

Typology of depressive communal areas in a Russian town

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Abstract. The typology of communal areas in a Russian town is presented in the article. The typology is characterized by location in town functional zones, by area localization, by hierarchy according to size and type of depression. Communal areas located in different functional areas of the city are divided into: communal areas in the residential zones; communal areas in public and business zones; communal areas in industrial zones; communal areas in engineering systems zones; communal areas in traffic-road net zones; “green” communal areas; communal areas in special use zones. By localization relative to the city center the communal areas can be: in the historical core of the city; in the administrative center of the city; in the middle part of the city; in the peripheral part of the city. According to the communal areas hierarchy, it can be considered at three urban levels (similar to economic theory): macro level; meso level; micro level. According to the types of communal areas depressiveness the territories can be divided into: economically depressed territories; socially depressed territories; architecturally depressed territories; territories with landscape depression; visually depressed territories; eneologically depressed territories. The above mentioned typology of communal areas based on the degree of their depression, will help the design and reconstruction process of a healthy urban environment in the cities of the future of Russia.

1. Introduction

Any town-planning system though constantly developing still contains some components of planning structure that do not change in a course of time. The functional zone being fixed to a certain area in the spacious structure of a town is inert to some extent that is why its reorientation is possible only under the condition of radical changes in a town building up.

The architectural-town-planning activities carried out to increase the labor productivity as well as to improve the level of social and cultural development are always connected with the improvement of the conditions of communal areas of a town.

The objects of a town municipal engineering gradually involved in the town structure can not be developed or modernized due to their being encircled by a tight town-planning.

The typology of communal areas of Russian towns is suggested in this article as guidance for planning and reconstruction of communal areas with a certain extent of depressiveness as well as suggestions on how to improve the regulation basis of town-planning.

2. Methods

The methods of research include the use of systematic and environmental approach, analysis, generalization and systematization of both theoretical and applied scientific papers, the study of archival and design materials, field examination, qualimetric data base processing as well as graphic modeling and experimental designing.



3. The typology of communal areas

While examining the communal areas and studying their depressive state, taking into consideration the features peculiar to Russian towns' communal areas, some typological characteristics were found out:

A) Due to communal areas' location in different functional zones:

- communal areas in the residential zones;
- communal areas in public and business zones;
- communal areas in industrial zones;
- communal areas in engineering systems zones;
- communal areas in traffic-road net zones;
- "green" communal areas;
- communal areas in special use zones.

Communal areas in residential zones - are territories and objects being a part of the housing and utilities services structure, the objects are adjacent to the housing stock or work for its direct domestic maintenance. These include: utilities communications passing through the territory of a residential courtyard, electrical substations, street lighting of the driveways to a residential building, heat meter units, attached or built-in boiler houses, utility sites, household waste collection sites, parking lots, courtyard improvement, courtyard landscape gardening.

Communal areas in the public and business zones - are the territories and objects related to the public-business city function of communal areas, for example, squares in front of the public and business objects, markets and market-places, warehouses, saunas and laundries.

Communal areas in the industrial zones - are the territories and objects located on the industrial sites intended for the utility maintenance of the industrial process, for example, utilities communications passing through the industrial site, electrical substations, street lighting, heat carrier units, boiler houses, waste collection sites, parking lots, courtyard improvement and landscape gardening, warehouses and wholesale malls.

Communal areas in engineering systems zones - are the territories and objects related to the city communications, for example, nuclear power stations, hydro-power stations, electric power stations, heating plants, street lighting, separately standing district and city boiler-houses, water intakes, wastewater treatment facilities, gas stations, tele- and radio towers, collecting channels of city engineering systems.

Communal areas in traffic-road net zones - are the territories and objects related to the city traffic infrastructure as well as sanitary protection zones in accordance with the technical regulations requirements. These include: rail, car, river, sea, air and pipeline transport communications, railway stations, parking lots, garages and depots, bridges and viaducts.

"Green" communal areas - are the territories and objects related to protective landscaping such as sanitary-protective landscaping, forest belts, nursery gardens and water intakes.

Communal areas in special use zones - are the territories and objects related to the city functional special purpose zones as well as sanitary-protective zones established according to sanitary-epidemiologic regulations. These include: cemeteries, crematoriums, burial ground of cattle, city landfills, waste-processing plants.

B) By localization relative to the city center the communal areas can be:

- in the historical core of the city;
- in the administrative center of the city;
- in the middle part of the city;
- in the peripheral part of the city.

The analysis of the formation and development of Russian towns through different historical stages shows that urban fabric can be divided into three main zones: central, middle and peripheral [1]. Given that the communal area is quite diverse in its function, it is impossible to locate all the objects in a single, median or peripheral zone. However, it is of great importance to consider the future location of

communal areas while planning in order to prevent the development of a depressed urban environment.

C) According to the communal areas hierarchy, it can be considered at three urban levels (similar to economic theory):

- macro level;
- meso level;
- micro level.

The allocation of urban levels is conditional, since the territory itself has only a certain geographic location and resources. Only when included in the social environment does a certain area become a significant part for a particular life situation in a person's life [2].

Macro level

A.V. Krasheninnikov defines the urban environment as consisting of discrete parts that differ in the method of creation and in perception. In its turn, macro-space stands for an urban territory, which is limited by the conditions of pedestrian accessibility and recognizable social practice [2].

In this regard, the macro-space of the city means "the socio-spatial complex of the urban environment macro level having event coloring and territorial affiliation, for example: the city center, metro station area, neighboring block, culture park" [2].

In this research, the macro level of communal areas within the city is considered as the formation of spatial objects, sanitary-protective landscaping territories and urban landscape areas with housing and utilities infrastructure. Due to their vast spaces, such objects located within the city are quite extensive, creating difficulties in the architectural and spatial planning of these parts of the city [3].

Communal areas related to macro level are:

- cemeteries;
- warehouses complexes;
- city landfills;
- sanitary-protective zones;
- engineering systems zones.

The macro level territories require strong investments for their modernization and maintenance.

Meso level

In the architectural space, the meso level will indicate a medium-sized space. Meso-space can be defined as "a part of territory that includes several micro-spaces united by the condition of social control." [4]

The meso level also includes the adjacent space, courtyard and inter-yard space, the space of squares, urban pedestrian zones, arcades, malls, plazas [5].

In this research, the meso level of town communal areas represents the environment formed by medium and large architectural complexes that are actively involved in the formation of the street line and affect the town as a whole. Such objects are often located at the main points of the town structure.

The meso level includes architectural structures and communal areas ensembles with such objects of communal areas as:

- transport enterprises (railway stations, bus stations, airports);
- markets and market pavilions;
- sanitary enterprises;
- energy enterprises;
- waste recycling plants.

Micro level

The micro level implies the interaction between a man and architectural objects, that is why we are talking about the contact space which, on the one hand, has an impact on a person, and on the other hand, it undergoes a reciprocal influence. There is some kind of "dialogue" between a person and the environment around him [3].

Among all of the city's space levels, microspaces are the smallest particles of the urban social environment [6].

The research the micro level of city communal areas is characterized by individual objects of small enterprises that create local "interior" space. Such a space as a contact medium corresponds to the psychophysiological parameters of human perception for example in residential areas where a man interacts with the communal area objects.

D) According to the types of communal areas depressiveness the territories can be divided into:

- economically depressed territories - communal areas in a state of extreme economic decline;
- socially depressed territories - communal areas leading to a change in a person's psycho-emotional state and degradation of the perception of social values, social norms of behavior and perception of the environment;
- architecturally depressed territories - communal areas with physical and moral depreciation of architectural objects (architectural shell, structural and space-planning system), as well as low artistic qualities of the architectural and spatial environment that cause depression;
- territories with landscape depression - communal areas with the degradation of the natural and anthropogenic landscape of housing and utilities complexes that negatively affect the environment and people;
- visually depressed territories - communal areas with violated visual ecology, leading to disharmony of the environment and adversely affecting the emotional and physical condition of a person;
- eneologically depressed territories - communal areas with disruption of energy-information links between architectural objects and people, urban space and people due to the modern development of a city and the lack of harmony between architecture and the environment in which it is embedded.

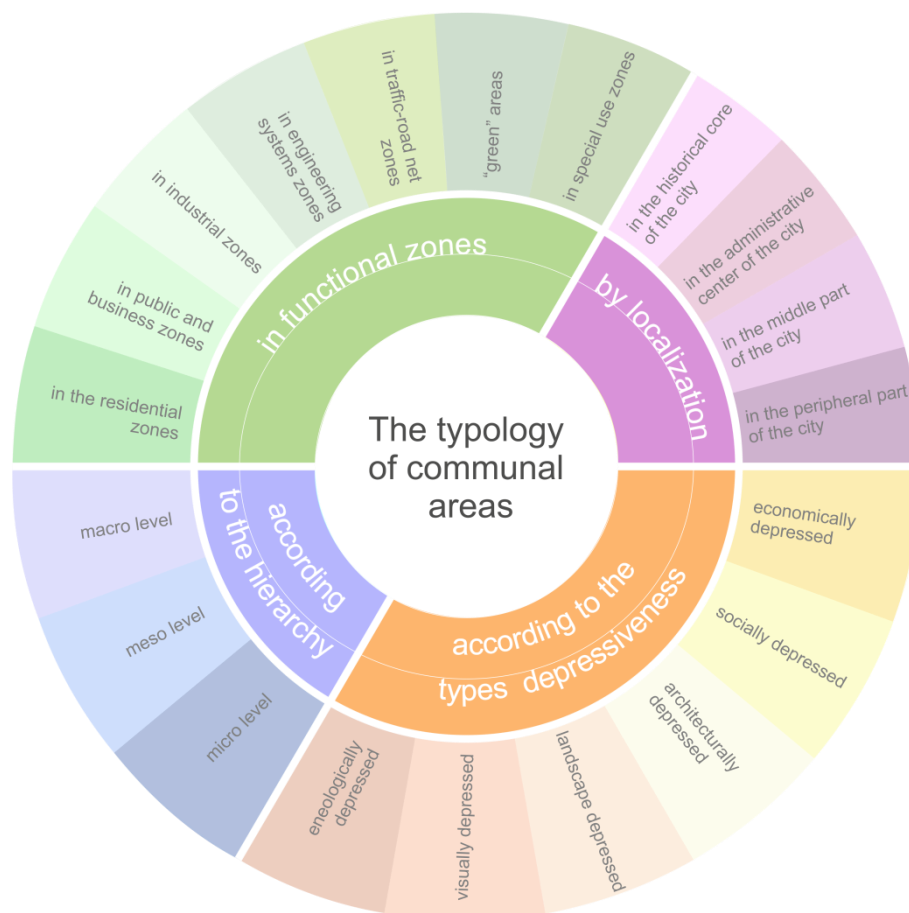


Figure 1. Thypology of communal areas

4. Conclusion

The typological features of town communal areas depression by functional affiliation, by town planning localization, by formation hierarchy, by types of depression identified in the research helped to determine the most efficient directions of communal areas rehabilitation. The above mentioned typology of communal areas based on the degree of their depression, will help the design and reconstruction process of a healthy urban environment in the cities of the future of Russia.

5. Acknowledgments

The main results of the study are presented in 20 publications (4 in publications recommended by the Higher Attestation Commission of Russia). The research materials were approved in the final qualifying works of the majors "Architecture" and "Design of the Architectural Environment" at the Orenburg State University.

The presented typology of communal areas was introduced into the research work of the Architecture Department of the Orenburg State University on the topic "Architectural and Planning Modernization of the Orenburg Urban Landscape Depressed Zones".

The main provisions of the study were approved in the practical architectural activities of the project team of the "Archimetria" Design Bureau in the course of the federal program "Comfortable Urban Environment" 2017-2018 in Orenburg and in Svetly town of Orenburg region. The implemented courtyards were included into the Federal Register of the best implemented practices (projects) for improvement by the Russian Federation Ministry of Construction and Housing and Utilities Services.

References

- [1] Filanova T V and Shuruev F V 2015 Analysis of the process of formation of the system of public and recreational spaces in the largest historically developed city *Architecton: news of universities* **49**
- [2] Krasheninnikov A V 2016 Macro-spaces of the urban environment *Architecture and modern information technologies* **3 (36)**
- [3] Ushkin D I 2008 Contact environment: classification of types *Architecton: news of universities* **22**
- [4] Krasheninnikov A V 2012 Social and spatial structure of pedestrian space *Architecture and modern information technologies* **4 (21)**
- [5] Smolenskaja E O 2004 *Method of modeling of open architectural spaces in the urban environment: on the example of the city of Samara* (Nizhnij Novgorod: Cand, Diss)
- [6] Krasheninnikov A V 2014 Micro-spaces of the urban environment *Architecture and modern information technologies* **4 (29)**