

Urban Spatial Patterns Based on the Urban Green Space System:

A Strategic Plan for Wuhan metropolitan area, P.R. China

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Abstract: Now, China is experiencing a period of rapid urbanization. However, the construction of new city zones and rehabilitation of old ones have brought irrational spatial patterns. Take Wuhan metropolitan area for example, its urbanization pace has surpassed urban planning, and has significantly but negatively impacted the region's ecological environment. This paper firstly makes an empirical analysis of the urban spatial patterns and green space system of Wuhan metropolitan area. In contrast to the traditional greenspace system, the paper expounds and proves that transformation of urban greenbelt system from "edge" to "core" is the keynote in the spatial pattern of urban land use. This strategy requires serious consideration in future planning.

The paper also puts forward a planning concept based on the ecological theory, sticking to "Design with nature, Green in city". It recognizes that more emphasis on the spatial pattern is still demanded to make a rational layout of urban green space system, currently deficient in Wuhan metropolitan area.

This paper applies the above research to the green space system planning in Wuhan metropolitan area. It analyzes the current natural matrix and spatial pattern of land use in Wuhan metropolitan area. Finally, it also suggests some best means of how to construct green space systems in Wuhan metropolitan area.

Key words: Green space system; Spatial pattern; Wuhan

1. Introduction

The population concentration enlarges the possibility to meet by chance and provides convenient infrastructure, which is the charm of city. However, during the past hundred years, the city has gradually been out of control due to the excessive urban development and the disorder of the spatial structure. On the other hand, urban residents' requirements on environmental quality become higher and higher owing to the social and economic development and the progress of the material and spiritual civilization. Then, this paper proposes the urban spatial patterns based on the urban green space system, in order to establish a new urban order and to apply this notion to urban green space system planning in Wuhan metropolitan area.

2. "Edge—core" Path of Urban Green Space System

2.1 Shift to "Edge—core"

During the long developing journey of city, various factors which influence spatial patterns all

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had their own day with the time. The shift process of urban dominant space in different periods can be seen clear from the following table, with signs to denote the power of politics, economy, technique, society and ecology (Table 1).

Table 1 Shift Process of Urban Spatial Patterns

Social Phase	Dominant Sector	Traffic Means	Dynamic Mechanism					Dominant Space
			Politics	Economy	Technique	Society	Ecology	
Pre-industrialization	Agriculture	On Foot - Carriage	+	-	-	-	-	Center of Politics and Religion
Industry Convergence	Manufacture	Trolley	·	+	+	-	-	Industrial Zone
Industry Scattering	Tertiary Sector	Auto-mobile	-	+	+	·	·	Commercial Recreation and Office S.
Post-industrialization	Tertiary Sector	Speed -way	-	·	+	+	+	Office S. for Service Sector of Production, Open S.

Note: + stands for being strong, · for being comparatively strong, - for being weak, S for "Space"

The recourse is sort out by the author.

In agriculture society, political power almost determined the process of social development. As a result, either churches in western countries or temples in orient occupied dominant status in urban space, which meet the gerentocratic's demand of regional control. Neoteric and modern city, in its real sense, is originated from Industrial Revolution. Before 1950, secondary sector, especially manufacture, was dominant in most western developed countries, which resulted in the dominant status of industrial zone in urban spatial structure. Due to the development of heavy industry after the founding of P.R. China, China urban spatial structure changed a lot. Actually, theses two share the same mechanism that operates the change of China urban spatial structure. Since 1970, manufacture's status in city began declining while the tertiary sector rose gradually, which brought the change of urban spatial pattern. In the changing phase, the adjustment and choice of commercial recreational space, residence space and office space both involve reorientation. In these two phases, commercial recreational space, residence space and office space are regarded as the active mechanic space for urban production and life because of their obvious economic profits.

However, their correspondent green space system is reduced to the above active space's assistant space, i.e. inactive/passive space, owing to the distortion of its actual comprehensive effects. In recent decades, while the urban economy develops rapidly, the environmental resources become scarcer and scarcer. On the other hand, the ecological constraint represses the development of economy. The vicious feedback of the relation among technique, economy and

environment will be ultimate to arouse the government’s attention. To occupy a place in the furious international competition, the government must take some measures to reconcile these ternary relations. To design an appropriate open space and establish favorable human settlement by urban layout become the primary function of urban government. And urban green space system, as the urban spatial form of the most ecological value, is the most important. At the same time, the increase of urban resident’s spare time and pressure of work and study enhances their demand of green space. People begin to realize the most important mechanism of urban green space system is to transform the active mechanic space into ideal state, i.e. form the value of environment mechanism, in relation to people’s life. This urges urban spatial pattern to develop a kind of diversity system to relate other spatial forms and itself can provide city with ecological safety value. Consequently, the urban green space system occurs an “edge—core” shift to meet the requirements of the time (Fig.1). Urban green space system develops from convergence to scattering, from scattering to relation, from relation to fusion, and finally to network linking and fusion of urban and suburb area. Judging from such three conditions as size, connection and dynamic control, the size of the urban green space generally occupies 25- 30% of the main urban area and its degree of connection constructed through green spots and green alleyway is higher than other spatial forms (only below traffic system). The most essential is that urban spatial construction will be intrinsically unified due to the pervasion of urban greenbelt into urban land with the principle, i.e. to rationally layout Green space from the radius of its serving area.

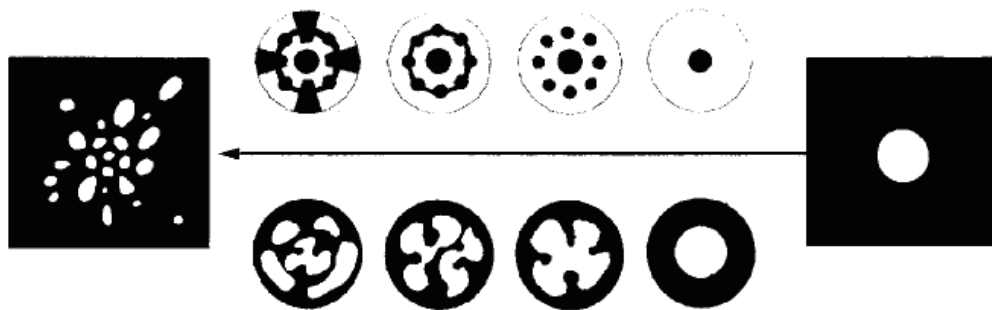


Fig.1 The Edge—core shift of Urban Green space System

2.2 Views of Urban Green Space in Knowledge-based Economy

Since 1990s, such high and innovative technology as digital information, computer science, optic fiber, microelectronics, photoelectric, CMOS chip, LSI, Laser, network, software, etc. have made great progress, which helps knowledge spread as information in the form of digital on network. All these make a variety of economic activities based on production, distribution, exchange and usage of knowledge and information possible. Hence, Knowledge-based economy acquired a strong ground. During this transformation progress, the mode, content and means of

human economic activities all changes radically, and at the same time social development also has another new tendency. These changes can have profound effects on the developing process, functional shift and spatial patterns of urban land. Consequently, urban greenbelt system also has to undergo some change.

But, as one of the main open space, how should urban green space system adjust itself? From the macroscopic perspective, i.e. the requirement of green space, one of the main drives of world city system: most of the multinational corporations will choose the places of headquarter and branches by comparing the urban environment and landscape of many cities. And of course, the favorable urban system, i.e. embodiment of the urban spatial pattern based on the integrate green space system, can attract more attention of the investors. However, hi-tech developing zone tends to be established on the suburban land of natural beauty because it is more critical than traditional manufacture industry in selecting workshop places. Obviously, the urban form lack of green space becomes a kind of bottleneck restricting technical development. As to the provider of green space— government and relevant departments, the appearance of world city system may impose more challenges upon the urban landscape which gets the trend of “colonization”, but its pressure on the cities help the prevalence of postmodernism in architecture and layout circle. The most rigorous weapon postmodernist architecture and layout have to struggle against urban homogeneity is urban cultural vein. They try to resume the cultural vein, recover people’s modest feeling about cities, which is discontinuous in modernism, and eternally preserve the magic of cities by employing some special designs. It is doubtless about the crucial position of greenbelt system in urban cultural vein, and as a result it is regarded as the key element in city design by city erectors.

But from the microscopic perspective, i.e. human demand, people’s desire for knowledge and information becomes more and more important when material situation in the period of knowledge-based economy is much improved. As a result, people try to enrich themselves in order to be more accustomed to the environment of ceaseless changes. The shortening of necessary work time and the increase of spare time make the leisure activities, which help people engage in self-creation ability and relaxation of body and soul, possible. Individuals in this special period pay more attention to two kinds of activities: one is the intimacy of people with nature; the other that between people. The former one is based on people’s desire for fresh air, natural attractions, which reflects people’s natural instinct; the latter reflects their sociality. During the long history of evolution progress, human has acquired a kind of ability to appreciate nature, to enjoy life and formed some psychological dependency upon nature. Through realizing and sensing this kind of emotion can they better understand selves, establish and strengthen self-identification. Furthermore, these feelings can consolidate the mutual understanding and trust, strengthen harmonious and responsible relationship between each other. All these indeed help realize self-worth. This is the most powerful reason why the communication in fictitious space can never replace that in open public area.

To conclude from the above, in my opinion, although information/fictitious space can functionally take some responsibility of urban open public space in the period of knowledge-based economy, it cannot replace the latter. As is known to all, the existence of green space itself is a kind of wealth to city for its enormous ecological, social and economic value, which cannot be replaced by any other kinds of space. Its importance will never be weakened but strengthened.

3. Design with nature, Green in city

The author puts forward a planning concept based on the ecological theory, sticking to “Design with nature, Green in city”, and suggests establishing greenbelts of proper size which relate to each other. Only in this way can the green space exert original self-clean and self-regulating ability and then can the government achieve macroscopic control of urban space and environment.

3.1 Extension From Urban Green space to Regional Green Space

Regional green space is based on the protection and optimization of natural ecological system and actually refers to continuous suburban green space of large size. It not only improves the whole ecological environment of the city region and its neighbors, and provides virescence support of urban environmental improvement. Furthermore, introduction of suburban green space into city also acts as the base of ecological balance. In practice, problems of urban woods and citted agriculture should be paid sufficient attention.

3.2 Function of Greenbelt Around City

This kind of greenbelt is originated from England and mostly lies at the transitional place where there is penetration into each other and sharp contradiction between city and rural land, and where the land usage is changed. Because of the diverse functions of greenbelt, cities have a very reasonable excuse to seize more land in name of greenbelt expansion. The author holds the view that greenbelt around cities should be constructed upon the natural resources, especially scenic woodland and rivers, and according to the model of “combining vines to yield melons (lian teng jie gua)”. This model can be said in another way, i.e. to take the existing hilly country and riverway in city as nature framework in urban planning, and connect with linear green space such surfaces as beauty spots, sight-seeing farms, feature areas rich in natural environmental resources and the land sensitive of ecological environment. And protect or exploit some places according to different functions. By this way can the marginal effect be played in full wing by realizing such proportion between size of the greenbelt edge and that of the internal area, in order to diversify species, increase degree of heterogeneity, and ultimately make the greenbelt more orderly and stable.

3.3 Construction of Green Ecological Network

The building of urban green space system must be dependent on the relations among green ecological network. Otherwise, within internal city, such lands as parks, square of green space and natural relic land become a kind of island surrounded by man-made construction, and at the same time, outside the urban land, the energy and biology flow/current of large-size green space cannot enter the main urban area through some effective means. Consequently, on one hand, we must make full use of riverway, transmitting wire of high voltage electricity and cuneiform green space to combine open and centralized spatial system closely with urbanized spatial system, aiming at a reasonable layout of the whole urban ecological environment. Then, urban green space will surround the whole city and nature will come into city, to keep the ecological balance of city. On the other hand, through the building of green alleyway can the urban green network system be established, can the green lands of large or small size scattering among city be connected, can the linking between all kinds of environment for living be strengthened and can the obstacles of living things' existence, migration and distribution be reduced. And then there more chances for animals and plants to intermingle into the established area and stretch into the comfortable space. At the same time, there should be more open space at crunode of the network in order to provide large-scale habitat for all life-forms and protect various life-forms even in small environment. In putting the planning into practice, we should reconcile the structure, layout of green space system with nature landform, physiognomy, and water system; we also should emphasize the relationship between the green space system and the functional subarea of city.

3.4 Reservation of Natural Relic Land in City

This kind of land and natural vegetation are always regarded as wasteland poor in sight and then replaced by manned environment. But actually most of them are community characteristic of certain zone, rich in rural plants, and also in good ecological relationship with wild animals. From above, it is safe to conclude that there exists great potential for diversification of living things, and this kind of land is helpful to recover and restore natural ecological sight in city and to save species resources and community structure. As a result, this kind of land should be protected with great emphasis to relive the threat and pressure imposed by urban development on the integrality of ecological system and existence environment of species. Furthermore, by doing this can the ecological balance be repaired and resumed, the continuity of nature process kept, and sustaining of nature evolution maintained.

3.5 Well-proportioned Distribution

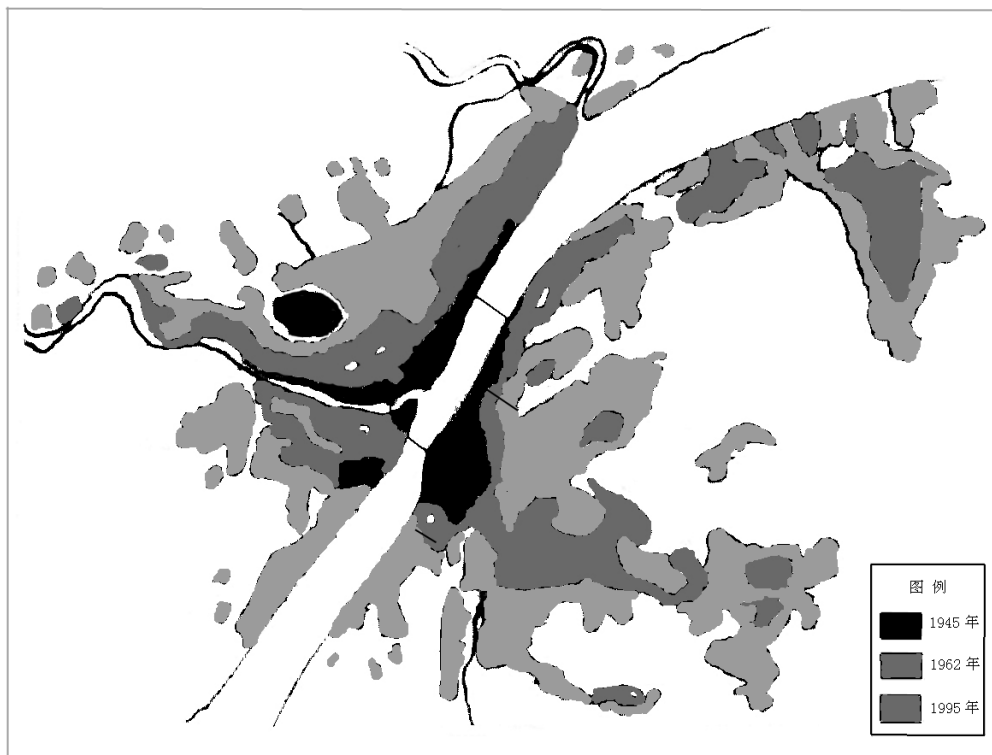
As to the center of city, the most common malpractice of virescene lies in the obvious spatial difference of the distribution of green space. In the commercial, industrial and residential area, due to the drive of financial profit, green space is always nibbled and cleared up, and its size is sharply reduced. However, in the cultural area of higher education and in the area of scenic tour there

forms centralized large-size green land. In fact, this situation not only violates the real requirement of urban residents, but also destroys the integral function of ecological system of green space. In the center of city, green space of different levels should be distributed with proper proportion in order to meet needs of different residents and form an integral system between each other. It should be noted that well-proportioned distribution doesn't mean absolute balance. As for the important areas of good natural vegetation, of great ecological significance, of powerful control upon urban style and feature, its vireescence coverage should be ensured. Such places as river or lake shore, urban square, historical relic, zoo and arboretum in city should have appropriate plant species according to their own dominant functions and become sparkles of urban green space system.

IV Study on Green Space System in Wuhan Metropolitan Area

4.1 Analysis of Urban Spatial Pattern

Wuhan, with a history of 3,500 years or so, lies on Jiangnan Plain at the junction point of Yangtze River and Han River. It is also the economic, technological, educational and cultural



center of Central China. (See Fig.2)

Fig.2 Sketch Map of Wuhan Urban Spatial Expansion

Urban spatial structure of Wuhan develops from initial focus of distribution along river

according to natural landform, to finger/strip-like expanded land along such axis as traffic line, and then to radiated slice of land with mixture of axis and line. But they have one thing in common, that is, they all develop on the basis of natural landform and with urban economy as main drive. According to the planning of Wuhan city made in 1996, in the future Wuhan will develop one urban center, seven important towns, four borough/county-level towns, 33 center towns, 52 level-four towns in organizational system. If this planning is really put into practice, its spatial structure will be likely to be star-shaped circularity (Fig.3). Then during this process, how does the ecological advantage of urban green space system function? How does it timely lead and control urban spatial structure?

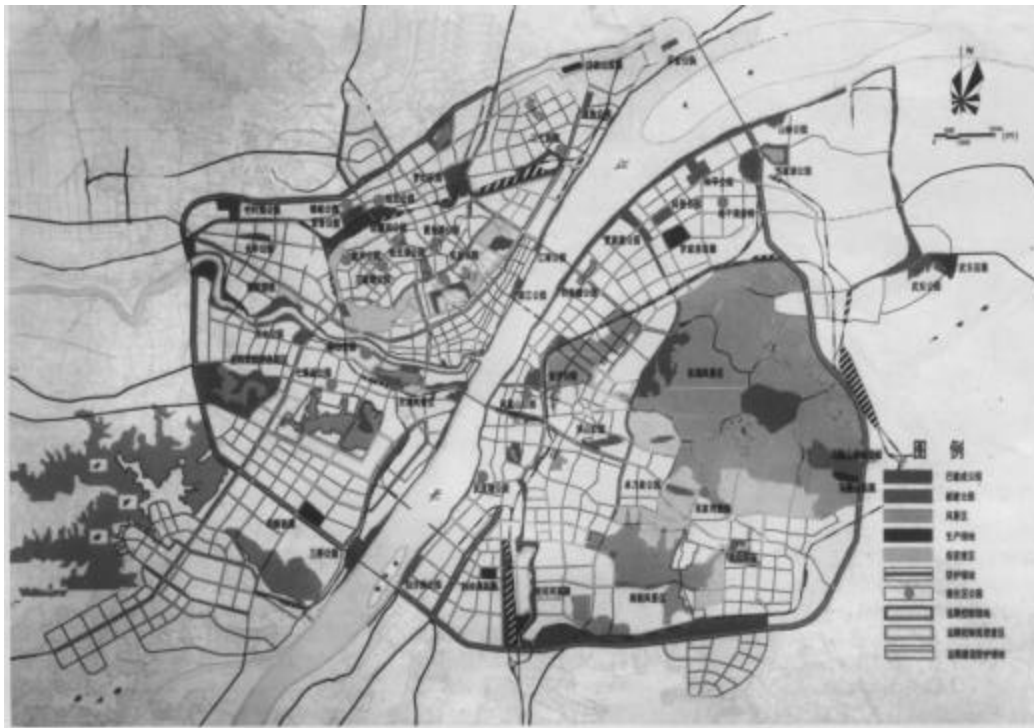


Fig.3 Map of Wuhan's major green space

4.2 Current Situations in Wuhan Urban Green Space System

In 2000, in Wuhan city there are altogether 5873hm² green landscapes, among which, public green lands are 2850hm². Average each person is 7.7m², and the virescence coverage is 32.9% (the East Lake and Guozhenghu Lake are included in the statistics), number and size of parks 21 and 485hm². Till 2002, the virescence coverage should reach 36.2%, Greenland occupies 32.79% of total lands, and average size of public Greenland should amount 10.36m² (the East Lake and Guozhenghu Lake, 1304hm², are included in the statistics). And furthermore, there should form general ecological framework in which hills become line, lakes parcel, rivers strap, and woods web. In recent years, Wuhan relevant departments obviously sped up the construction of urban

green space and all items in the planning are greatly improved. (Table 2), but there is still some rooms for improvement.

Table 2 Situations of Greenland in Wuhan City 1995~ 2000

Items	1995	1996	1997	1998	1999	2000
G Landscape (hm ²)	5237	5196	5270	5472	5648	5873
Public GL (hm ²)	2380	2332	2354	2526	2689	2850
Average PGL (m ²)	6.7	6.6	6.6	7.0	7.4	7.7
Coverage of GL (%)	31.1	30.9	31.2	31.8	32.2	32.9
Parks (hm ²)	2065	2016	453	735	580	485
Tree Planting (10,000)	31	35	57	36	38	40

Resource: data are from statistics in Wuhan annals 2000

G: Green /GL: Greenland/ PGL: Public Greenland

4.2.1 Lag of Urban Virescence Construction

Due to over-emphasis on economic construction, urban land in Wuhan city is over-exploited and construction of urban Greenland system is always neglected. The author makes a comparison of Greenland items in Wuhan with those of major garden cities in China (Table 3) and finds that, except for the size of green landscape and public Greenland, which are higher than other cities due to the larger total absolute size of Wuhan city, all the other items obviously lag behind other cities. It is clear to see that urban virescence construction in Wuhan has already been behind other cities.

Table 3 Comparison Between Wuhan and Others in Urban Virescence (1997)

	GL Coverage (%)	Size of GL (hm ²)	Public GL (hm ²)	Average PGL (hm ²)	Number of gardens	Size of Gardens (hm ²)
Peking	35.02	5414.00	3723.00	6.97	75	3350.00
Wuhan	31.20	5270.00	2354.00	6.60	26	531.00
Shenzhen	43.99	9563.00	1603.00	13.89	10	1234.00
Dalian	39.20	8578.00	1348.00	7.00	30	651.00
Nanjing	39.98	6118.00	1646.00	7.97	33	389.00
Average in GC	36.07	3453.83	975.25	12.49	22.5	779.17
China	25.53	492.67	128.61	5.54	4.6	91.21

Resource: data are from statistics in Wuhan annals 2000 and China Garden Association, 1999, China Garden Cities

GC: Garden Cities GL: Greenland PGL: Public Greenland

4.2.2 Disproportion of Urban Green Space

In the center of the city, there is obvious difference of the green space (Fig.3). It is can seen in two aspects: ? According to the macro-planning (1996-2020) of Wuhan city, average Public Greenland of Wuchang is 3.4m², and that of Hanyang 2.9m², but that of old downtown in Hankou only 0.04m². There even exists a centuple gap among them. ? Most of urban surface Green lands lie outside internal urban annulus and that in old city zone is deficient in Greenland. In fact, these two aspects reflect the same problem, that is, green lands recede and houses invade under the economic pressure. Deficiency of green lands in main city zone and disproportion of their distribution cause some problem in Wuhan: lack of space for residents to rest and entertain; reduce the environmental quality of city residents due to the boom of urban population, especially the coming high rate of the aged, and the sharp contradiction of deficient public green lands.

4.2.3 Deficient Protection for Urban Area Sensitive of Ecology

At the beginning of the founding of P.R.C, there were 300 lakes of above 100 *mus* (1 *mu*=666.7m²); in 1980s, 35 major lakes in main city zone. But in recent 20 years, due to people's indifferent sense of lakes protection and unclarity about the lakes' burgage, some lakes are stagnated and possessed, and the green spaces around lakes are seized for other usage. The number is reduced, from 35 to 27, and the green spaces of main city zone inside the second annulus are lessened by 214.1hm², 63.7% of the total lessened size of lakes. Lakes in Hankou decrease by 45.2% (Table 4). According to statistics, 2/3 of the occupied lakes are filled without permission from planning department, while these lakes counts much in improving ecological environment in city zone, in exhibiting the environmental traits of Wuhan city zone. Another problem concerning lakes is pollution, for example, pollution of the East Lake has aroused great attention and becomes a hot topic for study and research.

Table 4 1988- 1998 Change of Lakes Numbers in Wuhan

	Number of Lakes		Size of Lakes(hm ²)	
	1988	1998	1988	1998
Total	35	27	6619.5	6283.6
Han Kou	15	10	230.1	126.2
Han Yang	7	7	1219.9	1211.5
Wu Chang	13	10	5169.5	4945.9

Resource: The Data is from 1988~1998 Research Data of Wuhan Lakes

And the hills of cities are in the same plight. Especially in recent years, with the rapid development of city construction, such hills as Guishan Mountain, Guizishan Mountain, Miliangshan Mountain, Xiannushan Mountain, Tangjiashan Mountain and Ma'an Mountain are in some degree invaded and destroyed, leaving bad effect on the city ecological environment. The hills inside city zone belonging to scenic spot of gardens is pressed by tourist exploitation (like Guishan Mountain), and some hills are influenced by construction of some institution (like Guizishan Mountain). And due to quarry in suburban hills, the scenic spots in city become fragment, such as the main parts of Miliangshan Mountain and Xiannushan Mountain have

already been exploited.

4.2.4 Deficiency of Corridor Construction in Green Space System

Another prominent problem in Wuhan green space system is the lack of continuity of ecological process and pattern between scenic spots inside main city zone and those outside. Those inside main city zone do not integrate with regional scenic spots. This is largely due to the incomplete corridor construction in green space system and deficiency in the maintenance and implication of present corridor. As a result, the nature cannot actually enter the city without the cuneiform green spaces between urban and suburban area. Inside main city zone, parks or squares are just like isolated island for of living environment because they are not connected with green corridors, but roads. Then, without contact between patches of green space, it is impossible to form a whole green space system and to play its corresponding ecological role. At the same time, there will be high risk of being “destroyed one by one”.

4.3 Ideas for the Planning of Wuhan Urban Green Space System

4.3.1 To Build Basic Elements of Green Ecological Environment

The keynote in Wuhan city planning of green space system is the two outstanding basic colors: “green” and “blue”. “Being green” means the green network, relying on the transverse hill/mountain ridge in city zone, with the combination of dots, lines and sides; “being blue” refers to the formation of orderly blue chain beads, linking all natural lakes in the city. The present primary job is to protect and recover present hills and rivers/lakes in the city zone. It is required to strictly protect all massif, woodlands and public green lands.

First, do the above protective work. And then, integrate landscape with regional environment based on full understanding of physiognomy traits of Wuhan city. It is the most essential procedure in leading spatial structure of Wuhan city. This is because the functional whole and urban traffic lines of workers have already stretched into surrounding new city zone, and without control, it will become centralized layer structure of circles. It is necessary to spatially separate the functional organizations or groups outside city with reliance on regional green space. And then there will be enough open green space between central city zone and new one, to keep residential situation in good condition, to shape perfect layout structure and forms of open style.

4.3.2 Greenbelt Around City With the Model of “Combining Bines to Yield Melons”

Wuhan is now building two such greenbelts, which, in the author’s opinion, should be done with the model of “Combining Bines to Yield Melons” (Fig.4). It can be explained in this way: firstly, to appropriately make full use of the surrounding natural environment resources, and to build holt belts of different width and greenbelts of certain width; then, to combine woods park, natural reserve and historic relics by these belts, with emphasis on the virescence of scenic spots lying on the nodes, and then all of them will become the integral part of urban green space system marked by the spatial pattern characteristic of the combination of dots, lines and sides; finally, to develop “filling” expansion model for land use during city construction. For example, the annular woods system in Wuhan planning links such representative ecological forest scenes as Qiufeng

Park, Qiuzhenshan Park; dominant ecological woods scenes as Baiquan farm and Zoumaling Farm; places of interest as Mulan Mountain and Longquan Mountain; and historical, cultural scenes as Panlong Town and Yangluo Fortress. All these can also be open to education for students.

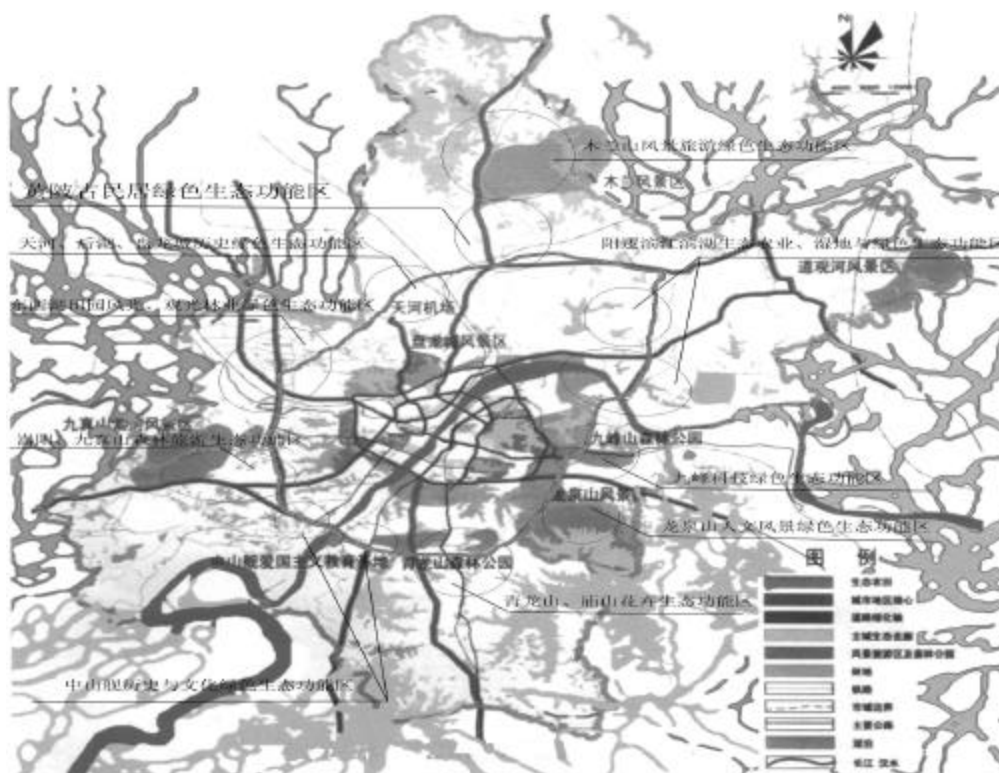


Fig.4 Illustration of Greenbelt of Wuhan

4.3.3 Green Corridor Construction

The artery of Wuhan green corridor should stretch along watercourse and mountain ridge and the corridor formed by the passageway between trees on both sides can only be regarded as branch. It is largely due to the primary purpose of the artery of green corridor is just to exchange air between urban and suburban area and to help wild plants, animals to move. If the corridor is built all along urban traffic line, there will be one big problem: the polluted air full from vehicles will be “transported” to every place and the rural plants, animals will have no chance to flow along artery. The main function of roads in green network lies in the flow of people, that is to say, by the construction of pavement, amble roads and ring roads, people can enjoy green spot when they just walk in tree shadow. In this way, the green corridor network composed of blue and green corridors closely connects mountainous region, water system, parks/gardens or other urban land, enabling the flow of species in the city. In fact, the construction of green corridor is the keynote in Wuhan green space system building. Only with the existence of the community, can the species move and become diverse. Furthermore, after connection, destroy of any part of the network will arouse great influence, so the green corridor system help protect green environment.

4.3.4 Green space of Wuhan Waterside Area

As a “River City”, Wuhan city is divided into three parts, which itself become a kind of symbol for the city. And the city is amazingly charming with the East Lake in Wuchang, a natural

lake wrapped by the city. But this kind of geographical feature can only be manifested through some spatial design. Analyzed from space, waterside zones of the city fall into three parts: ? middle part of the city, waterside scenes with such flowing water as Yangtze River and Hanshui River as the main body; ? there are attractions in the southeast of city with large lakes (the East Lake, the South Lake) as the principal part; ? in the north, there is a cluster of mini lakes with the five lakes in Hankou as the main part. At present, the space construction beside the water system begins to be effective, for example, after cleaning and repair of Dragon King Temple (Long Wang Tmple), there appears a green space surrounding the river with 4m in width, more than 1200m in length. As to the East Lake, 220,000 m² greenswards grow up there after some neatening of its surrounding environment. And there are also some improvement works being done on the river shore in Hankou. From experience, it is obvious that the building of green space beside water must take more functions, such as transportation, flood prevention, attractions, into consideration besides virescence.

4.3.5 Construction of Green Spots in Established Zone

This type of green spots mainly refers to urban gardens, square, mini pleasure parks, gardens at street intersection, green lands in residential area and those pertaining to some institutions. They all have direct relationship with people's residential environment. As to those green spaces pertaining to such institutions as schools of higher education, organizations for scientific research and hospitals, their beneficiary is limited, but virescence coverage is rather high. For instance, Luojia Mountain in Wuhan University, Yujia Mountain in Central China University of Science and Technology, Guizi Mountain in Central China Normal University, all have large pieces of green spaces and weighs much in ecological value, so they should be paid much attention and brought into planning system. Residential area keeps the most intimate relationship with residents. But till now, there has been overemphasis on such indices as cubage and exploited land size, which leads to the falling of residential environment quality. Here, the leverage function of market should be brought into play, and then the value of green lands can be exhibited in the price of house property. By this means, the construction of green lands in residential area will become a kind of voluntary action of commercial developers. About the construction of urban garden system, the layout must be rational and well-proportioned with the serving radius theory as the basis. On one hand, improve the number and quality of present green lands in gardens; and on the other hand, increase the number of gardens according to the theory of reachable species transfer. The best solution is the carrying out of "recede twos, enter green", i.e. prepare some fund and lands for green land construction when remove polluted factory and old residential area, and then there will be 30% green lands in main city zone with proper distribution.

V Conclusion

Green space system should be regarded as the basic element in balancing urban spatial structure and a necessary link between city and rural land. So it is reasonable to bring green space system into city planning. Based on the knowledge of the diverse functions taken by greenbelt

system, the author puts forward a new concept “Design with nature, Green into city”. It can work to guide layout practice and establish new urban spatial order through the planning and design of green space system.