"Dragon's Lair" Feng Shui Landscape Pattern and Its Interpretation in the Context of Urban Planning Practice in Southern Primorye

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Abstract. The article discusses the architectural and urban aspect of "Feng Shui" method for assessing landscape and climatic conditions, and the possibility of its use in the South of the Russian Far East. Following the "Feng Shui" rules, setting the distribution of energy on certain landscapes, we are dealing with the results of a comprehensive assessment of landscape, climate and other aerial characteristics. The overall landscape and climate characteristics of the territory (recorded in our case in the "Sha" or "Qi" energy distribution features) are not sufficient for the choice of certain urban planning techniques. In this regard, the "dragon's liar" landscape situation and the monsoon climate province climatic factors interaction analysis is of practical interest also for regional urban planning. The article assesses the influence of landscape and climatic factors on the formation of comfortable conditions within the "Dragon's Lair". In relation to the local landscape and climatic conditions of the Vladivostok agglomeration shown, that the method of finding out the landscape patterns conformed to "Dragon's Lair" characteristics usage practicability in the region is related to the such landscape morphotypes frequence and the annual wind and insolation regimes characteristics common for different areas. Under these conditions it is possible to identify the most comfortable terrain areas at the stage of developing an urban or rural settlement master plan, according to the topography analysis.

1. Introduction
The industrial revolution of the XIX century allowed the mankind to forget traditional methods of energy saving in urban planning, developed for thousands of years in the Mediterranean region, the Middle East and China. But the realities of XXI century draw us back to the origins, and above all to the experience of countries neighboring our region. The ancient Chinese urban planning philosophy "Feng Shui" and its Compass School, is here considered as a set of canons and rules for taking into account the landscape and climate specifics of East Asia in architecture and urban planning and represent the particular interest for our region.

The coastal part of China up to the watershed between the Huang He and the Yangtze rivers, as well as part of Manchuria, the Korean Peninsula and the Primorsky region, are located in the same climate province of monsoon and moderate monsoon weather [2,3]. The unique climate of the region,
which combines features of a sharp continental "Siberian" winter and a humid tropical summer had a significant influence on urban culture of local ethnic groups. Perhaps by virtue of the regional climate uniqueness and landscape types diversity, such a deep philosophy of human coexistence with nature has developed here rather than elsewhere.

2. Theory and methods
The Chinese associated human well-being with climate conditions and their changes. Living in a complex monsoon climate and hilly terrain allowed them to learn how to monitor and take into account the annual temperature cycle, the interaction of various landscapes with wind and insolation conditions, the influence of landscapes on the area moistening and collecting seasonal precipitation and fog moisture. The result of this interaction was expressed among other things in specific concepts that assess the territory comfort level and symbolize two opposite types of energy: "Chi" - positive, comfortable for human, and "Sha" - negative, uncomfortable. In fact, following the "Feng Shui" rules, setting the distribution of energy on certain landscapes, we are dealing with the results of a comprehensive assessment of landscape, climate and other aerial characteristics. At the same time it should be emphasized that the key factors for evaluating the adoptability of a particular territory for settlement development in classical Feng Shui are undoubtedly broader than the concept of bioclimatic comfort considered in the article [6].

The landscapes were systematized depending on the nature of their influence on the distribution of Sha and Qi energy and divided into elements with certain stable properties. Rivers, ground water, basins, etc. are the "veins of Earth" or "veins of dragon" (lun mo); winds and air flows are the life-giving matter – "qi" pneuma. The places where the "veins" connect were considered particularly significant and similar to acupuncture points in Chinese medicine. If the earth energy does not flow well through these channels owing to resisting energy flows encounters, then diseases occur in the earth's organism. Living near these places was considered unfavorable [4,8].

The symbols used in Feng Shui, such as the Phoenix, Tiger, Turtle, and Dragon, usually denote certain types of terrain and their interrelation [7]. These characteristics of landscapes were necessarily taken into account when placing settlements and forming the planning structure of cities during ancient times. Since then, special rules regarding symbolic connections between the building location and its' layout with certain cosmic realities in all categories of construction works were established. Any building was conceived as an organized space that resisted external chaos.

A special place among the favorable landscapes for buildings was took the "dragon's lair" - an amphitheater-type valley with four defenders – "The four protective features are identified with reference to the position of the observer and are named after four guardian animals from Chinese mythology" [4, p. 3]. The Black turtle at the North is a symbol of wisdom and longevity in Chinese mythology, often associated with the clan ancestors. That’s why the burials were located on the North side of the settlements as a symbol of the ancestors’ protection, like rear area defense. The red Raven or Phoenix bird from the South – (Fenghuang) has long been revered by the Chinese as a divine bird and auspicious, symbolizing beauty and harmony. That’s why the places for observations and admiration was located in the Southern sector – as the sun or the element of fire gave people energy and welfare. The green dragon – the spirit of water and rain, the sovereign of climate and weather, is the Creator of the "qi" energy, located from the East. Finally, the white tiger as the spirit of the mountains and caves, the wind that drives out evil demons, a defender and a fearless warrior, is located on the West side. (figure 1)
The overall landscape and climate characteristics of the territory (recorded in our case in the "Sha" or "Qi" energy distribution features) are not sufficient for the choice of certain urban planning techniques for aerial development in the context of modern European urban planning culture in terms of assessing the bioclimatic comfort level. Only using the results of a multi-factor landscape and climate situation assessment can make the open and closed urban spaces geometric parameters variability used as a means of creating comfort [10]. In this regard, the "dragon's liar" landscape situation and the main monsoon and moderate-monsoon climate province climatic factors interaction analysis is of practical interest for regional urban planning.

The main landscape characteristic of the "Dragon's Lair", which determines its bioclimatic comfort, is the amphitheatral shape of the valley, opened to the South. In fact, it works as an insolation niche collecting the low winter sun rays and providing insolation heating during the daytime, and also cold air free outflow during the winter nighttime. (figure 2) The Azure Dragon Mountain from the East protects the valley from the raw cold summer wind and fog (the 1st stage of the sea monsoon) and slanting rains (2nd stage of the sea monsoon). The Tiger and Black Turtle from the West, Northwest and North provide wind protection from the winter monsoon. The basin from the South reduces summer overheating, smoothes the temperature contrasts of autumn cooling and provides additional "lighting" of the valley during the low solar altitude in winter.
Figure 2. "Dragon's Lair" bioclimatic comfort formation in the moderate-monsoon climate province (P Kazantsev).

"Feng Shui forest" on the watershed creates additional protection from strong winds, allows calm winds in summer pass through for aeration, provides sun protection in summer (from West and South-West – the main overheating sectors of the horizon), and preserves the natural hydrological balance of the territory. Its role in maintaining comfort of the "Dragon's Lair", water content and land fertility of the territory was fixed by special, sometimes rigid rules that prohibited any economic development of the watershed [1].

In common, regarded amphitheatrical valleys spatial characteristics (together with the vegetation on the tops of hills) are close to the ratio of the hills’ height and valley plan dimension as 1:3-1:5, which is optimal to keep warm and dry air in the valley from blowing out. With regard of the mountain systems average altitude for the considered region, this limits the capacity of the dragon's Lair to either a small settlement or a separate structural element for a larger city development [5].

3. Experience and results
Analyzing coastal areas’ small-scale landscapes of the Far-Eastern South, which is the most urbanized part of the Russian East, it is easy to notice that the landscape situation characterized by Feng Shui as a "dragon's Lair" is quite typical for local conditions (double diagonal hatching on the diagrams). A more detailed assessment of Vladivostok area’s continental part shows that the southern steep slopes of hummocky watersheds stretched along the latitude commonly divide this kind of amphitheatral valleys of the southern orientation (figure 3, A). In the late XIX – early XX centuries – at the early stage of Vladivostok development – the planning structure of the city almost completely followed this natural terrain structure. Low-rise buildings of urban settlements called “slobodka” – specific planning units were commercial villages or small workers’ settlements of the city – occupied the flattest and
most comfortable terrain areas and in such a way the development followed the canons of "Feng Shui almost perfectly (figure 3, B).

Figure 3. Showing up the landscape patterns conformed to "Dragon's Lair" characteristics and their consideration in Vladivostok continental part urban development process (P Kazantsev).

Largely spontaneously established compliance between the city urban fabric and the Southern part of Murav’ev-Amursky peninsula landscape was infracted with the beginning of mass industrial development in Vladivostok (late 60's of XX century). Industrial construction technologies made it possible to start continuous urban development of both lowlands and watersheds of the peninsula without taking into account landscape and climatic features of the area [12], (figure 3, C).

At the same time sharply increased number of storeys and the length of buildings could no longer correspond to small-scale terrain units. Mass high-rise development "came out" the ridges’ wind shadows and infracted the insolation regime of South-oriented amphitheatral valleys. The situation was aggravated by an urban planning error of the early XXI century when local architects began to place high-rise buildings almost in the centers of the "dragon's Lair" areas (figure 3, D).

To date, the initial landscape and climate situation on the continental development area of Vladivostok has been completely infracted, and the possibility of using the "Feng Shui" logic to revise urban planning decisions is minimal. However, as the plans for urban development of the city’s island territories that still preserve natural landscapes – primarily Russky island – are starting to be implemented, it is advisable to assess the possibility of using the methodology at a new stage of city development.

The research was conducted for Saperney peninsula where the island’s first stage development is planned. The goal was to create the planning scheme which would follow the landscape morphology. Three chains of amphitheatral valleys opened to the Southern sector (and conformed to Dragon’s Liar
characteristics) were found in the analysis, and these areas were regarded as fragments for residential areas as they are located in the most comfortable microclimatic conditions. It was suggested to leave the watersheds as unbuilt green areas which would protect the settlements (as the Feng Shui forest did) to keep these microclimatic conditions (figure 4).

![Figure 4](image.png)

**Figure 4.** Showing up the landscape patterns conformed to "Dragon's Lair" characteristics and the suggestion for their consideration in further development of Saperny peninsula (Russky island) (Y Marus).

On the settlement scale the Dragon’s Liar principle also took place, as the housing groups form the semiclosed yard spaces chains also opened to the Southern sector. The same goes for houses: their circulation spaces and apartments’ utility rooms with smaller fenestration area located on the North side protects the living spaces with glass curtain walls and balconies oriented to the Southern sector (figure 5). Efficiency of the suggested method from climatic point of view was approved with slopes exposure and wind regime digital analysis. The decision about the revision of existing functional zoning scheme was made after finding out the difference of suggested developing method.
Figure 5. "Dragon's Lair" as a prototype for the dwelling group space planning structure development in Far-Eastern South conditions. Graduation project “Saperny peninsula resettlement concept” by Y. Marus.

4. Discussion
Usage of the “Dragon's Lair” methodology for choosing midrise city blocks’ shape, geometric parameters and orientation was later confirmed on the professional work level. The method was used to develop a proposal for the city blocks typology that regards the wind and insolation regime microclimatic changes in hummocky topography conditions. The work was carried out as part of the design and research theme “Architectural and Urban Planning Microclimate Evaluation for Vladivostok City Area” (for consulting bureau Strelka KB, figure 6). Later, the methodology had an influence on the choice of new cultural and business center city blocks’ urban planning configuration in the area of the First River (Nikken-Sekkey company, Vladivostok working group consultations, figure 7, A, B)
Figure 6. "Dragon's Lair" as a prototype for the dwelling group space planning structure development in Far-Eastern South conditions. Midrise city blocks typology suggested for “Vladivostok development space planning regulations”, Strelka KB (P Kazantsev).
Figure 7. City Master Plan for Vladivostok – Strategic Development Area Vladivostok First River, Nikken Sekkei, 2018 (Image by Nikken Sekkei). A, B – city blocks configuration regarding insolation and wind regime.

5. Conclusions
The method of finding out the landscape patterns conformed to "Dragon’s Lair" characteristics usage practicability in the region is related to the landscape morphotypes frequen
cce in Southern Far East and the annual wind and insolation regimes characteristics common for different areas. Under these conditions it is possible to identify the most comfortable terrain areas at the stage of developing an urban or rural settlement master plan, according to the topography and watersheds vegetation
distribution analysis. In this case, wind and insolation regime 3D modeling and modeling results

correction by field observations, can be considered as necessary at the stage of detailed urban planning
duced project development. This approach also can be used as one of the landscape and ecological
assessment stages to identify prerequisites for particular territory ecological framework development.

6. References
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