

Architectural and Landscape Layout Principles of River Valley Areas in the Ukrainian Carpathians

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The research is focused on the challenging problem of correlation between the architecture and landscape in the river valleys located in the Ukrainian Carpathians. The article defines and proves five essential principles of architectural and landscape layout of these territories, based on the results of author's research and modern scientific developments.

Key words – valley area, architectural and landscape layout, principle, local population distribution system, settlement, scenic area.

I. Introduction

During the recent decades, fast growth of tourism and recreation industry, changes of ownership forms and business methods contributed much to dynamic development of urbanization processes in the Carpathian mountains, where settlements and their infrastructure are located in the river valley areas. These territories draw special attention due to their huge resource potential and place in the population distribution system. Besides, economic situation of the Carpathian settlements is quite complicated, therefore business activation in the region, also revealed in urban development (particularly in river valley areas) is a crucial challenge.

Valleys of the Ukrainian Carpathian rivers make an environment of special importance and sensitivity, where fast natural and human-induced processes take place. If not managed properly, the urbanization may cause negative disturbance of natural balance resulting in environmental disproportion. Human activity in the Carpathians increases frequency of damaging disasters, such as ruinous high waters and floods. The Framework Convention on the Protection and Sustainable Development of the Carpathians was adopted in May 2003. The facts above prove the timeliness of the issue, i.e. optimization of correlation between architectural and urban development works and natural environment conditions in the river valley areas.

II. The main part of the material

Based on the results of architecture-landscape interrelation in the river valley areas of the Ukrainian Carpathians and in accordance with the general concept of sustainable development and specific conditions of urban construction, five principles of architecture-landscape layout of the surveyed territories will be further discussed. The principles are as follows: functional expedience and sufficiency, architecture-landscape congruence, environmental friendliness, safety and mobility.

Term “expedience” means compliance with the goal, practical usability and reasonableness. Sufficiency stands for satisfaction of certain need or meeting certain requirement, being properly proved and therefore convincing. [1] In other words, functional expedience of any object or system means that the efforts of this object or system are directed at gaining its preset goals. Functional sufficiency is the presence of all necessary useful options in the object or system.

At the level of local population distribution systems, the principle of *functional expedience and sufficiency* in the architecture-landscape layout of the river valley areas of the Ukrainian Carpathians shows in detecting outer and main inner functions of the system, their geographical distribution and proper scale selecting. At the level of settlements this principle will appear in functional valley area zoning based on general functional concept of population distribution system, to which this settlement belongs, and previous analysis of its needs. At the level of river valley area components this principle is found in the scale of architectural works and their space and layout solutions.

The term “congruence” means compliance or unity with something. [1] In city planning the principle of *architecture-landscape congruence* means observing balanced aesthetic and functional unity of architecture and natural landscape. John Ormsbee Simonds says that a person naturally feels and enjoys unity and harmony of the integral landscape scenery. The degree of visual harmony or unity of various elements of the landscape defines not only the depth of our satisfaction, but also the quality known as “beauty”. Successful designs should reveal unity systems, ensuring joint of all artificial and natural forces and thus creating new environments of serenity and order. [2]

The congruence principle, mentioned above, in architectural and landscape layout of river valley areas is implemented in space layout of the territory, proportion of natural and human-introduced components of architectural landscape, in the scale of buildings, architectural style, coloristic and decoration materials. Observing the principle of architecture-landscape congruence helps to save authenticity and attractiveness of landscapes of river valley areas in the Ukrainian Carpathians.

The principle of *environmental friendliness* is based on the previous assessment of actual situations in the valley areas of the Carpathian rivers. Environmental friendliness is the ability not to harm the natural environment. Nowadays, the environment status is the most challenging issue because of the global ecological crisis. Urban territories are mostly responsible for the complicated environmental situation on the planet. [3]

The Carpathians are particularly sensitive to human impact, therefore environmental friendliness in the architecture-landscape layout of the river valley areas in the Ukrainian Carpathians is extremely important. At the level of local population distribution systems, the principle of environmental friendliness shows in determination of territorial development of land and intensity calculation of valley areas and adjacent terrains. At the level of settlements and typical elements of architectural landscapes this principle

will appear in low impact upon natural landscapes and observing sanitary and protective norms in functional land zoning, locating buildings and structures on the territory, utility lines (water supply, sewages, heating and power supply) and solid waste management. Besides, this principle is implemented in ecological architecture implying energy and material saving technologies and implicated integration of human-made objects and their natural environment.

The term “safety” stands for freedom from danger or risk, sometimes even for light-heartedness. [1] Safety is an important psychological human need. Psychologist Abraham Maslow in his theory of human motivation described human need in the security of health, property and the future and put safety right above physiological needs in his hierarchy of needs. The principle of safety in urban development is included into environmental friendliness, because the design oriented towards healthy environment must ensure its safety to the nature and human health.

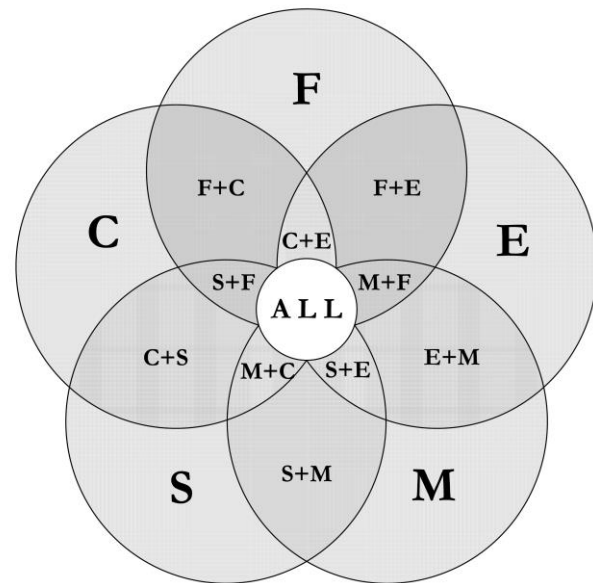
The principle of *safety* in the architecture-landscape layout of the Carpathian river valley areas stays separately from the environmental friendliness to emphasize the importance of protection from industry-induced threats, typical for these areas: floods, high waters, mud streams, soil shifts and erosion, as well as possible earthquakes. The safety principle in the architecture-landscape layout of the Carpathian river valley areas is implemented in introduction of river bed stabilization means, creating polders and dry mountain channels, in designing new water control dikes and repairing old ones, bank stabilization, designing water control structures (embankments and semi-embankments) to increase the water flow speed, building engineering structures (bulkheads), in application specific construction and technical solutions to buildings and engineering development of territories.

Nowadays the term “mobility” is getting more and more popular. The word means ability to move fast, flexibility or being quick in assessment of situation and finding new forms of business. [1] The principle of *mobility* in various spheres of human activities results from the global dynamism of the world and mankind.

The principle of *mobility* in the architecture-landscape layout of the Carpathian river valley areas is mainly supported by the dynamism of local population distribution systems in the Carpathians, which is visible in the intensity of passenger and cargo transportation flows, valley area intensity, as well as in development and degradation processes in some functions of the systems, which leads to constant transformations in design and architecture. The principle of mobility in this case is found in using temporary portable dismountable structures for seasonal tourist businesses, long-term buildings made of lightweight blocks that may be quickly dismantled and transported, as well as in applying structures that can be easily adjusted to comply with the changed standards of modern society.

The above principles of the architecture-landscape layout of the river valley areas in the Ukrainian Carpathians are closely connected to each other and, according to the system approach, are joint in one entity

(fig. 1). Some of the principles are closer to each other, while the connection between others is weaker. This also depends upon the level of design, however, all of them must be applied in architecture and landscape design for the territories in question.



- F - principle functional expedience and sufficiency
- C - principle architecture-landscape congruance
- E - principle of environmental friendliness
- S - principle of safety
- M - principle of mobility

Fig.1 The system of principles of architectural and landscape layout of river valley areas in the Ukrainian Carpathians

Conclusion

These proved principles make a basis for architectural design concepts in river valley areas to be further developed upon. Proper and comprehensive application of the five principles to the architecture-landscape layout of the river valley areas will ensure realization of sustainable development of the Carpathians on city construction level.

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