

## INTRODUCTION

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At the current stage of Ukraine's development, socio-economic and ideological transformations are taking place, which are driving changes across various areas of urban planning. New standards are being introduced for the creation and maintenance of a fully functional living environment, harmonized with European and American models. At the same time, leading European and American countries are facing the challenge of achieving balanced urban development<sup>4</sup> based on innovation. «Smart» city models are being implemented, integrating social, economic, and environmental factors, while ideas traditionally associated with city planning theory and practice are losing their relevance. Under these conditions, there is a growing need in city planning to reconsider established approaches to the understanding of objectively existing entities and phenomena that equally influence the realization of new design solutions.

The intensive accumulation of theoretical knowledge about the formation of the physical and spatial environment of city planning objects under the influence of social, economic, historical, and environmental factors, along with the development and implementation of comprehensive systems aimed at ensuring sustainable urban development, contribute to the advancement of *research closely related in content to morphological studies*<sup>5</sup>.

The development of morphological research within the framework of city planning theory in Europe and the United States is linked to the expanding range of subject areas in urban studies and the establishment of *urban morphology* as an independent academic discipline in the early 20th century. Contemporary discourse on urban morphology is primarily shaped by the International Seminar on Urban Form (ISUF), which operates according to the principles laid out by M.R.G. Conzen and S. Muratori. *ISUF scholars recognize challenges in the field, including the lack of a unified theoretical foundation and the uneven application of interdisciplinary knowledge.*

In Ukraine, morphological research in the context of city planning theory remains insufficiently developed, prompting the need for new methodological approaches that would

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<sup>4</sup> Since, for different epochs and for various European countries, the city is not a universally accepted and clearly defined category, it is interpreted in this study as a type of settlement that, in historical retrospect, is distinguished by size, building density, and structural organization, and in the present day – by population, according to the Ukrainian classification of cities based on population, with a clear territorial organization and distinct planning structure. The formulated theoretical and methodological approaches to the study of the material structure of the defined cities can be applied to settlements of different ranks.

<sup>5</sup> In this work, morphological research should be understood as the process of studying the shape and structure of a particular object, focusing on examining the features of its formation and establishing the patterns of its spatial organization.

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most fully convey the conceptual characteristics of morphology as a scientific direction. In 2006, H. Osychenko succeeded in raising the profile of morphological issues and formulated theoretical and methodological principles essential for studying city planning objects. Prior to this, morphological problems were addressed primarily by scholars drawing on methodologies developed in architectural and city design composition. Their analyses revealed that morphology was often seen merely as a method that simplified the instrumental framework for describing physical form. On one hand, for a long time, morphology in architecture and city planning developed as a descriptive component (identifying visual properties of form) and as a means of detecting structural elements of the city (e.g., architectural form morphology, spatial morphology, street morphology). On the other hand, it served to define properties and features of physical reality to justify specific compositional decisions. As a result, the scientific essence of the concept of «morphology» in city planning was diminished, and its potential remained unrealized. Moreover, morphological terminology is sometimes applied in a formalized manner. In parallel, there is a lack of comprehensive theoretical and methodological studies within city planning theory that address the formation of the physical and spatial environment of cities based on scientifically grounded morphological concepts developed at a general scientific level. There is a pressing need for a thorough analysis of interdisciplinary achievements – philosophical, biological, philological, geographical, and others – to comprehend and delineate previously studied issues and identify gaps in the study of morphology in city planning theory. Consequently, both theoretical and applied research on morphological issues have yet to be adequately reflected in Ukrainian city planning theory and require focused investigation.

*The relevance of the research topic* is determined by the following factors:

1) the need for a purposeful *systematization of ideas* and *perspectives* on objective reality in city planning theory, adapted to the ideological and thematic content of morphology as a scientific doctrine, and based on this – the formation of the theoretical foundations of the morphology of the city;

2) the challenge of ambiguous interpretations and the formalized use of *morphological concepts* and *categories* in the theory and practice of city planning, which requires harmonization of lexical meanings and the compilation of a corresponding thesaurus;

3) the necessity to refine existing and *incorporate new interdisciplinary knowledge* and methodological approaches into city planning theory, which would allow for the identification of new relationships between concepts from various disciplines, expand traditional disciplinary methodologies, and deepen specialization within urban studies;

4) the importance of defining a system of scientifically grounded *provisions* on the morphology of the city, which would enable the qualitative analysis of morphological characteristics of city planning objects, correlate logical and formal aspects within the scientific process, and ensure its effectiveness and productivity.

*The choice of the research topic* is motivated by the insufficient development of the subject, particularly the theoretical understanding of the morphological paradigm; the coherence of the

ideological and thematic content of the concepts «morphology» and «morphology of the city»; the comprehension of the lexical meaning of conceptual and categorical terminology; and the need to expand abstract cognitive morphological ideas, concepts, and theories, and to assess their theoretical and practical significance for the advancement of city planning.

The *scientific hypothesis* of this research is based on the assumption that the physical structure of the city<sup>6</sup> can be characterized by formal features and properties associated with the manifestation of physical form in city planning. The development of a city's physical form follows specific principles and objective regularities. We define the physical form of a city as a bounded portion of territory enclosed by a closed notional line (administrative borders established at the legislative level), considered as an integrated whole with all existing structures and buildings, and characterized by specific physical parameters. These parameters can be studied within the framework of morphology as a scientific doctrine. In disciplines related to the study of the city, this knowledge may be expressed through a scientific theory of *city morphology*, each discipline applying its own theoretical and methodological tools. In city planning, city morphology – with its own principles, categories, functions, and research methods – can be considered a scientific doctrine aimed at understanding and revealing the morphological essence of the city and deepening knowledge of the patterns and characteristics of its physical structure formation.

The research aimed to develop theoretical and methodological foundations for the morphology of the city, capable of explaining the essence of morphological content in city planning and systematizing knowledge about the patterns and specific features of the formation of the city's physical structure. The objectives were achieved through the sequential resolution of the following tasks:

1) to identify the particularities of the *development of morphological studies* in city planning and *the formation of the morphology of the city* both abroad and in Ukraine;

2) to generalize and systematize knowledge about morphology as a general scientific discipline and to outline its *theoretical and methodological tools* formulated at the domain-specific scientific level; to substantiate the research methodology;

3) to reveal the *semantic context* and the specifics of the manifestation of morphological content in city planning, and to substantiate the way it is represented within the system of scientific knowledge about the city; to formulate a definition of the term *morphology of the city*, identifying its *key features, place, and role* within city planning theory;

4) to define and substantiate *the fundamental principles* of the morphology of the city as a scientific discipline and organize them in logical sequence;

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<sup>6</sup> The definition of «material» in the phrase «material structure of the city» broadens the understanding of the city as a form of territorial organization, described by the concept of "structure" and specified through the expression of one of the phenomena revealing the essence of a thing in relation to other things: planning structure, compositional structure, functional structure, etc.

5) to justify the cognitive and explanatory *effectiveness of the theoretical and methodological tools* of the morphology of the city and to formulate generalizations aimed at identifying the regularities and specifics of the formation of its physical structure.

The object of the study was defined as the physical structure of cities in the western region of Ukraine. The term *physical structure of the city* is understood as the substantive level of the city, represented by a set of interrelated structural elements, which contrasts with the planning framework and is viewed as its content across three conventionally accepted hierarchical levels. The subject of the study is the morphological content and categories related to the patterns and specific features of the formation of the city's physical structure.

The conceptual boundaries of the study were defined by the logical interpretation and theoretical substantiation of morphological aspects at both philosophical and domain-specific methodological levels. The chronological framework of the research spans from the 8th–6th centuries BCE – when the layout and development of ancient settlements that initiated the European urban planning tradition took place – to the present day. The period of the formation of morphology as a general scientific discipline aligns with these boundaries and is associated with the emergence of form as a philosophical category. However, for the sake of completeness, the author occasionally extended beyond these temporal limits when addressing specific issues.

The research methods were selected in accordance with the tasks set in the study and considering both the object and subject of the research. Methods were applied at both the general scientific and the domain-specific scientific levels. The *general scientific level* was based on the method of theoretical analysis, which facilitated the selection of the research topic → expansion of existing knowledge on morphology → understanding and disclosure of the essence of morphological aspects in city planning → identification of fundamental principles of city morphology as a scientific discipline. This was implemented using logical techniques and operations, as well as elements of dialectics, axiomatic, hypothetical, hypothetico-deductive, and inductive-deductive methods. The *domain-specific scientific level* incorporated methods that reflect the specific nature of the formation of the city's physical structure and were aimed at identifying its morphological characteristics.

*The methodological framework* of the study is based on interdisciplinary and systemic approaches, which are the most relevant for understanding the formal properties of the physical structure of the city. These approaches were applied at both the *philosophical–worldview* and the *logical-epistemological levels*.

The chosen topic lies at the intersection of philosophical, geographical, and other scholarly inquiries pursued by both foreign and Ukrainian researchers. Consequently, many of its aspects are examined at the convergence of various scientific disciplines.

*Scientific novelty of the obtained results.* The dissertation substantiates conceptually new and theoretically significant provisions and conclusions for city planning theory, developed by the author. Specifically:

- For the first time:

- it is established that the reflection of morphological content in city planning is represented by *theoretical generalizations of knowledge about form*, aimed at studying physical reality on a theoretical level, taking into account interdisciplinary knowledge of morphology and related scientific approaches;

- the *main elements and logical structure of the morphology of the city* are defined and formulated, generalizing existing morphological knowledge and enabling explanation of the specific ways in which morphological content manifests in the understanding of the city;

- the term *physical form of the city* is introduced, which refines the semantic characteristics of morphological content in the comprehension of the urban environment;

- the *main directions in the development of the morphology of the city* are distinguished – structural morphology and evolutionary morphology – both of which contribute to the expansion and deepening of morphological understanding in the theory and practice of city planning;

- a *synchronous-diachronic approach* is proposed, enabling the identification of features in the formation of various manifestations of the physical structure of the city, as well as the assessment of patterns in the development of its morphological characteristics over time;

- *criteria are established for identifying the main types of physical form and morphological structure of the city*, which reflect its formal properties and are aimed at determining the regularities and specificities of the formation of the physical structure;

- a *morphological model of the «puzzle-city»* is developed, summarizing the regularities in the formation of the city's physical structure and expressed through the principles of the morphology of the city;

- the necessity of introducing *the concept of the habitus of the city* into city planning theory is substantiated. This concept explains the features of the formation of the physical structure of cities shaped in different historical periods. The term *habitus of the city* is defined as follows: it is the set of morphological characteristics of the city's physical structure that are specific to a particular epoch and culture.

- The essence of category-related concepts associated with morphology of the city has been specified, including *«morpheme»*, *«morph»*, *«morphological type»*, *«morphological unit»*, *«morphological feature»* and *«morphological structure»*. These concepts serve to identify objects based on their specific characteristics and reflect, in a generalized form, the morphological content and interrelations among them.

- Clarifications have been made regarding:

- the meaning and interrelation of the terms *«urban morphology»* and *«morphology of the city»*. It has been demonstrated that, although similar in their essential characteristics, they are related as a dialectical whole and its part;

– morphological methods of studying the city: *morphometric*, *morphographic*, and *morpho-typological* methods, which hold interdisciplinary status and promote integration with other scientific fields in both methodological and instrumental dimensions. It has been established that the methodological foundation of the morphology of the city lies in the method of morphological description.

- The morphological approach to the typology of city planning objects has been further developed, based on the specificity of morphological content. This enables the development of general methods and principles for their spatial and urban organization.

The results of the study can be applied in both scientific-methodological approaches – by enriching the theory and practice of city planning with substantive morphological characteristics – and in educational methodologies: the morphological approach developed in the dissertation is recommended for incorporation into the educational process and use within the higher education system. This would enhance the theoretical training of specialists in the field of architecture and city planning theory and history, and improve the methodology of pre-design and pre-diploma research.

The author's conclusions regarding the theoretical foundations of morphology of the city broaden the subject base of lecture courses on the history of city planning and may be utilized in the development of instructional and methodological support for academic disciplines.