

# Study on the Formation of Residential Planning Units in the Middle of XX — Early XXI Century: an Interpretive Review\*

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**Abstract**—The article analyzes the patterns of formation of residential planning units (microdistrict, neighborhood, community) based on the comparative retrospective analysis of their concepts formation. The article is based on the author's own on-site survey of the existing and new residential planning units, as well as on the analysis of theoretical sources. This study employs a chronological and critical analysis of the formation periods of the residential planning unit concepts, and undertakes a search for general patterns of their developmental transformations. Methodologically, the study will examine the topic material in the following order: the formation of concepts of residential planning units in the middle of the XX century; critical reinterpretation of the theoretical concepts of residential planning units in the late XX century; development of theoretical concepts of residential planning units in the early XXI century.

**Keywords**—residential planning units; microdistrict; community; neighborhood; urban morphology; urban planning

## I. INTRODUCTION

The search for rational organization of cities at the beginning of the twentieth century entailed the enlargement of historic quarters, the formation of theoretical concepts for residential planning units (RPU) as the smallest indivisible structural and planning elements of settlements. Thus, the 1970s witnessed a worldwide experiment of planned, functionalist development of cities based on the RPU principles. Residential planning units were treated as indivisible "cells" of urban tissue with the necessary service complex for population organically tied to housing. The end of the twentieth century was characterized by criticism of the existing concepts of RPUs. In some cases, this criticism led to canonically-built microdistricts being destroyed and wiped off the ground. Scholars also developed alternative ideas for the organization of the living environment. At the verge of the twenty-first century, patterns in the historical development of the settlements led to the reassessment of the content and change in morphological structure of the living environment, as well as the search for the optimal plan unit.

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Researchers note that a plan unit may be identified in any part of the town plan that is morphologically different from its surroundings - in terms of its streets, plots and buildings. In this sense, the interpretative review of the conceptual formation and development of RPUs in the middle of XX - early XXI century appears to be particularly relevant.

## II. THE FORMATION OF CONCEPTS OF RPUS IN THE MIDDLE OF THE XX CENTURY

### A. Neighborhood Unit (USA)

Clarence Arthur Perry developed the neighborhood concept, which was included in the development plan for New York and its adjacent territories. The emergence of the first neighborhood, "Forest Hill Gardens," American historiography dates back to 1910. The main components of the neighborhood concept were outlined in the study called "The neighborhood unit," published in 1929. Neighborhood, as envisioned by Clarence Perry, was an integral residential unit in terms of social organization and planning. He believed that the territorial unification of representatives of various social strata (similar to rural communities) would contribute to the development of common interests and good neighborly relations among people, which ultimately would lead to healthy social life of the city as a whole. "Educational, religious and social life of the population became the center of the unit [1]. Open spaces were to form a system of small parks and recreational spaces designed to meet the needs for communication, and organization of collective holidays. On the school premises, it was planned to conduct election campaigns and community meetings. The transport arteries Perry defined as the boundaries of a neighborhood. Main streets should have been wide enough for the development of the pedestrian network and shops. In each unit, local administration was supposed to coordinate its planning development and a police station managing the collection of taxes and overall order on the territory. The land-use plan and the density of settlement were to be properly formatted and approved in the signed contract between the Neighborhood Council and the municipal government. In the 1930s, neighborhood gradually became the official plan and

regulatory element in the structure of an American city. In the first third of the twentieth century, sociologists explored the process of naturally evolving local "neighboring" communities in Chicago, which, as a rule, did not coincide either geographically or functionally with neighborhoods. This process led to a critical rethinking of the concept of neighborhood and the rise of the notion of natural areas (for

example, the natural areas of Little Italy or China Town). Duany Plater — Zyberk & Company (USA) became the followers of Perry's ideas. They proposed a new vision of the Neighborhood idea in the work called "The Lexicon of New Urbanism" designed for the development of American suburbs [2] (see "Fig. 1").

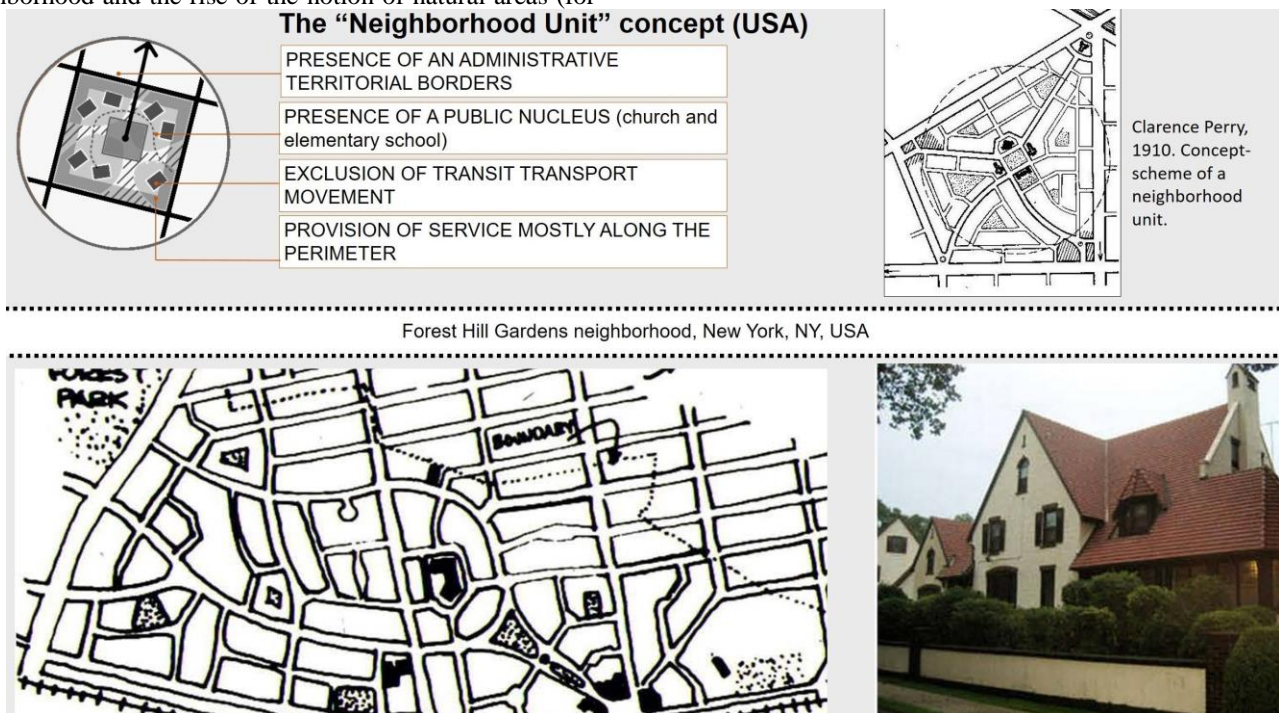


Fig. 1. Development of the "Neighborhood Unit" concept (USA).

**B. Community (the UK, European Countries)**

The European variant of an RPU was tested during "County of London Plan" project (1937–43, Great Britain), which relied on the naturally developed, self-sufficient residential formations — communities. The concept was widely implemented and assessed during the construction of the New Towns of in the United Kingdom. Communities were created along transportation routes. The geometric center of each unit was a public transport stop, saturated with services and trade facilities with equal pedestrian accessibility for residents. In the comprehensive plans of UK towns, one could identify several hierarchical levels: a "residential group" with a playground for games and a public hall; community with an elementary school, shopping center and public hall; the community group formed the district with the trade function, and the last level — the urban center. Thus, in accordance with the comprehensive plan, Harlow town was divided by highways into several communities,

each with its own "sub- center". For British planners, the "core" of the community is the place, around which the communication of community members should form. One group of researchers emphasizes the priority of interpersonal relations, arguing that social life is a social "framework" of the community, on which planning decision should be based. Shopping center became the most significant public enterprise in the community. According to the studies authored by Shemyakina, the development of the community concept in the 1960s is associated with the development of transportation infrastructure and a change in the planning structure of cities in the UK [3]. The author identifies the following periods in the development of residential communities in England in the twentieth century: the "microdistrict" (the period of the first-generation New Towns of United Kingdom constructed around 1940s); "the core area - ecological area" (adopted in the towns of the second generation in 1960–70s), "multifunctional communities" (late XX - early XXI century) (see "Fig. 2").

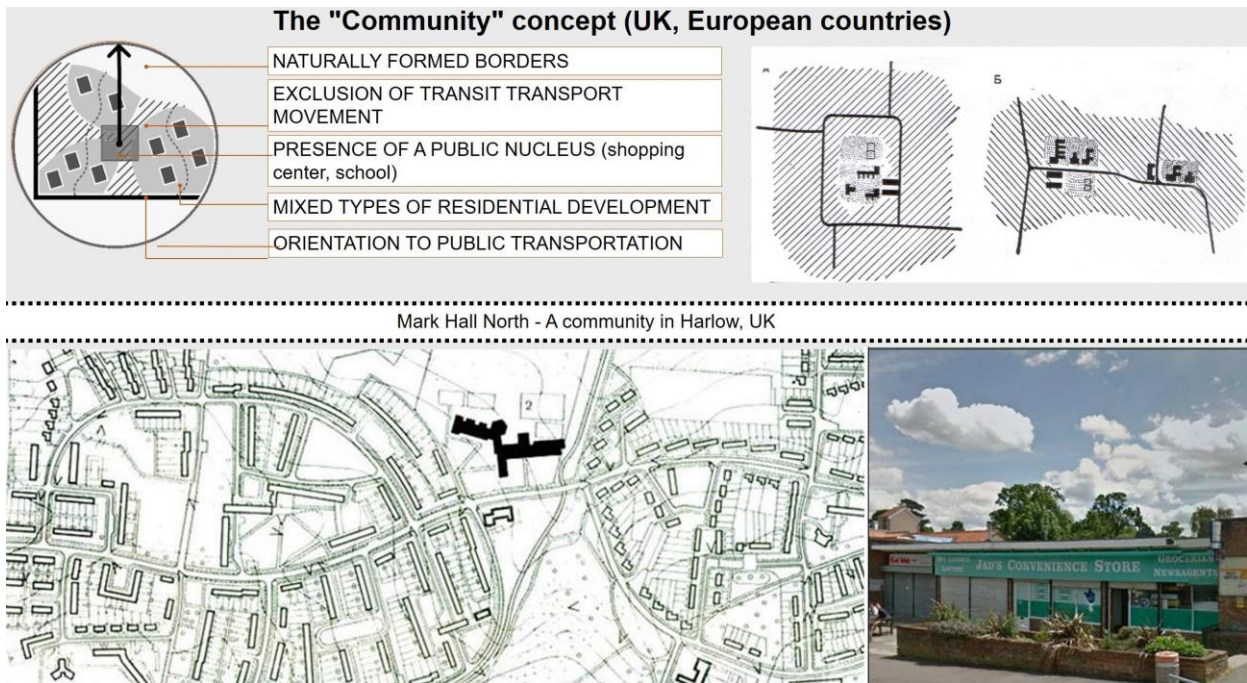


Fig. 2. Development of the "Community" concept (UK, European countries).

### C. Microdistrict (USSR, Eastern Europe, China)

The concept of "microdistrict" developed in the USSR in the course of experimental planning and planning competitions. As demonstrated in research by Kosenkova, experimental competitive projects treated the microdistrict as an indivisible urban element, with the complex of essential services for the population organically connected with housing [4]. Galaktionov (1946) proposed to form residential areas from groups of enlarged quarters — microdistricts. The traffic system in the microdistrict was built on the basis of excluding the internal transit traffic and ensuring the safe organization of the pedestrian walkways of children to children institutions. Location of residential buildings was designed in accordance with the principle of creating residential groups with their own gardens and primary maintenance. Residential groups were to be erected with a focus on urban highways and access to a public park. Therefore, by the end of the 1950s, the microdistrict entered into the practice of urban planning as an "algorithm" for designing residential areas, based on a calculation of the density of buildings, the radius of service of social objects determined from averaged indicators, and the development of a nomenclature of typical elements. Purposeful theoretical

and applied development of the norms and regulations for the design and construction of the Soviet microdistrict began from the competition for the design of an experimental residential area in South-West Moscow in 1960 (arch. Rubanenko, Dyubek, Galaktionov, Zaltsman, Yokhales, etc.). The concept of the microdistrict was applied in the Chinese development practice. As evidenced by Duafan Lu research, in China the concept of a microdistrict was first used as a basic living unit in the process of designing a preliminary comprehensive plan for Beijing in 1957 [5]. By 1958, China witnessed the beginning of debates about the future construction of microdistricts. Professionals proposed a "direct quotation" of the Soviet "microdistrict" model, with the norms and rules adopted by that time, but there were also supporters of preservation of the traditional layout that had developed in the residential areas. The Fifth and Seventh Congresses of the International Union of Architects, held in 1958 in Moscow and in 1963 in Havana, the International Planning and Building Symposium, held by the UN in September 1964 in Moscow, recognized that research and international practice of urban planning confirm the feasibility of using the microdistrict system for the development of a city structure [6] (see "Fig. 3").

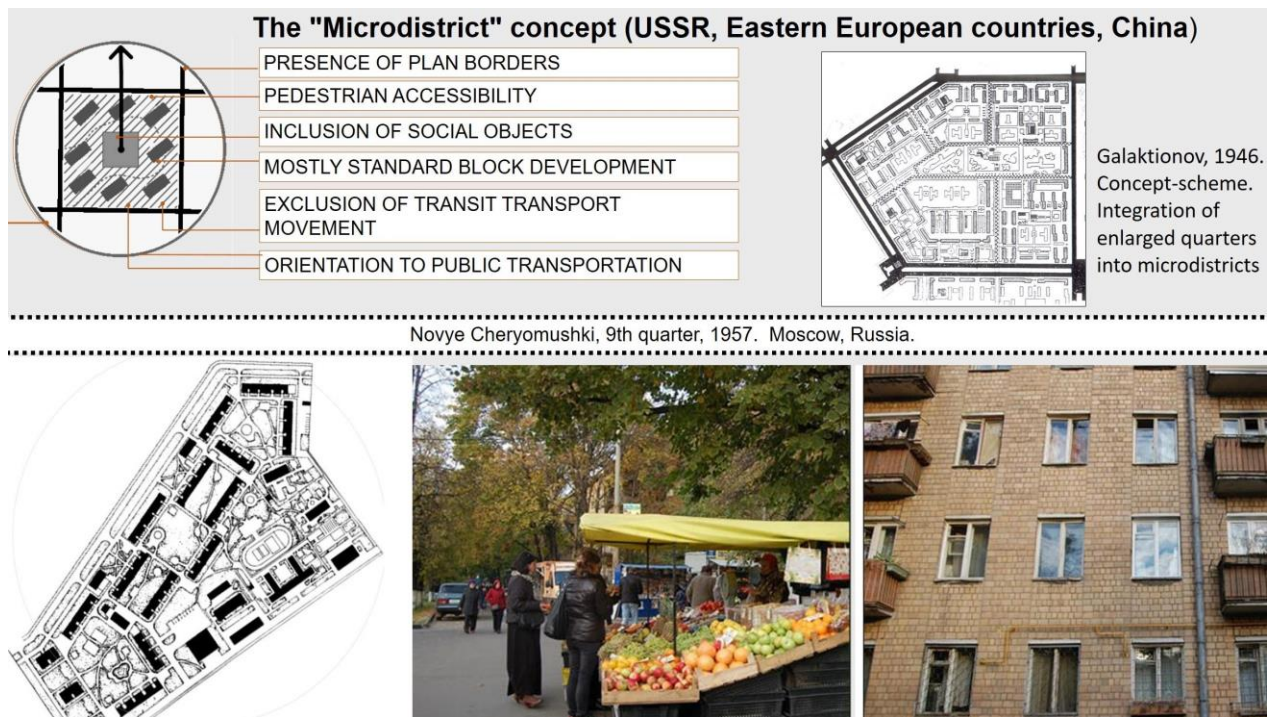


Fig. 3. Development of the "Microdistrict" concept (USSR, Eastern European countries, China).

A comparative analysis of the concepts of RPUs that have developed by the middle of the twentieth century demonstrates their common features:

- morphological identity;
- strict interrelation and territorial division of the main functions of living, work, rest, primary and secondary education, as well as their pedestrian connectivity;
- the presence of planning boundaries, social institution in the form of a church or school; planning center in the form of a market square or a microdistrict square; division of residential areas into smaller formations;
- Residential units become the smallest elements of the planning structure of a city.

### III. CRITICAL REINTERPRETATION OF THE THEORETICAL CONCEPTS OF RPUS IN THE LATE XX CENTURY

Analysis and systematization of domestic and foreign theoretical studies in the field of urban planning of RPUs enabled the identification and summation of the scholarly criticism that had developed by the 20th century:

- The lack of consistency between industrial methods of mass construction and the social demand

Typical housing did not address the diversity of inhabitants, their needs, lifestyles, cultural norms and forced them to adapt to this incoherence at the cost of serious social and mental issues. According to Kiyanencko, the "modernist" layout of the RPUs provoked criticism from residents for the imperfection of social life, their inability to reflect the complexity of social, economic, and technical problems [7]. As shown in the research conducted by Kosenkova, in the

USSR, in the period of intense discussions of the industrial method of solving the housing problem, one of the ways to collect the opinions of the population were letters to the architects and the government. In the late 1960s, western countries survived a wave of social rejection of the accepted industrial methods of forming a living environment. For instance, the residential area "Pruitt-Igoe" in St. Louis, Missouri built in accordance with all the progressive ideals of CIAM, awarded by the American Institute of Architects, was barbarically spoiled by the inhabitants, and eventually dismantled by the authorities;

- The rigidity of the RPU functional zoning scheme

In the USSR, based on the findings of sociological studies conducted by Kogan together with the sector of social psychology of the Department of Narrow Sociological Studies of the Institute of Philosophy within the Academy of Sciences of the USSR, a conclusion was drawn about the mismatch between places of communication and leisure of residents, and between service buildings and places of residence. The perception of a freely-forming social and business center was imbued with the concept of the New Settlement Element<sup>1</sup>. Within this framework, the authors emphasized "equal freedom of communication for all": residential formations were to be located equally with respect to the community center and the forest-park zone surrounding the residential development. In the UK, the concept of community was criticized for the failure to organize social life, and the flaws of rigid functional zoning. Hall, in describing the evolution of the planning theory that covered the late 1960s and early 1970s, defined community

<sup>1</sup> Novy Element Rasseleniya – a conceptual futuristic urban planning movement that existed in the 1960s in the USSR.

as “continuous participation in the conflict”, describing the emergence of the opposition movement among the population against British architects and town planners;

- Aggressiveness of residential development with a dominant monochromacy, monotony, and hypertrophy of free spaces

Sharp criticism among the population and scholars was caused by the visual monotony of mass residential development. Orientation to its maximum economy at the cost of unification led to the depersonalization of the residential space in a city. It was necessary to compensate for the stinginess of the unified development and the hypertrophied free spaces of the yards with large forms of vegetation. Kaganov (1989) defines the problem of amorphous residential development, speaking of the hypertrophy that generates irreversible social and planning problems;

- Detachment of residents from the process of designing objects of the living environment

Researchers consistently formulate critical arguments against urban planning that is “guided by abstract ideas and ignoring the daily lives of citizens,” and argue for the need to develop the “natural habitats” of communities based on the principles of social and environmental self-development. According to Jane Jacobs, a diverse living environment should be based on a spontaneous order and various mechanisms of self-regulation while rejecting the “programmed” urban planning theories. There was a consistent emergence of concepts such as “social architecture”, “social urban planning” or “participatory architecture”; in the UK — “community architecture”. In the United States, the principles of “self-development” of neighborhoods in the mid-1970s gained strength. The activity of the American Planning Association contributed to the development of research on social and environmental planning of neighborhoods, information systems in planning, implementation of local management policies; new principles of neighborhood planning that take into account the views of citizens, and so on. Thus, the USA witnessed the gradual development of a bottom-up planning form (see “Fig. 4”).

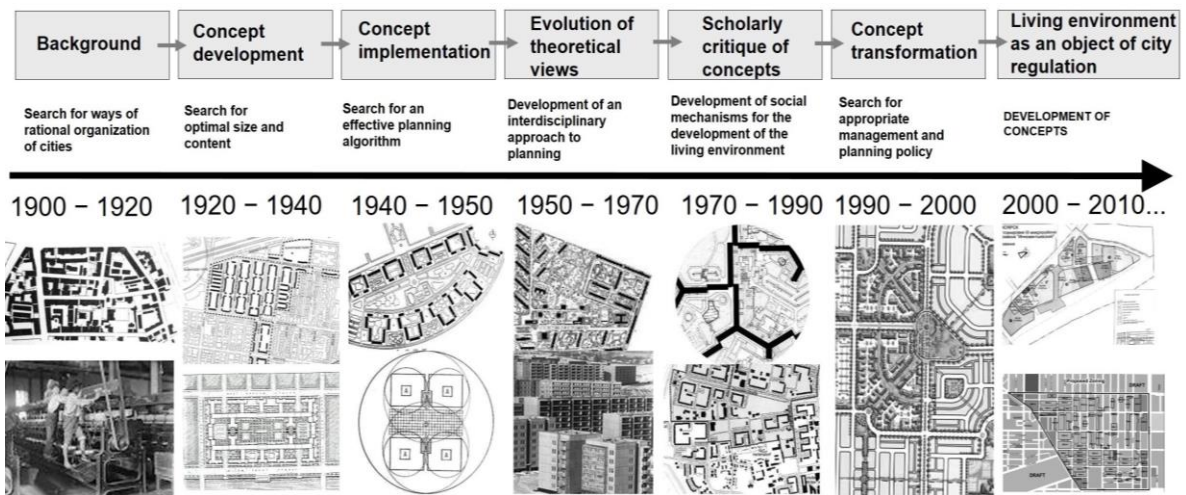


Fig. 4. The development of RPU concepts in the XX century.

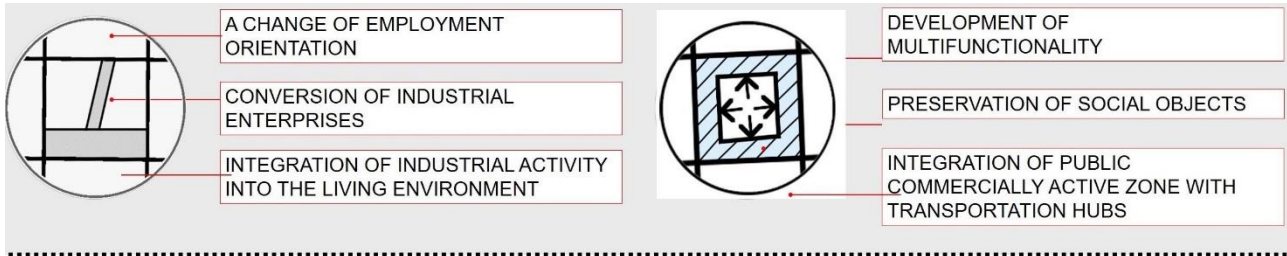
#### IV. DEVELOPMENT OF THEORETICAL CONCEPTS OF RPUS IN THE EARLY XXI CENTURY

The study identifies a number of trends that characterize the development of theoretical concepts of residential planning units in the early XXI century:

- The changing in perspective on the functional content of RPUs

The conversion process, the redistribution of employment led to the transformation of the minimalist spatial structure of RPUs. It featured the dissolution of the service systems hierarchy and the natural formation of social and commercial areas. In foreign countries, the design of RPUs was based on the following: the creation of advanced multifunctional cores; the integration of places of employment in the living environment; Merging of a public commercial active zone with transportation nodes (TOD). The development of

multifunctional spaces in the residential environment led to an understanding of RPUs as a microeconomic element of a city's economy [8] (see “Fig. 5”).



Microdistrict SOHO, Beijing, China

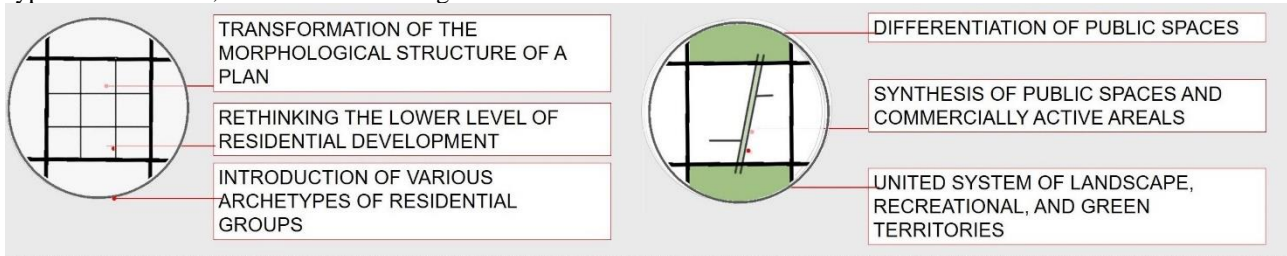


Fig. 5. A shift in perception about the functional content of RPUs.

• The development of RPU morphology

The emergence of unforeseen processes on the territory of RPUs led to the transformation of their morphological structure. There was a tendency to prefer the fine-meshed pattern on the plan formed by residential groups of different archetypes. In addition, there occurs recognition of the

importance of commercially active areas, as well as differentiation of public spaces depending on social action. Finally, there developed a unified system of landscape, recreational, and green areas [9], [10] (see “Fig. 6”).



Microdistrict "Airport", Krasnoyarsk, Russia



Fig. 6. The development of RPU morphology.

• Organization and management of RPUs.

The forms of participation in the design of RPUs in different countries vary by the degree of civic engagement

and state support [11]. Thus, in North American countries, residents are "engines" of the bottom-up design process. In the UK, citizen participation is initiated by government. In Germany, cooperation takes place through local microdistrict

administration and federal programs of social support for development. In Russia participation occurs at the level of homeowners associations and territorial self-government in the framework of solving utilitarian problems of housing maintenance in residential districts.

## V. CONCLUSION

The aspiration to seek rational organization of the urban structure led to the formation of concepts of RPUs in the middle of the XX century such as microdistrict, neighborhood, and community, perceived as the smallest indivisible elements of the living environment.

Systematization of domestic and foreign theoretical studies in the field of urban planning of RPUs made it possible to identify and generalize scientific criticism that targeted the following: rigid functional planning models of residential units; the hypertrophied open spaces; the detachment of residents from the planning process of living environment objects; and the incompatibility of industrial methods of mass construction with social demand.

Systematization of the study results devoted to RPUs makes it possible to identify the main vectors of the development of theoretical concepts of residential planning units in the early 21st century. Among them are: a change in ideas about the functional content of RPUs; development of morphology of RPUs; organization and management of RPUs.

In the early XXI century, the newest concepts of RPUs emerge as self-sufficient residential formations with a diverse representation of residential development archetypes, safe access to guaranteed socially important institutions, flexibly developing commercially active area, hierarchically-built open public spaces, and managed local authorities.

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