

Vol. 7, No. 2, 2021

UDC 711.4

Yuliia Idak

ESTABLISHMENT AND DEVELOPMENT OF MORPHOLOGY AS A BASIC SCIENCE AND ITS POTENTIAL IN THE THEORY OF URBAN PLANNING

*Science Doctor, Associate Professor of the Department of Urban Planning,
Lviv Polytechnic National University, Lviv
e-mail: yuliia.v.idak@lpnu.ua
orcid: 0000-0002-1123-5759*

Received: 05.08.2021 / Revised: 30.08.2021 / Accepted: 17.09.2021

© Idak Yu., 2021

<https://doi.org/10.23939/as2021.02.173>

Abstract. The main stages of the formation of morphology as scientific teaching are highlighted and characterized, the fundamental aspects of the concept of “form” are formulated, the features of the formation of morphology as an independent scientific direction are generalized, the categorical analogue of “morphological” in urban planning is traced, and the place of morphology in the teachings of form in urban planning is determined. Outlining the problem of defining the concept of “form” in the theory of urban planning and urbanism, it is accepted that the form of a city is an expressive feature of a city, which is characterized by a certain set of morphological meanings and their formal indicators.

Key words: form, morphology, theory of urban planning.

Problem statement

The development of both urban studies in general and the theory of urban planning, in particular, should be associated with the expansion of the existing theoretical and methodological foundations that form the basis for deepening knowledge about the specifics of functioning, development features and the nature of the formation of the material and spatial environment of the city. At the same time, the established theoretical and applied base is not sufficient for the coordinated development of various areas of scientific activity directly related to the study of the city.

In the process of comparative analysis, it is noted that the research approaches that underlie most scientific works devoted to the specifics of the formation of urban planning objects are not relevant and properly justified. The existing theoretical framework, which is based on a modern understanding of the formal qualities of the substantive level of the city in the global and intersectoral contexts, especially needs to be expanded and clarified.

The problem is caused by the spread of a well-established model for studying urban planning objects, which was based on solving problems related to the development of the functional and planning structure and composition of the city. This situation determines the importance and relevance of studying a number of categories that can serve as a basis for studying morphological features of urban planning objects, which,

in turn, requires clarification and improvement of existing and attracting new interdisciplinary knowledge for the theory of urban planning. It will help to identify new relationships between the concepts of initial disciplines, expand the traditional disciplinary methodology and deepen specialization in urban planning.

Analysis of research and publications

The theoretical basis of the study were works on the formation and development of morphology as a general scientific doctrine in the philosophical worldview (Aristotle, 1976; Kanaev, 1970; Mikulinsky, ed., 1972; Reshetov and Stezhko, 2013; Tararoev, 2009; Shcherba et al., 2004;) and logical-epistemological (Bakhtin, 1987; Biskub, 2014; Dika, 1975; Etymological..., 1982-2012; Mala..., 2004-2013; Dictionary..., 1970–1980; Yudkin-Ripun, 2006; 2011;) contexts. Works on the specifics of the functioning of morphology in biology (Meyer, 1958; Meyen, 2010; Lutz, 2002; McLaughlin, 2002), philology (McElvenny, 2018; Szemerényi, 1996), geology (Biletsky, 2007) and geography have become particularly important (Huggett, 2007; Simonov, 2005). A sample analysis of theoretical and methodological foundations related to the study of morphology at a specific scientific level and identified features of the use of specialized terminology (Timonin, 2001). Particular attention is paid to the study of the concept of "form" and the definition of the nature of its functioning in urban theory (Rappaport, 2000; Remizova, 2016; Besussi etc., 2010; Curdes, 2015; Dempsey etc., 2010; Kropf, 2009; Marr and Nishihara, 1978). In Ukraine, among the array of local scientific reflections, this topic remains virtually unrepresented.

Purpose of the article

The purpose of the study is to identify and characterize the main stages of the formation of morphology as scientific teaching, to formulate the fundamental aspects of the concept *form*, generalization of the features of the formation of morphology as an independent scientific direction, trace the categorical analogue of "morphological" in urban planning and determining the place of morphology in the teachings of form in urban planning.

Results and discussion

A philosophical-ideological and logical-epistemological approaches are the *methodological basis* of the research. Their application is due to the understanding and disclosure of the essence of morphological content in urban planning and the selection of those concepts and categories that correspond to it. The method of theoretical analysis also showed its effectiveness, which provided the choice of the research topic, the definition of the essence of the main morphological concepts and categories, the systematization of the main stages of the formation of morphology as a scientific direction and generalization, based on the comparison of the main facts about morphology in various fields of knowledge and the identification of their common features.

Morphology in the course of its development has confidently outgrown the status of a special section of biology (Etymological..., 1989) and, having passed all the stages of formation characteristic of any branch of science, has become a fundamental section of various branches of knowledge: biology → *botany* → **plant morphology** (Meyer, 1958); philology → *grammar* → **word morphology**; geology → *Mineralogy* → **mineral morphology** (Beletsky, 2007); geography → **geomorphology** (Huggett, 2007) et al. In addition, morphology as a scientific branch is actively developing in the *cultural studies* (Yudkin-Ripun, 2006), *mathematics*, *sociology*, *physics* and other areas of knowledge.

The process of formation of morphology as a scientific field can be divided into five stages. *The first* is a fundamental stage, related to the emergence of the concept of *form* and *morph* and the development of ideas about form in philosophy. At this stage, the main content of concepts and the necessary scientific background of morphological problems were formed. *The second* one is nominative. When the need for

morphological knowledge was realized, the term *morphology* appeared itself. *The third* stage is explicit, manifested in the formation of morphology as an independent section in botany. At this stage, the necessary prerequisites for identifying morphological problems in the field of knowledge were formed and ideas about the goals, subject and object of the *morphology* were formed. At the *fourth* fundamental stage, morphology has acquired an independent scientific status and spread to various branches of knowledge. *The fifth* stage is associated with the formation of individual sections and the specification of the content boundaries of morphological concepts in accordance with the object and subject of study.

The current state of morphology at the general scientific level can be described as accumulative since it is associated with the generalization of the factual base and a gradual increase in knowledge. If other branches of science are dominated by certain paradigms formed by scientific communities and determine a certain interpretation of the essence, nature and sources of development of reality, then morphology sets the basic level based on which they are formed.

Fundamental aspects of the concept of “form”. In modern philosophical thought, the object of a certain science is understood as a reality that exists independently of the subject (researcher) and regardless of the form (material or ideal) in which it appears. For most natural sciences, their objects are material entities, and for the humanities, they are ideal. But there are also sciences whose objects appear simultaneously in two forms of the real world – material and ideal. This circumstance is important for defining the concept *form* in the theory of urban planning and it is due to its different interpretation. This is because of the fact that a city is an object of interest in various spheres of human activity and scientific disciplines. Accordingly, the content of the concept *form* varies depending on the tasks set and the relationship with other scientific branches: in some studies (environmental, economic, etc.), the form of the city is understood as a material object, and in others (mainly in works of philosophical, sociological and cultural orientation, etc.) – as a spiritual object.

The etymological dictionary of the Ukrainian language indicates that the term *fôrma* is borrowed from Latin and it means *shape, appearance*. However, these are just assumptions, since there is no reliable information about its origin. There is also an assumption about the connection of the Latin word *fôrma* with a Greek *μορφή* (*shape, pattern, model*) through an intermediate form *morma* with dissimilation *m-m* in *f-m* (Etymological..., 2012, p.).

The ancient understanding of the category *form* and close to it *morfe*, *eidos* and *idea* are associated with the production of things according to certain normative descriptions, which were interpreted as the form of objects themselves, and philosophically reduced to an “eternal” and non-destructive essence: the idea, form or *eidos* of the object (Rappaport, 2000). According to Aristotle’s philosophical views, the essence of being a thing is its form. The form is not a quality, not a quantity, not a relation, but something that makes up the essence of a thing, without which it does not exist (Aristotle. *Metaphysics*).

Later category *form* began to be understood not as a form of things, but as a form of thinking itself. The philosophical thought of modern times, exploring the category *form*, was no longer about craft production, but about the formation of scientific knowledge and their systems, changing styles in art, and developing the philosophical concepts themselves (atomistic, epistemology, ontology, semiotics, etc.).

Nowadays there is no single accepted definition of the concept *form*. Its interpretation is very different in all areas of knowledge. An idea of the phenomenon *form* and its definitions are so different in the areas of public consciousness that they often lead to misunderstandings in scientific circles and are the reason for the lack of formulativeness of the concepts associated with it. The dictionary of the Ukrainian language contains 13 definitions of this term, where only the first one received scientific justification in the context of scientific teaching *morphology*, characterized by methodological awareness of the processes of formation and constitution of knowledge about the formal side of objective reality.

Formation of morphology as an independent scientific field. The ideal of *plant morphologies* (and organisms in general) was put forward by J. W. Goethe, who first formulated the concept of morphological type in botany (Meyen, 2010). However, its origins go back to the era of antiquity, when the basics of

classifying parts of speech and grammatical categories were formulated, a system of biological classification was developed, etc. (Encyclopedia ..., 2012).

The terminology of morphological descriptions of plants was developed in the XVII century. At the same time, the first attempts were made to theoretically generalize different types of plants in appearance and structure. However, the formation of plant morphology as independent scientific teaching began in the XIX century (Mikulinsky, Ed., 1972), after J. W. Goethe's work "Experience of Plant Metamorphosis" appeared. (Goethe, 1797).

Term and concept **morphology** was introduced into scientific circulation, as is now believed, by J. V. Goethe, probably in the 90s of the XVIII century, when he was intensively engaged in studying the structure of animals, mainly their skeleton (Kanaev, 1970). For the first time, this word occurs in The Diary of J. W. Goethe, in the notes of September 25, 1796, and in a letter to J.-F. Schiller dated November, 12 of the same year (Kanaev, 1970). There is an assumption that his understanding of form was reduced to determining the internal parts that make up the structure by linking the external form of organisms or artistic work with their internal structure, to determine the internal parts that make up this structure. J. W. Goethe also considered the external and internal form as a product of the process of formation and transformation. Comparative morphology in plants and animals is one of the data that led to the theory of evolution (Kropf, 2009).

There is an assumption that the word *morphology* formed by J. V. Goethe from the basics of words *μορφή-form* and *λογία-teaching* (from Greek) modelled on words such as *biology* (from German *Biologie*), *theology* (Teologie), etc. (Etymological ..., 1989). In Ukrainian, the word is borrowed from German – *Morphologie* (Kanaev, 1970).

In print, this term first appeared later, in 1800, in one of the works of the naturalist K. Burdakh. Whether K. Burdakh borrowed it by verbally transmitting conversations with J. V. Goethe or invented it himself remains unknown (Kanaev, 1970). K. Burdach also coined the term *biology* in 1800, he proposed using it to refer to the study of living things from a morphological, physiological, and psychological point of view (Laughlin, 2002; Lutz, 2002).

But J. W. Goethe dreamed of using this concept in the study of mountains and the topography of the Earth. Working on a problem of *morphology* and looking for its place among related sciences, J. W. Goethe determined its content-the consideration of the form (*Gestalt*) both in its parts and in general in their correspondences and deviations. He arranged morphology in the appropriate sequence and found a logical place for it (Kanaev, 1970): history of nature → natural philosophy → anatomy → chemistry → zoonomy (*Zoonomia* – the doctrine of the laws of animal life (Encyclopedia) → psychology → **morphology** → physiology. At the same time, contemporaries argue that such a sequence is not logical.

Literally, a word *morphology* means the doctrine of the form, usually the body of organisms, and in fact, it is closely related to the concept of "*the organism*". This is how I. Kant philosophically interpreted this concept, since it was his work "Critique of Pure Reason" (*Kritik der Urteilkraft*, 1790) that had a significant influence on the formation of Goethe's philosophical thought.

Further, morphology in botany developed in different ways, forming different directions: *comparative*, *ontogenetic*, *phylogenetic* (evolutionary), *ecological* etc.

Classical morphology usually used qualitative criteria and verbal, informal descriptions, which inevitably have a subjective character, to assess the features of the structure of organisms. A natural stage in the development of morphology was the need for quantitative assessment of the structure and obtaining multiple reliable objective data (Dyka, 1975).

Role of morphology in modern biological science is not unambiguous. This is due to the fact that if morphology is considered as *an applied discipline* that serves the needs of taxonomy, then it has the status of *a method*. If it is considered as a theoretical discipline, then this determines the presence of its own subject of research, which is not directly related to the solution of axonometric (visually depicted spatial forms) problems (Timonin, 2001).

In the XIX century, the term *morphology* also spread to linguistics as a definition of the branch of language science that studies word forms. In a linguistic sense, it was first introduced in 1859 by the German linguist A. Schleicher, claiming: “for the science of word formation, I choose the term ‘morphology’” (Szemerényi, 1996). His goal was to create a synchronous description of forms in languages without taking into account their historical development (McElvenny, 2018). In Ukrainian, the word is borrowed from German – *Morphologie* (Etymological era, 1989).

In the modern system of knowledge with the development of scientific knowledge of the world, *morphology* has been strengthened and has become a branch of scientific disciplines in such areas as architecture – *architectural morphology* (develops in two main directions, such as identification and classification of forms, research of the morphogenesis process); mineralogy – *mineral morphology*; geography – *geomorphology*; mathematics – *mathematical morphology*; cultural studies – *culture morphology*; sociology – *social morphology*; folklore studies – *morphology of folklore*, etc.

The theoretical and methodological foundations of morphology as a scientific branch were not formed immediately. The process of formation is associated with the description of the objects under study. Over time, this approach has changed: based on the description, theories have been formed aimed at identifying characteristic features, explaining properties, and formulating recommendations for their practical application.

Categorical analogue of “morphological” in philosophy. The connection of research with philosophy is due to: the variability of the evolution of matter (a), the variety of ways of scientific explanation (b) and the multiplicity of methodological approaches to the definition of the concept “*form*” (c). One of these reasons is the use of a priori categories in relation to reality.

Knowledge of the surrounding world is not stable but is in constant motion – the process of development. As a result, there are new scientific directions and systems of concepts that describe them.

To consider objective things related to form, the author relies on Aristotelian logic and a system of categories that reflect objective reality and the general pattern of development of all material, natural and spiritual phenomena. In the historical, philosophical and logical literature, an assumption is put forward by a scientific basis of *Aristotle's logic*, were his observations and studies on the following issues: *morphology and physiology of animals*.

Three Aristotelian categories are often distinguished as the most general: *matter, property* (or *quality*) *of a thing, the ratio of one thing to another*. That is, morphology can generalize knowledge about things, their properties, and the relationship of one thing to another.

Categorization is also crucial for the study of subjects related to the city since the theory of urban planning performs its search in parallel at two levels – material (the level of the city – object) and ideal (the level of urban planning – process), requiring effective mechanisms for categorical reflection of knowledge.

Ideas about the content-form relationship in urban planning. The phenomenon of categorization in this paper, although one of the most controversial, is not as necessary as the definition of questions related to the form. This is due to the fact that there is an understanding of morphology as the “doctrine of the form” according to etymology.

Form as a philosophical category is inextricably linked with content. At the same time, the same content may have a different form, but the same form may be filled with different content. A kind of concretization of content and form is such categories as essence and phenomenon.

Nowadays, morphology is associated with a number of scientific disciplines in which, first of all, formal structure (rather than quantity) is a central issue. In linguistics, this is the study of word-formation, in biology, it is about the shape and structure of organisms, in geology, the emphasis is placed on the characteristics, configuration and evolution of rocks and forms of the earth, etc.

In connection with the question of the formation of concepts of morphology as a general science of forms, which is gaining the importance of a scientific method, a cultural critic I. Yudkin-Ripun (2011)

suggests making one caveat. The German-language tradition of understanding, in the course of which the ideas of this direction were developed, uses the concept of *gestalt* (from German *Gestalt*), which translates both as a form and as an image and therefore means *a meaningful form*. In turn, at least two terms are used to define the concept of content – *Gehalt* and *Inhalt*, where the definitions of the meaning of a form and its material, substance intersect.

In cultural studies, according to I. Yudkin-Ripun (2011), *ideas about the content-form ratio that are unsuitable for use in the terminological system of cultural morphology*, are false. Perhaps this position should be taken into account, given that in urban planning, a city is always understood as a meaningful form, “*inseparable both from its meaningful meaning and from the substance that becomes its carrier. Moreover, such a form is always only one of the metamorphoses of the incessant transformation process and appears not as a static fact, but as a program of such transformations. At the same time, it always appears as an object of reflection, through which it is understood and reveals its content, it is an intermediate stage in the endless chain of metamorphoses, where the source of subsequent transformations and the generation of new forms each time is laid*” (Yudkin-Ripun, 2011). However, in this case, the goal of learning about the city will be to find semantic relations of an informal nature and study them within the framework of philosophy.

Because *form* the city is not clear (visually) from the point of view of its appearance or structure, so the concept itself (form) in relation to the city is mainly considered from the point of *philosophy's* view (since the *form* is a categorical concept), thus entering an interdisciplinary field of knowledge.

Form as a philosophical category reflects the objective world since all objects, processes and phenomena of nature and society have their own form. At the same time, it cannot be considered as an independent essence of something, but is in organic unity with the “content”: *the elements and processes that make up a particular phenomenon are its content only by entering a certain form*.

According to philosophical beliefs formed as a result of life experience, *form* and *content* as integral aspects of things, processes, and phenomena of the objective world, they are inseparably interrelated categories: content is understood as the unity of all interacting elements of a certain material system, and form is the principle of organization, the orderliness of particular content.

The defining aspect of content, in philosophical teachings, is its *variability*, and for the form – its *constancy*. The same content may have a different form, but the same form may have different content. Therefore, the form is more conservative; it corresponds to the content at the initial stage of the object's development and then slows down its development. However, the content destroys the form, but at the same time changes itself, destroying the entire object (Reshetov and Stezhko, 2013).

Despite the fact that this study is based on pluralistic philosophical views, the categories of *form* and *content* there are concretized and presented from the point of view of their material manifestation.

The whole process of forming a city and its components is based on compliance with certain rules and regulations, which, in turn, provide for the segmentation of the city's territory into separate parts. As a result, the territory is divided into many fragments of different shapes and resembles a mosaic – *puzzle*. Each fragment has a certain content (as a philosophical category), which reflects a certain number of elements that interact with each other and are arranged in a certain order. As a result, a material structure is formed – a physical (material) representation of a set of interrelated elements. The content as a way of existence of the form has certainty and has an impact on the formal characteristics of the city as a whole: the degree of density, the nature of the configuration, etc.

If the *form* of the city is considered as a *material object*, consisting of many components, then its *content* is a special *form of object cognition*, which is determined by the most general but essential characteristics (morphological, compositional, functional, stylistic, etc.). Now in the scientific language, the concepts of “content and form” are increasingly being replaced by more specific and defined ones in relation to the city – system, structure, element, function. These characteristics are due to *philosophical worldview* and they are considered through a number of general scientific methodological principles: idealized object, concreteness, comprehensiveness, development. Theoretical analysis is possible only if there is *an idealized object*. In the real world, a city consists of objects, relationships, phenomena, and processes. Therefore,

determining the features of the city's material structure using an idealized model will allow you to view the object in a simpler form with clearly defined morphological features.

Form as a characteristic of the material content of the city. Before studying morphology in the theory of urban planning, we need to understand the concept of *form*. This is because morphology, first of all, is the study of form. In theory, form means both the appearance of an object and a certain state in which a particular element shows itself. So, in geometry, a shape is considered in two meanings: the first – as a characteristic of identical shapes formed by transferring or turning; the second – as an object in which a simple geometric shape manifests itself. Authors of the study of problems of representation and recognition of the spatial organization of three-dimensional shapes (Marr etc., 1978), identify the *form* with the shape and take it as a characteristic denoting the surface of the object. They note that a form is a formal scheme for describing shapes or parts of them.

Finally, in various fields of activity, there are many different ideas about form: external expression of some content – in philosophy; structure and system of organization – in system research; appearance and outline – in the study of objective reality; identification with simple geometric shapes – in geometry; composition, which is a geometric drawing, semantic constructions and reflection of figurative tasks – in decorative and applied arts, etc. All of them are the semantic unity (integrity) of disparate things, the essence of which is reduced to the reflection of material structures on certain substrates. In a narrower sense, it is visible through a figure on a certain material basis (substrate).

At the same time, O. Rappoport (2000) noted that *“as soon as we begin to consider the concept of architectural form from the point of view of the logic of professional thinking, we are faced with the fact that we are dealing with one of the main philosophical categories, but immediately find that the category of form in philosophy is not developed so much that it can be “applied” in architecture”*. In his opinion, *“all philosophical interpretations, where form and content are considered in contrast to each other, are vague and do not provide anything for understanding the logic of architectural thinking, and modern western thought has avoided it altogether”*. The shape of the subject belongs not so much to the subject itself, but the cognitive means of a person. It sees in objects only those forms that are mastered by knowledge and thinking in the cultural tradition and language.

The architectural form that occupies a central place in the theory of architecture (history of architecture and architectural composition) has no unambiguous definition. O. Rappoport (2000) explains this by saying that the architectural form performs the function of a category, and on its basis, more specific definitions are created, such as “classical architectural forms”, “modern architectural forms”, etc. Finally, in his dissertation, O. Rappoport (2000) considered the architectural form as a product in which morphological, symbolic and phenomenological aspects are synthetically intertwined.

A similar position regarding the form in a work of fiction is shared by literary critics: *“form is an expression of the active value attitude of the author, creator and perceiver (co-creator of the form) to the content; all moments of the work in which we can feel ourselves, our value attitude to the content, and which are overcome in their materiality by this activity, should be attributed to the form”* (Bakhtin, 1987). The author, illustrating a work in which “technique” (i.e., a form understood as a set of techniques) is absent, represents only the content (Klochek, 2007).

A. Remizova (2016) places special emphasis on the understanding of form in architecture, in particular in didactic activities, noting that architectural form and space are described by the following concepts: archetype – simple geometric shapes; structure – elements and connections between them and organization – a way of combining parts into a whole.

Representation of the form in urban planning is more based on the works of authors who distinguish it as the primary characteristic of the material expression of the city, which is reduced to determining qualitative and quantitative features and identifying compositional techniques. In the end, Aristotle's interpretation of form as the root cause that determines the certainty of things began to distinguish between physical and spiritual substances. Therefore, in urban planning, the carrier of form can be conditionally

defined as the primary substance, considered by scientists from the receptive side – that is, from the point of view of visual perception of material reality.

It is also important to emphasize that the generalization of knowledge about form in urban planning reflects the way they are positioned in relation to already available information about related conceptual entities. Categorization, which underlies this process, up to a certain limit is the imposition of psychological meta-reality on the objective world, which, in addition to its material nature, also implies certain ideal entities (Biskub, 2014).

The whole process of comparing the form and meaning is based on compliance with certain rules and regulations, which, in turn, provide for the segmentation of the city into separate urban planning objects. Such units can correspond to categories of different types, but they can be further grouped into classes according to common categorical features, for example, object (substance) and form (quality) are different categories, but common categorical features are morphological, compositional, functional, semantic, stylistic, etc. It is worth noting that these features do not appear equally at different hierarchical levels; the leading feature can be one or the other – this especially depends on the level at which the object acts as a category *substance*.

While characterizing a body in statics, in its spatial relationships, the category of *form* is expressed by the concept *structure*, *construction* and so on. The closest to these categories is the concept of “organizing” (a way of linking elements of content in its movement and development) (Shcherba, 2004).

The city in its material expression (way of organization) represents a planar structure. From this perspective, one aspect of urban planning theory is to describe how a city and its characteristics overlap with certain values: *structural organization of the city* can be described by *morphology*, *mutual organization by composition*, and its *development by the history of urban planning*.

In the process of studying the city and the features of its organization, along with general philosophical categories, the concepts that determine the form of the city and important common features of its components are also identified. For example, *morphological type* is a special category that largely expresses the morphological nature of the quarter and is one of the defining features of it as a part of the city.

The problem of form interpretation in urbanism remains unresolved. Thus, to denote the physical characteristics of the constituent elements in urbanism, the concept of “*urban form*” is used. In one of the thorough studies “Dimensions of the Sustainable Cities” (2010), the urban form is considered as a spatial configuration of fixed elements of the city: transport structure, density, building types, hierarchical levels, and functional use, each of which has a specific physical dimension (Dempsey et al., 2010). Similar in its content is the interpretation of the concept *form* in the study “The Structure and Form of Urban Settlements” (2010). Studying the structure and shape of urban settlements, the group of authors focuses on the fact that the urban form can be considered in a two-dimensional plane, and its main characteristics are determined by density (high and low) and configuration (ranging from adjacent and compact to unrelated and scattered) (Besussi et al., 2010). Similar in its essential features is the interpretation of the form by G. Curdes (Curdes, 2015), who sees the form as a *formal characteristic of city elements: plots, buildings, and neighbourhoods*, and C. Gandhi (Handy 1996), who defines it as *a set of characteristics related to the method of land use, transport system, and project idea*.

Conclusions

Morphology in the natural sciences and in those humanities that are amenable to quantitative analysis studies the external forms and internal structures and entities, quantitative and qualitative features of a formal nature.

Linking morphology with urban planning, it is necessary to find a place for it among several concepts that are traditionally associated with the knowledge (perception) of the form. These primarily include urban planning composition, which, as in architecture, is traditionally associated with form and structure.

In both morphology and composition, the object of study is form. The difference lies only in its manifestations, the essence of which is laid down in the etymology of each word. In the case of morphology, the form is considered as a single integral object that has the property of divisibility. In a composition, on the contrary, several forms need to be combined into a complete structure, otherwise, it (the form) will not be a compositional form. Thus, morphology divides and describes morphological features, and composition determines the morphological characteristics of elements with their subsequent compilation or arrangement into a complete composition.

In turn, *composition* in urban planning is a link between general theoretical philosophical concepts of urban planning and artistic problems of urban space formation. By its origin, composition theory studies objective patterns of shaping and related means of constructing architectural and urban planning objects. The history of urban planning shows numerous examples of various compositions: the development of regular rectangular planning of ancient cities (the Greeks based the planning of their cities on a rectangular system and improved it) and the formation of ensembles. If a medieval city is compositionally enclosed in ants, then the renaissance city is directed from the centre to the periphery, and the centre of the city was no longer the buildings of the cathedral or town hall, but the free space of the main square, etc. At the same time, the history of urban planning shows that in the absence of compositional patterns, the city environment became unattractive, lost its integrity and expressiveness.

Thus, *urban planning composition* is a way of organizing the elements of the city to achieve a common spatial unity and harmony and ensure the interrelation of the components due to the artistic idea and function of the urban form, while *morphology in urban planning is the doctrine of form and structure*.

The role of morphology in relation to composition in urban planning is not clear. This is explained by the fact that, on the one hand, morphological characteristics precede the composition (layout of the form), since they describe and determine the features of the general expression of the object, and on the other hand, they can follow it and thereby act as an object of morphological study. There is also a problem in the fact that sometimes the fundamental characteristics of an urban planning composition (texture, limit, limitation, etc.) can be studied by morphological characteristics of the form and be its defining features.

For the future, the author of the study aims to formulate global trends in the development of the city's morphology.

References

- Asmus V. F., 1976. Arystotel. *Metafizyka*: Soch.: v 4–kh t. B.: M.: Musl, T. 1.
- Bakhtyn, M., 1987. *Lyteraturno krytycheskye staty*. M.: Khudozhestvennaia lyteratura.
- Biskub, I. P., 2014. *Linhvistychna katehoryzatsiia: vid Arystotelia do IMAL* (isolating-monocategorical-associational language). *Studia philologica*, 3, P. 11–18.
- Dyka, O. M., 1975. *Morfologhyya*. Bolshaia medytsynskaia entsyklopedyya. M.: Sovetskaia entsyklopedyya.
- Etymolohichnyi slovnyk ukrainskoi movy*: V 7 t., 1982–2012. B: O. Melnychuka, hol. red. K.: Naukova dumka.
- Kanaev, Y. Y., 1970. *Hete kak estestvoyspytatel*. L.: Lenynhradskoe otdelenye yzdatelstva “Nauka”.
- Klochek, H., 2007. “Khudozhnii svit” yak katehorialne poniattia. *Slovo i Chas*, 9, P. 3–14.
- Mala hirnycha entsyklopediia*: V 3 t, 2004–2013. V.: V. S. Biletskyi, red. Donetsk: Donbas.
- Meien, S. V., 2010. Pryntsypy morfologhycheskykh yssledovanyi v paleobotanyke. *Lethaea rossica*, 3, P. 95–108.
- Meier, K. Y., 1958. *Morfohenyia vysshykh rastenyi*. M.: Yzdatelstvo Moskovskoho unyversyteta.
- Mykulynskyi, S. R., red. 1972. *Ystoryia byolohyy s drevneishykh vremen do nachala KhKh veka*. Akademyia nauk SSSR, YYET AN. M.: Nauka.
- Rappaport, A. H., 2000. *K ponymanyiu arkhitekturnoi formy*. Doktor ysk. NYITYAH.
- Remyzova, E. Y., 2016. Khudozhestvennye metody arkhitekturnoi kompozytsyy: Uchebnoe posobye po vypolneniyu praktycheskykh zadanyi. Kh. : KhNUSA.
- Reshetov, O. O. ta Stezhko Z. V., 2013. Kласychna teoriia rozvytku. *Dialektyka. Naukovi zapysky*, 13, P. 156–159.
- Symonov, Yu. H., 2005. *Heomorfologhyya*. S.-P.: Pyter.
- Slovnyk ukrainskoi movy*: V 11 tomakh (SUM-11), 1970–1980. V.: I. K. Bilodid, hol. red. K.: Naukova dumka.
- Tararoev, Ya. V., 2009. Arystotelevskaia ontologhyya kak “ontologhycheskaia paradyhma” klassycheskoi fizyky y kosmologhy. *Epistemology & Philosophy of science*, XXI (3), P. 122–137.
- Tymonyn, A. K., 2001. Rol morfologhy v botanyke. [online] *Homologhy v botanyke: opyt y refleksyya*, s. 10–17. Dostupno za adresoii: <herba.msu.ru/russian/symposium/2001/morpho/timonbot.rtf> [Data zvernennia 02 serpnia 2019].
- Shcherba, S. P., Shchedrin, V. K. ta Zahlada O. A., 2004. *Filosofiia*. V: S. P. Shcherby, red. K.: MAUP.

- Entsyklopedycheskyi slovar, 1890–1907. *Entsyklopedycheskyi Slovar* F. A. Brokhauza y Y. A. Efrona [online] S.-P.: Brokhauz-Efron. Dostupno za adresoju: <<http://www.vchi.net/brokgauz/index.html>>. [Data zvernennia 02 serpnia 2019].
- Yudkin-Ripun, I., 2006. Do rekonstruktsii ukrainskoi “filosofii zhyttia». *Studii mystetstvoznavchi*, 1 (13), P. 7–16.
- Yudkin-Ripun, I., 2011. Khudozhni kody v morfolohii kultury: opys tekstiv i deryvatsiia sensiv. *Kulturolohichna dumka*, 3, P. 8–17.
- Besussi, E., Chin, N., Batty, M. and Longley, P., 2010. The structure and form of urban settlements. In: T. Rashed and C. Jürgens, et al., edss. *Remote sensing of urban and suburban areas*, P. 13–31.
- Curdes, G., 2015. *Spatial organisation of towns at the level of the smallest urban unit*. 10.13140/RG.2.1.2094.9841.
- Dempsey, N. and an., 2010. Elements of Urban Form. In: M. Jenks, C. Jones. *Dimensions of the Sustainable Cities*, 2. L.: Springer, P. 21–51.
- Encyclopedia Britannica, 2012. *Encyclopedia Britannica Online*. [online] London: Encyclopedia Britannica (UK). Available at: <<https://www.britannica.com/>> [Accessed 02 August 2019].
- Handy, S., 1996. Methodologies for exploring the link between urban form and travel behavior. *Transportation Research: Transport and Environmen*, D 2 (2), P. 151–165.
- Huggett, R. J., 2007. *Fundamentals of Geomorphology*. Third edition. London and New York: Routledge.
- Kropf, K., 2009. Aspects of urban form. *Urban Morphology*, 13 (2), P. 105–120.
- Lutz, P. L., 2002. *The Rise of Experimental Biology: An Illustrated History*. Totowa, NJ: Humana Press.
- Marr, D., and Nishihara, H., 1978. Representation and recognition of the spatial organization of three-dimensional shapes. *Proceedings of the Royal Society of London*, 200, P. 269–294.
- McElvenny, J., 2018. August Schleicher and Materialism in 19th-Century Linguistics. *Historiographia Linguistica*, 45 (1–2), P. 133–152.
- McLaughlin, P., 2002. Naming biology. *Journal of the History of Biology*, 35 (1), P. 1–4.
- Szemerényi O. J. L., 1996. *Introduction to Indo-European Linguistics*. [e-book] Oxford University Press: Clarendon Press.

Юлія Ідак

Доктор архітектури, Доцент кафедри містобудування
Національний університет “Львівська політехніка”, Львів
e-mail: yuliia.v.idak@lpnu.ua
orcid: 0000-0002-1123-5759

СТАНОВЛЕННЯ ТА РОЗВИТОК МОРФОЛОГІЇ ЯК ЗАГАЛЬНОНАУКОВОГО ВЧЕННЯ І ЇЇ ПОТЕНЦІАЛ У ТЕОРІЇ МІСТОБУДУВАННЯ

Анотація. Визначено та охарактеризовано основні етапи становлення морфології як наукового вчення. Аналіз літературних джерел показав, що морфологія упродовж свого розвитку впевнено переросла статус важливого розділу в біології, ставши самостійною і пройшовши всі етапи становлення, характерні для будь-якої наукової галузі. Процес становлення пов'язаний з описом досліджуваних об'єктів та розробленням на його основі теорій, спрямованих на виявлення характерних ознак, пояснення властивостей і практичного їхнього застосування.

Варіативність еволюції матерії, різноманітних способів наукового пояснення та множинність методологічних підходів до визначення поняття “форма” зумовили порівняльний аналіз категорійного аналогу “морфологічного” у філософії. У філософії розуміння форми зводиться до семантичної єдності (цілісності) розрізнених речей, зміст яких відображений у фігурах на визначеній матеріальній основі (субстраті).

Окреслено проблеми визначення поняття “форма” в теорії містобудування та урбаністиці, зумовлені різним його трактуванням та змістом, який варіюється залежно від поставлених завдань і співвідношення з іншими галузями знань. В одних дослідженнях (екологічних, економічних та ін.) форму розуміють як зовнішній вигляд та обриси визначеної матеріальної дійсності, а в інших (переважно в працях філософського, соціологічного, культурологічного спрямування та ін.) – як зовнішнє вираження певного змісту. Не менш дискусійною залишається проблема визначення поняття “урбаністична форма”, що здебільшого застосовується для опису фізичних характеристик елементів міста. Також через можливість пізнання форми в межах композиції та високий рівень її наукової розробленості в теорії містобудування сформувався погляд розглядати форму як суб'єктивну категорію. У цьому дослідженні форму слід трактувати як об'єктивну характеристику зовнішнього виразу матеріально наявного предмета. Тому прийнято, що форма міста – це виражальна риса міста, якій притаманний певний комплекс морфологічних значень та їхніх формальних показників. У містобудуванні вивчення морфології міста форму слід розглядати як характеристику двовимірної моделі фіксованої частини території міста з усіма наявними будівлями та спорудами.

Ключові слова: форма, морфологія, теорія містобудування.