point of view, we need to consider how to build a large area of food production into an important part of human culture. Therefore, in order to lay the foundation of this cross-cultural bridge, it is necessary to learn from the experience of other countries and nations and

find resonance with international culture.

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References

- [1] “*Recommendations of the Central Committee of the Communist Party of China on Formulating the Fourteenth Five-Year Plan for National Economic and Social Development and the Long-term Goals for 2035*”. 2020.10.29.
- [2] “*The key tasks of new urbanization and urban-rural integration development in 2021*”, Development and Reform Planning (2021) No.493, National Development and Reform Commission. 2021.4.8.
- [3] “*National Food Security Medium and Long-term Planning Outline (2008-2020)*”, National Development and Reform Commission, Guofa [2008] No. 24, 2008.11.
- [4] “*Statistical indicators around you*”, National Bureau of Statistics. 2013.10.
- [5] “*Food Balance Sheet (2001)*”, Food and Agriculture Organization of the United Nations. 2001
- [6] “*Communiqué on the main data results of the second national land survey*”, Ministry of Land and Resources, National Bureau of Statistics, Office of the Second National Land Survey Leading Group of the State Council. 2013.12.31.
- [7] Zeng Xiongsheng. “*The past, present and future of Asian agriculture*”. Beijing, China Agriculture Press. 2010:39-44.
- [8] “*Notice on Further Improving the Permanent Delimitation of Basic Farmland*”, Ministry of Land and Resources, Ministry of Agriculture. 2014.11