

**ARCHITECTURAL AND PLANNING ORGANIZATION OF RESIDENTIAL ARCHITECTURE IN THE HISTORICAL ENVIRONMENT OF THE CITY (ODESSA AS AN EXAMPLE)**<sup>1</sup>**O.B. Vasylenko,**

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**Abstract.** The evolution of the development of the historical centers of Ukrainian cities are currently acquiring special relevance in connection with the problems of radical reconstruction of its infrastructure; the lack of territories on the one hand, and the desire for maximum safety of the existing buildings on the other hand. As practical activities show, project of center reconstructions, protected and reserved zones of historical cities are not able to solve the accumulated problems while simultaneously preserving the existing historical ensembles and background buildings as much as possible. In order to adapt the center to modern requirements with minimal destruction of the urban environment, At the present stage of development of housing construction in our country, there is a complex of interrelated architectural, social and economic issues that characterizes the cities of Ukraine. In this regard, the experience of Odessa, actively responds to numerous challenges, and it is likely to become a model city for solving urgent housing problems. Odessa architects are forced to resolve issues related to the choice of free territories for new construction, which every year are becoming more and more challenging and difficult to resolve.

**Keywords:** residential architecture, architectural and planning organization, historic city center, residential blocks.

**Statement of the problem and its connection with important scientific and practical problems.** Overproduction has emerged in the municipal housing market, that was caused by a decrease in demand for cheap apartments from the solvent part of the population. It is necessary to find a professional solution to the existing discrepancy between the periods of moral and physical lifetimes of residential buildings.

The study of the problem was carried out at various levels: structural and compositional, mainly based on the materials of the city of Odessa. The proposed research is based on the existing research of other authors on the problem of the development of the historical centers of Ukrainian cities.

Ukraine and European countries have achievements in the field of residential design, it is significant and worthy of a comprehensive study. Domestic and foreign practice of residential design demonstrates the broad direction of the architectural and planning organization. This is not a tribute to fashion, but a deep architectural and design substantiation, conditioned by the requirements of the problems of economy, ecology and social policy (Fig. 1).

The complex is part of the "green corridor" of Singapore, the so-called micro district in the southeast of the city, where buildings with the largest multi-level greening are concentrated. There are 31 houses around six squares in a hexagonal projection. The blocks are arranged in such a way that they form eight large autonomous volumes with open courtyards at all levels, cascading roof gardens and public terraces (Fig. 2).



Fig. 1 The Interlace in Singapore - eight hectares of future housing



Fig. 2 The 2015 Architectural Oscar was awarded to the Tetrax quarter in Singapore

The World Architecture Festival award for Best Building and Best Residential Complex of 2015 was awarded to The Interlace, which consists of intersecting houses the work is planned to explore the following *topical* issues. 1. Positions on the possibility of considering the aesthetic problems of organizing large residential areas in historical cities using modern conclusions of the system theory. The principles of compositional and artistic interaction of both individual buildings with the existing systems and systems of different times in the ensemble of a streets, blocks and

cities based on the identification of external and internal systemic connections in their specific architectural perception. Methodology for the formation of new residential complexes in the structure of residential areas in the historic centers of a large cities.

**The purpose of the study** is to substantiate the architectural and planning organization of residential architecture in historical environments of the cities (Odessa as an example).

**Research objectives:**

- to introduce a systematic methodology in the study of architectural and planning aspects of the formation of historical living environments of city centers;
- show the presence of signs of the architectural and planning organization of residential streets;
- to prove the need to preserve residential buildings as integral elements of the historical systems;
- to analyze the existing residential urban areas from the position of consistency;
- to reveal the interaction of various types of buildings in the historically developed central part of the city;
- to trace the relationship between dominants and environmental buildings at the street level and in the city system;
- highlight the types of residential development system;
- to determine the architectural and planning organizational means.

The issues of the architectural and planning organization of housing in the historical environment of the city were developed by scientists: P. Džervus [2], A. Feltins [3], C. Gutierrez [4], R. Lucas [5], N. Mysak [6], E. Rudberg [9], V. Sergi [10], L. Stanek [11], A. Moravánszky [11], C. Schmid [11], J. Tran [12], T. Tykesson [13], S. Vidén [14], L. Gunilla [14], K. Wiest [15].

**Research methods.** The object of the research is the historical residential buildings, blocks and streets of the central districts of Odessa. The subject of the research is the architectural and planning organization of residential architecture in the historical environment of the city of Odessa. The methodological basis of the study is the main provisions of dialectical materialism on continuity, which determines the nature of the relationship between the recent and the old. The work is characterized by a systematic approach to solving a complex of artistic and spatial problems. In the course of the study, the philosophical concepts of systems, unity and harmony were analyzed, which made it possible to substantiate the principles of consistency as fundamental in the interaction of buildings of different times. The author studied works on the history of the formation and development of Moscow residential areas. The study used archival materials from Odessa, the Odessa History Museum, the city's library and Odessa State Academy of Civil Engineering and Architecture, on the analysis of which the conclusions of the study were proposed.

**The main text.** In the course of the work, it is planned to carry out field surveys of historical streets and blocks of the center of Odessa, and new construction projects in these areas. Plots of residential areas in the center of Odessa and existing streets were taken as examples, revealing the relationship of various building systems (Fig. 3).

The scientific novelty of the work lies in the theoretical substantiation of the spread of the systemic approach to the formation of the compositional and artistic qualities of residential architecture; in identifying the possibility of interpreting the main types of residential buildings that have developed in the historical development of Odessa, as artistic systems; in the proposed principles of interaction between residential groups of different times and dominant structures in the structure of the street, city; in the creation of a methodology for the ensemble inclusion of new residential construction in the historical environment of the center of Odessa (Fig. 4).



Fig. 3 Multi storey residential building, Lev Tolstoy Square, Odessa



Fig. 4 Residential building of Bernardazzi and 18-storey «Pearl» on B. Arnauskaya street, Odessa

Numerous aspects of the transformation of the historical environment of the center of Odessa were developed by research and design institutes of the city under the guidance of leading experts in this field of architecture and urban planning. In the fundamental theoretical works and project proposals of these teams, many important social and architectural and urban planning problems are posed and developed, such as the choice of residential areas for reconstruction, the density of residential stock, the composition and set of premises for residential complexes in the existing part of the city, etc. [16].

The living environment of Odessa in the last century was not considered as an integral part of the valuable historical heritage, many prominent scientists and historians, such as V.P. Urenev, A.B. Rallev, O.S. Sleptsov, V.I. Vershinin, reflected in their works significant issues of the formation of residential buildings in the history of the city. In these works, a significant amount of valuable material has been accumulated, which largely served as the basis for the proposed research.

The problem of the artistic appearance of residential buildings is also today an object of scientific and creative searches (research work under the leadership of Odessa scientists-architects was made of projects of residential buildings for the existing areas). However, in these works, the main attention is drawn towards the stylistic characteristics of buildings in the historical center. The current level of assessment and the scale of the forthcoming reconstruction work requires more comprehensive approach to the problem, taking into account in the architecture of the building its urban planning function and the role in the ensemble of the city, a separated building with a space-planning structure of the environment while maintaining a modern interpretation of its artistic appearance [17].

It should be noted that, in contrast to free-standing, spatially separated public buildings, the living environment is a dense mass of buildings, perceived by large fragments and complexes. In this regard, the architecture of residential buildings in the city center should be considered only at the level of a complex or a group of houses (residential street, block). In addition to that an important point of view under study is the fact that the living environment consists of many functional and structural common elements (Fig. 5).



Fig. 5 The most negative public response was received by the facts of preparation and construction of multi-storey residential complexes at the addresses in Odessa: St. Belinsky, 16, St. Astashkina, 29, St. Bolshaya Arnautskaya, 26-30 and 23/1, as well as St. Osipova, 40

According to the head of the Department for the Protection of Cultural Heritage Objects of the Odessa Regional State Administration Vladimir Meshcheryakov, today there are 12 historical cities and 4500 cultural heritage sites in the Odessa region. In addition, there is one UNESCO site - in the village of Staraya Nekrasovka, Izmailovsky district. As for the historical center of Odessa, the center is included in the preliminary list of UNESCOs.

According to Vladimir Meshcheryakov, in this regard, there are a number of problems that need to be solved. First of all, the limitation of the height of new buildings and the preservation of the traditional character of the historical environments. In this regard, at the initiative of the regional state administration, «... in December last year, a meeting of the working group on the illegal construction of multi-storey residential buildings in the central historical area of the city of Odessa was organized with the participation of the Ministry of Culture, the public and local authorities for the protection of cultural heritage». It was decided to take measures to suspend illegal construction. The minutes of this meeting were sent to the Prosecutor General's Office, the State Architectural and Construction Inspectorate and the Ministry of Culture.

According to Vladimir Meshcheryakov, this issue will be brought up at a meeting of the expert council under the Ministry of Culture, which is tentatively scheduled for February 25. One of the issues that will be discussed there is the lack of permission from the Ministry of Culture for this construction. This, according to the regulation on historical areas, should have been obtained. Note that, according to V. Meshcheryakov, based on the width of the streets in the historical area of Odessa (on average, about 30 meters), the height of new buildings in the center of the quarter should not exceed 18.6 meters, and at the corners of the blocks - 21.3 m (about 5-6 floors). As for the new buildings inside the courtyards, according to the clause on the preservation of the traditional character of the historical environment, they should not be visible from the outside.

Systems' analysis has become the property of architectural science relatively recently. His main positions in the last 15-20 years were reflected in the works of I.P. Hnes. In the studies of these authors, the most important and general issues of urban planning, urban infrastructures, their transport systems, and settlement systems have been worked out. The issues of the artistic appearance of cities from the standpoint of systems' analysis are considered only in separate works of V.I. Timofeenko [23].

The architecture of historic residential streets and neighborhoods was examined. However, the task of transforming the center of a large city has the goal not only of a new construction, but also of the preservation of historically valuable buildings and complexes in the residential environment of the city, the compositional laws of the formation of which should be taken into account and developed at the present stage of attitudes towards the historical heritage during the reconstruction of vast massifs of terraced buildings [18].

The intensity of new housing construction in the central core of Odessa determines, in addition to an individual creative approach, the need to create a number of general methodological developments aimed at preserving the integral historical systems of the center through their artistic interpretation in synthesis with modern architecture.

The significance of the results obtained lies in the determination of scientifically grounded principles of architectural and planning tools for the formation of a holistic appearance of the multi-temporal residential environment of the center of a large city in the development of a general problem of creating an ensemble perception of the city as a whole.

The methodological foundations presented in the work open the way for the development of further research towards the transformation of historical blocks. The proposed method can be used by the architectural workshops of Odessa Gorstroyproekt during the reconstruction of residential quarters blocks as a pre-design stage of work required for construction in a historical environment. In addition, the developed methodology is recommended for use in teaching students of architecture universities who carry out term and diploma projects to create new residential complexes in the existing areas of the city center. Revealing a general approach to the architectural and planning combination of residential buildings of different times, as well as the listed possibilities

of introducing the main provisions of the methodology determine the practical value of the dissertation research [20].

**Research findings:**

- The study substantiates the possibility of using the systemic method in the study of architectural-planning and compositional-spatial problems of the formation of housing architecture. This made it possible to consider the living environment of the city as an architectural and planning system. After analyzing the fulfillment of the connections at the system object, the following are identified: Internal connections between the elements of the primary building system of a street, a block, ensuring their development as a whole; connections mean the means of combining buildings, the volumetric-spatial structure, the degree of plasticity of buildings, the presence of dismemberment in height, the unity of the principles of facade composition, scale relationships, the possibility of permissible differences. External links that determine the interaction of the primary building system with the external environment and determine: the relationship between the elements of the system and single buildings of other systems; the relationship of the detailed system with the environment; the possibility of entering the system of a street, a quarter block and another more complex structured system of a district, a city; relations and connections that arise between equivalent primary systems.

- The conducted historical analysis of the urban planning situation showed the emergence of certain types of homogeneous residential systems at each stage of the city's development - estate-courdoners, estate-perimeter, perimeter, handicraft-suburban. The inevitability of constant interaction of building elements of different types in the structure of the developing center made it possible to single out as the main residential system of the large historical city of Odessa - a separate and mixed type building system.

- In the course of the research, based on the study of the conditions of residential buildings, streets, blocks in the history of the development of Odessa, it is planned to formulate the principles of the successive interaction of different-time residential formations in the system of streets and cities. Systemic interconnection of two or more types of residential buildings, each of which has a sufficient number of elements and is a complete system. As a result of this interaction, a system of a separate or mixed type is formed, which has a set of system characteristics. The interrelation of elements is carried out both in the longitudinal and transverse directions, visually perceived street space. The contour of the street obeys the dominant town-planning accents and the center of the city of Odessa. In the process of historical analysis, regularities were revealed in the location of the dominant structures and the historical environment of the Odessa city center.

- Revealed the need for a specific approach to the organization of new residential areas in the center, taking into account the formation of the historical system of the street, as well as the structural construction of the central part of the city, revealing the possibility of systematic inclusion of modern residential construction in the existing areas.

- A technique is proposed that identifies possible principles and architectural and artistic means of incorporating new residential complexes into the historical environment of a large city. The structure consists of the following stages: development of principles that ensure the operation of the internal connections of the elements of the local system; the implementation of ensuring the operation of internal links and the restoration of the selected first section of the methodology as a result of the type of the primary building system; identification of the ensemble interaction of the primary residential system of buildings, streets, quarters and blocks with the urban structure.

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## АРХІТЕКТУРНО-ПЛАНУВАЛЬНА ОРГАНІЗАЦІЯ АРХІТЕКТУРИ ЖИТЛА В ІСТОРИЧНОЇ СЕРЕДОВИЩІ МІСТА (НА ПРИКЛАДІ м. ОДЕСИ)

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**Анотація.** Еволюція розвитку історичного центру українського міста набуває в даний час особливої актуальності в зв'язку з проблемами докорінної реконструкції його інфраструктури, дефіцитом територій, з одного боку, і прагнення до максимального збереження існуючої забудови, з іншого боку. Практична діяльність показує, що проекти реконструкції центрів охоронних і заповідних зон історичних міст не в змозі вирішити накопичені проблеми про зберігаючи сформовані історичні ансамблі і фонову забудову. Щоб центр пристосувати під сучасні вимоги з мінімальним знищенням і руйнуванням міського середовища, необхідно досліджувати загальні закономірності процесу трансформації способу центру українського міста і знайти диференційований підхід до використання реконструктивних заходів. На сучасному етапі розвитку житлового будівництва на Україні існує комплекс взаємопов'язаних архітектурних, соціальних і економічних питань. У цьому ряду досвід Одеси активно відповідає численним викликам часу, може стати прикладом для вирішення нагальних житлових проблем.

**Ключові слова:** житлова архітектура, архітектурно-планувальна організація, історичний центр міста, житлові квартали.

## АРХИТЕКТУРНО-ПЛАНИРОВОЧНАЯ ОРГАНИЗАЦИЯ АРХИТЕКТУРЫ ЖИЛЬЯ В ИСТОРИЧЕСКОЙ СРЕДЕ ГОРОДА (НА ПРИМЕРЕ г. ОДЕССЫ)

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**Аннотация.** Эволюция развития исторического центра украинского города приобретает в настоящее время особую актуальность в связи с проблемами коренной реконструкции его инфраструктуры, дефицитом территорий, с одной стороны, и стремление к максимальной сохранности существующей застройки, с другой стороны. Как показывает практическая деятельность проекты реконструкции центров, охранных и заповедных зон исторических городов не в состоянии решить накопившиеся проблемы одновременно максимально сохраняя сложившиеся исторические ансамбли и фоновую застройку. Чтобы центр приспособить под современные требования с минимальным уничтожением и разрушением городской среды, необходимо исследовать общие закономерности процесса трансформации образа центра украинского города и найти дифференцированный подход к использованию реконструктивных мероприятий. На современном этапе развития жилищного строительства в нашей стране существует комплекс взаимосвязанных архитектурных, социальных и эко-



номических вопросов, характерных для городов Украины. В этом ряду опыт Одессы, активно отвечающей многочисленным вызовам времени, может стать примером для решения насущных жилищных проблем. Одесские архитекторы вынуждены решать вопросы, связанные с выбором свободных территорий для нового строительства, которые с каждым годом становятся всё более не разрешимыми.

**Ключевые слова:** жилая архитектура, архитектурно-планировочная организация, исторический центр города, жилые кварталы.