CLASSIFICATION OF PUBLIC OPEN SPACES

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Abstract. *In the context of rapid urbanization and the increasing demand for high-quality urban environments, establishing a scientifically grounded classification of Public open spaces (POS) has become particularly important. Although numerous projects exist in global and local practice, a unified typology that integrates planning, functional, and social aspects of POS formation is still lacking. The aim of this article is to identify structural patterns and propose a classification of Public open spaces that meets modern requirements for comfort and sustainable development. The study employs a comparative analysis of existing scientific approaches, field observations, morphological examination of the urban fabric, and typologization of spatial structures. Methods of systematization, graphic-analytical modeling, and content analysis of project materials were applied. This methodological framework enables the identification of recurring spatial patterns and functional distinctions across different POS types. The proposed classification highlights key groups of Public open spaces based on functional specialization, scale, and degree of integration within the urban environment. Distinct spatial structures were identified, along with their characteristic features and formative factors. The findings emphasize the need for a comprehensive approach to POS development that considers spatial organization, social usage scenarios, and broader urban planning context. The study also acknowledges limitations related to insufficient statistical data and variations in terminology across research sources. Overall, the results demonstrate the importance of creating a unified classification capable of improving the planning, design, and management of open public spaces. The insights gained may inform future urban planning strategies and serve as a foundation for further research.*

Keywords: *open spaces, typology, classification, urban environment, planning structure, public areas, urban studies.*

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АШЫҚ ҚОҒАМДЫҚ КЕҢІСТІКТЕРДІ ЖІКТЕУ

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Аңдатпа. *Жедел урбанизация жағдайында және жоғары сапалы қалалық кеңістіктерге деген сұраныстың артуы аясында ашық қоғамдық кеңістіктерді (АҚК) ғылыми негізделген жіктеу ерекше маңызға ие болуда. Әлемдік және отандық тәжірибеде әртүрлі жобалар кең таралғанына қарамастан, АҚК-нің жоспарлау, функционалдық және әлеуметтік аспектілерін кешенді түрде қамтитын бірыңғай жүйелендірілген типология әлі күнге дейін әзірленбеген. Мақаланың мақсаты – жайлылықтың заманауи талаптары мен тұрақты даму қағидаларын ескере отырып, ашық қоғамдық кеңістіктердің құрылымдық заңдылықтарын айқындау және олардың жіктелуіне қатысты ұсыныстар әзірлеу. Зерттеу қолданыстағы ғылыми тәсілдерді салыстырмалы талдауға, далалық бақылауларға, қалалық құрылымның морфологиялық талдауына және кеңістіктік құрылымдарды типологиялауға негізделген. Жүйелендіру, графо-аналитикалық модельдеу және жобалық құжаттаманың контент-талдауы сияқты әдістер қолданылды. Ұсынылған әдіснама АҚК типтері арасындағы қайталанатын үлгілер мен функционалдық айырмашылықтарды анықтауға мүмкіндік береді. Жүргізілген классификация ашық қоғамдық кеңістіктерді функционалдық мамандануына, ауқымына және қалалық ортаға интеграциялану дәрежесіне қарай негізгі топтарға бөлуге мүмкіндік берді. Түрлі құрылымдар арасындағы айырмашылықтар анықталып, олардың сипаттық ерекшеліктері мен қалыптасу факторлары белгіленді. Алынған нәтижелер АҚК қалыптастыруда кеңістіктік ұйымдастыруды, әлеуметтік пайдалану сценарийлерін және қала құрылыстық контекстті талдауды қамтитын кешенді тәсілдің қажеттілігін көрсетеді. Сонымен қатар, статистикалық деректердің жеткіліксіздігі және әртүрлі зерттеулердегі терминология интерпретациясының алуан түрлілігі сияқты шектеулер де атап өтілді. Зерттеу АҚК жобалау мен басқарудың тиімділігін арттыруға мүмкіндік беретін бірыңғай типология әзірлеудің маңыздылығын растайды. Ұсынылған қорытындылар қала құрылыстық стратегияларды әзірлеуде және кейінгі зерттеулерде пайдаланылуы мүмкін.*

Түйін сөздер: *ашық кеңістіктер, типология, классификация, қалалық орта, жоспарлау құрылымы, қоғамдық аумақтар, урбанистика.*

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ОБЗОРНАЯ СТАТЬЯ

КЛАССИФИКАЦИЯ ОТКРЫТЫХ ОБЩЕСТВЕННЫХ ПРОСТРАНСТВ

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Аннотация. *В условиях ускоренной урбанизации и роста потребности в высококачественных городских пространствах особую значимость приобретает научно обоснованная классификация открытых общественных пространств (ООП). Несмотря большое количество данных, единой систематизированной типологии, учитывающей разные аспекты формирования ООП, до настоящего времени не разработано. Целью статьи является выявление структурных закономерностей и предложений по классификации открытых общественных пространств с учётом современных требований комфортности и устойчивого развития. Исследование основано на сравнительном анализе существующих научных подходов, полевых наблюдениях, морфологическом анализе городской ткани и типологизации пространственных структур. Использованы методы систематизации, графо-аналитического моделирования и контент-анализа проектной документации. Методология позволяет выявить повторяющиеся паттерны и функциональные различия между типами ООП. Проведённая классификация позволила выделить ключевые группы открытых общественных пространств по функциональной специализации, масштабности и степени интеграции в городскую среду. Установлены различия между различными структурами, а также определены их характерные особенности и факторы формирования. Полученные результаты демонстрируют необходимость комплексного подхода к формированию ООП, включающего анализ пространственной организации, социального сценария использования и градостроительного контекста. Отмечены ограничения, связанные с недостатком статистических данных и разнообразием интерпретаций терминологии в разных исследованиях. Исследование подтверждает важность унифицированной классификаци для эффективности проектирования и управления ООП. Представленные выводы могут быть использованы при разработке градостроительных стратегий и в последующих исследованиях.*

Ключевые слова: *открытые пространства, типология, классификация, городская среда, планировочная структура, общественные территории, урбанистика.*

1 INTRODUCTION

Public open spaces (POS) play a key role in shaping the urban environment by ensuring comfort, social integration, and the aesthetic perception of the city (**Gehl, 2010; Whyte, 1980**). They function as essential elements of public life, creating conditions for everyday interaction, recreation, communication, and the formation of citizens' identification with the urban environment. In the context of contemporary urbanization, POS are increasingly regarded as spatial nodes that connect various urban functions and contribute to the social sustainability of cities.

Contemporary studies emphasize that the quality of public open spaces has a direct impact on residents' social behavior, the level of use of urban infrastructure, and the formation of an inclusive urban environment (**Carr et al., 1992; Loukaitou-Sideris et al., 2009**). Well-organized public spaces promote social cohesion, enhance safety, stimulate pedestrian activity, and improve the overall quality of urban life. In this context, particular importance is attributed to the spatial characteristics of POS, such as scale, configuration, accessibility, and the degree of integration into the urban fabric.

In recent decades, increasing attention has been given to the need for systematizing public spaces in view of their multifunctional nature. A number of authors argue that public open spaces cannot be considered solely from functional or aesthetic perspectives, as their effectiveness is determined by a combination of planning, morphological, and social factors. However, despite the existence of individual typological approaches, most existing classifications remain fragmented and fail to reflect the comprehensive nature of POS.

Despite the extensive attention paid to the design, regeneration, and operation of public spaces, there is still no unified and systematized classification of public open spaces that simultaneously accounts for planning, functional, social, and morphological aspects of their formation. This significantly complicates both scientific analysis and the practical application of research findings in urban design and the management of urban environments.

The aim of this study is to identify and systematize the key types of public open spaces and to analyze the aspects of their formation with regard to functionality, planning structure, and social effectiveness. The creation of high-quality POS becomes possible through the integration of a typological approach with an assessment of the social and spatial context, allowing for a more accurate consideration of actual patterns of space use and the needs of the urban population.

To achieve this aim, the study employs a comprehensive methodological approach that includes a review of academic literature, morphological and functional analysis of existing public open spaces, and the development of a classification based on identified patterns. The results are intended to systematize knowledge of urban public open spaces and may serve as a methodological foundation for further research, as well as for the practical planning and design of public spaces in the contemporary urban context.

2 LITERATURE REVIEW

The contemporary state of urban Public open spaces (POS) has been shaped historically as a result of the interaction between architectural practice, urban planning theory, and the sociocultural needs of the population. Initially, POS emerged spontaneously and were rarely planned comprehensively within large-scale urban development, as designers concentrated primarily on housing while leaving the surrounding environment underdeveloped (**Batalina, 2006**).

In recent decades, interest has grown in integrating urban infrastructure with a comfortable environment for residents, reflecting a shift from a mechanistic, homogeneous society toward flexible and multifunctional urban spaces (**Mamaeva, 2015**). International practice highlights the importance of improvement programs with an emphasis on ecology, historical and cultural preservation, social engagement, and public participation in planning processes (**Dennis Wakaba, 2016**).

Contemporary research in the field of architectural and urban environments considers public open spaces as a multilayered phenomenon that combines spatial and planning, social, artistic, and functional characteristics. A number of studies emphasize that the uniqueness and quality of the

architectural environment are shaped by compositional and planning solutions, scale, spatial and visual organization, as well as scenarios of space use (**Kisselyova et al., 2024**). The principles of "open space" organization are interpreted as a system of interrelated elements that ensure flexibility of use, social activity, and adaptability of the urban environment (**Shlyakhtich & Kisselyova, 2025**). In this context, public open spaces go beyond the traditional understanding of isolated territories and are viewed as structure-forming components of the urban environment.

The theoretical interpretation of the role of public spaces is also grounded in the concepts of the "living city" and the public realm developed by J. Jacobs and C. Alexander, where particular attention is paid to the human scale, functional diversity, and density of interactions (**Kozhakhmetov & Abilov, 2022**). Complementing this approach, studies on the artistic interpretation of public spaces demonstrate that the aesthetic and symbolic characteristics of the environment enhance spatial identity and influence users' perception and behavior (**Tolegen et al., 2022**).

Analysis of the reviewed studies demonstrates that contemporary research on public spaces focuses on two main directions: the social function of POS and their spatial–planning characteristics (**Yalçın & Asiliskender, 2025**; **Nasution A.D. and Zahrah W., 2025**) analyze open spaces as an element of a "friendly city," emphasizing human-centered urban development. Based on long-term studies conducted in Indonesia, the authors show that even with low levels of infrastructural quality, residents actively use open spaces, and their true functionality is determined by connectivity, walkability, and integration into residential urban fabric.

Urban planning standards and regulations significantly influence the proportion and structure of open spaces, particularly in residential districts. The ratio of open space varies depending on building height and planning features (**Liu X. et al., 2025**). Another authors (**Kholifah N. A. et al., 2022**) propose an empirical approach for evaluating the quality of public spaces based on user perception. This indicates that typology development should consider not only planning structure and form but also social and qualitative dimensions, making the classification more responsive to residents' real needs.

The modern study (**Winanda et al., 2025**) examines open spaces through the lens of operational efficiency. Using J. Gibson's model of affordances, the authors show that physical accessibility of parks does not guarantee their effective functioning: poor maintenance, insufficient management, low community involvement, and the absence of sustainable programming decrease the quality of the urban environment. This highlights that public spaces should be evaluated not only through physical parameters but also through institutional management mechanisms.

Taken together, these studies form the scientific context supporting the importance of both socio-behavioral and structural-typological approaches to analyzing open public spaces, directly reinforcing the objective of this work – the classification of POS in the city of Almaty.

Key concepts in contemporary POS research include:

Morphological approaches: distinguishing compact (radial-concentric), horizontal (linear), and vertical spaces, which makes it possible to assess their integration within the urban structure (**Mamaeva, 2015**).

EcPOSychological approach: evaluating spaces through density, resource potential, comfort, and ecological characteristics, taking into account philosophical and psychological aspects of spatial perception (**Iovlev, 2006**).

Functional-spatial classification: dividing POS into green, grey, and blue spaces, and classifying them by urban planning type, function, duration of stay, social activity, and degree of greening.

The research methods included both on-site environmental surveys and analyses of spatial and ecological characteristics, allowing for the identification of relationships between architectural structure and environmental comfort (**Basu S., Nagendra H., 2021**). The key strengths of these approaches lie in their comprehensive assessment of spatial, socio-functional, and ecological parameters, while their weaknesses include insufficient data systematization and limited attention to local cultural specificities.

One of the important problem of the sustainable development of public open spaces (POS) – case of the suburban areas, which enhancing neighborhood livability, especially in the face of

uncontrolled urban sprawl (**Mantey D. Sudra P., 2018; Kępkowicz A., 2024**). Another approaches to the decision – characteristics of the climate and transport resilient and sustainable cities (**Zhang, X., & Li, H., 2018; Croce S., Vettorato D., 2021; Zhang, W., Lu, D., Zhao, Y., Luo, X., Yin, J., 2022**)

The existing gaps in the literature include the lack of an integrated methodology for assessing the comfort of public open spaces that accounts for all subsystems (architectural, ecological, compositional, and decorative). There are insufficient classification of spaces considering contemporary trends and limited quantitative research on functional activity and social engagement of users. The present study aims to systematize classifications of public open spaces and to develop a methodology for assessing their quality with consideration of morphological, functional, and socio-ecological characteristics.

3 MATERIALS AND METHODS

The present study is conducted in the form of a systematic review of academic literature and an analytical synthesis of existing approaches to the classification of public open spaces (POS). The methodological framework of the research is based on an integrated approach that combines theoretical analysis, a comparative-typological method, and elements of morphological analysis of the urban environment. The main objective of the applied methods is to identify current trends in the study of public open spaces, key theoretical concepts, and existing morphological and functional typologies, as well as to determine methodological gaps in contemporary research, which made it possible to develop an original integrated classification model.

The research materials include publications by domestic and international scholars, articles in peer-reviewed journals, monographs, doctoral and master's dissertations, as well as urban development programs and strategic documents devoted to the development and improvement of urban public spaces. The foundational sources include the works of Batalina (2006), Iovlev (2006), Mamaeva (2015), and Dennis Wakaba (2005), which address issues of spatial organization, typology, and functional content of public spaces.

In addition, materials from electronic academic databases and official online resources containing up-to-date research findings and regulatory provisions related to the formation of the urban environment were analyzed.

The research procedure consisted of several consecutive stages. At the first stage, a comprehensive collection and systematization of literature on public open spaces was carried out, covering both the historical prerequisites for the formation of POS and contemporary approaches to their analysis, design, and performance evaluation. The sources were structured according to thematic areas, including functional, planning, morphological, and socio-environmental aspects.

At the second stage, a critical assessment of the selected materials was conducted. The analysis focused on their scientific relevance, methodological rigor, completeness of the presented data, and the degree of applicability of the proposed approaches to the contemporary urban context. Particular attention was paid to the comparability of classification criteria and the universality of the typological attributes used. As a result of this stage, outdated, fragmented, or overly specialized approaches that did not allow for the formation of a coherent classification system of public open spaces were excluded.

The third stage of the study was aimed at synthesis and comparative analysis of the selected data. Based on a comparison of existing classifications, an analysis of the morphological, functional, and socio-environmental characteristics of public open spaces was carried out. This made it possible to identify recurring typological features as well as to determine differences in the interpretation of the same spatial elements across various scholarly approaches.

The final stage of the research involved the development of an original integrated classification of public open spaces. On the one hand, this was facilitated by the experimental experience of classifying open public spaces, which was obtained as a result of field research. The classification was formulated with consideration of a combination of morphological characteristics, functional

activity, degree of greenery, level of social activity, and the affiliation of public open spaces with specific types of urban structural elements. This approach made it possible to integrate disparate typological models into a unified system adapted to the analysis of contemporary urban spaces.

The outcome of the study is a classification scheme of public open spaces that systematizes existing typologies and consolidates the key characteristics of different POS types. In the given scheme, the classification is based on urban planning aspects (significance, degree of activity of using the POS), compositional techniques (scale, spatial-planning structure, visual perception), socio-political factors, etc. The proposed scheme can be used as an analytical tool in academic research as well as a methodological basis for the practical planning and design of public spaces in the context of the contemporary city.

4 RESULTS AND DISCUSSION

The typology of public open spaces has a direct impact on user behavior patterns and the level of emotional attachment to the urban environment. Spatial characteristics such as accessibility, degree of greenery, openness, visual permeability, as well as the presence of areas for individual and group activities, are key factors in shaping positive perception and the sustainable use of public spaces (**Tran J., 2024**). The relationship between spatial organization and social behavior confirms the need for a systematic approach to the classification of public open spaces that takes into account both physical and social parameters.

The exceptional complexity of the object itself – open public space as an urban interior – is exceptional. Like any work of artistic architecture, it is a unified and integral organism, combining functional, formally, technical and ideological aspects. The systematization of open urban spaces can be based on the characteristics of their material and physical forms, which underpin the diversity of artistic impressions of the urban environment. The question boils down to the choice of form-creation criteria.

Analysis of the practice of environmental design of open spaces shows that as the urban content of a given site increases, the palette of planning elementary units that make up its surface becomes richer, and the techniques that assemble them into a coherent structure become more diverse. Open urban space is, as it were, "assembled" from individual subspaces, functional areas, specialized in purpose, and characterized by surface treatments and equipment. The presence of various combinations of these structural elements is a distinctive feature of the structure of any urban interior, and the degree of complexity of such combinations and the level of organization of the entire planning structure can be considered as the leading criterion for its classification.

An analysis of existing academic studies and publications devoted to public open spaces revealed a significant diversity of approaches to their classification. Various authors propose typologies of public open spaces based on a wide range of criteria, including urban significance, spatial activity, visual characteristics, stages of historical development, spatial and planning structures, functional purpose, scale, temporal patterns of use, socio-political factors, as well as zoning according to A. V. Krashennikov (**Batallina, 2006; Mamaeva, 2015; Iovlev, 2006; Wakaba, 2005**). This diversity reflects the complex nature of public open spaces and the difficulty of their unambiguous typological definition. At the same time, such variability allows us to reflect the existing diversity of POS, which depends on many complex factors.

The results of the comparative analysis showed that most existing classifications are characterized by a high level of detail and cover a broad spectrum of public open space attributes. At the same time, a significant number of approaches focus primarily on individual aspects – planning, visual, or functional – without comprehensive consideration of social activity, behavioral scenarios, and user comfort. This reduces the applicability of such classifications in contemporary urban contexts, where public spaces are expected to meet the requirements of inclusivity, multifunctionality, and sustainable development.

At the same time, the analysis demonstrated that the body of existing typologies forms an extensive theoretical foundation that makes it possible to identify key parameters recurring across

different classification models. These include the morphological structure of space, functional composition, degree of greenery, intensity of use, and the role of public open spaces within the urban structure. The systematization of these parameters allowed disparate approaches to be synthesized and the main patterns of public open space formation to be identified.

The outcome of this work is the development and visualization of an integrated classification model presented in Scheme 1, "Classification of Public Open Spaces," which consolidates the results of the analysis of existing typologies and reflects the diversity of approaches to the classification of public open spaces (**Figures 1, 2**).
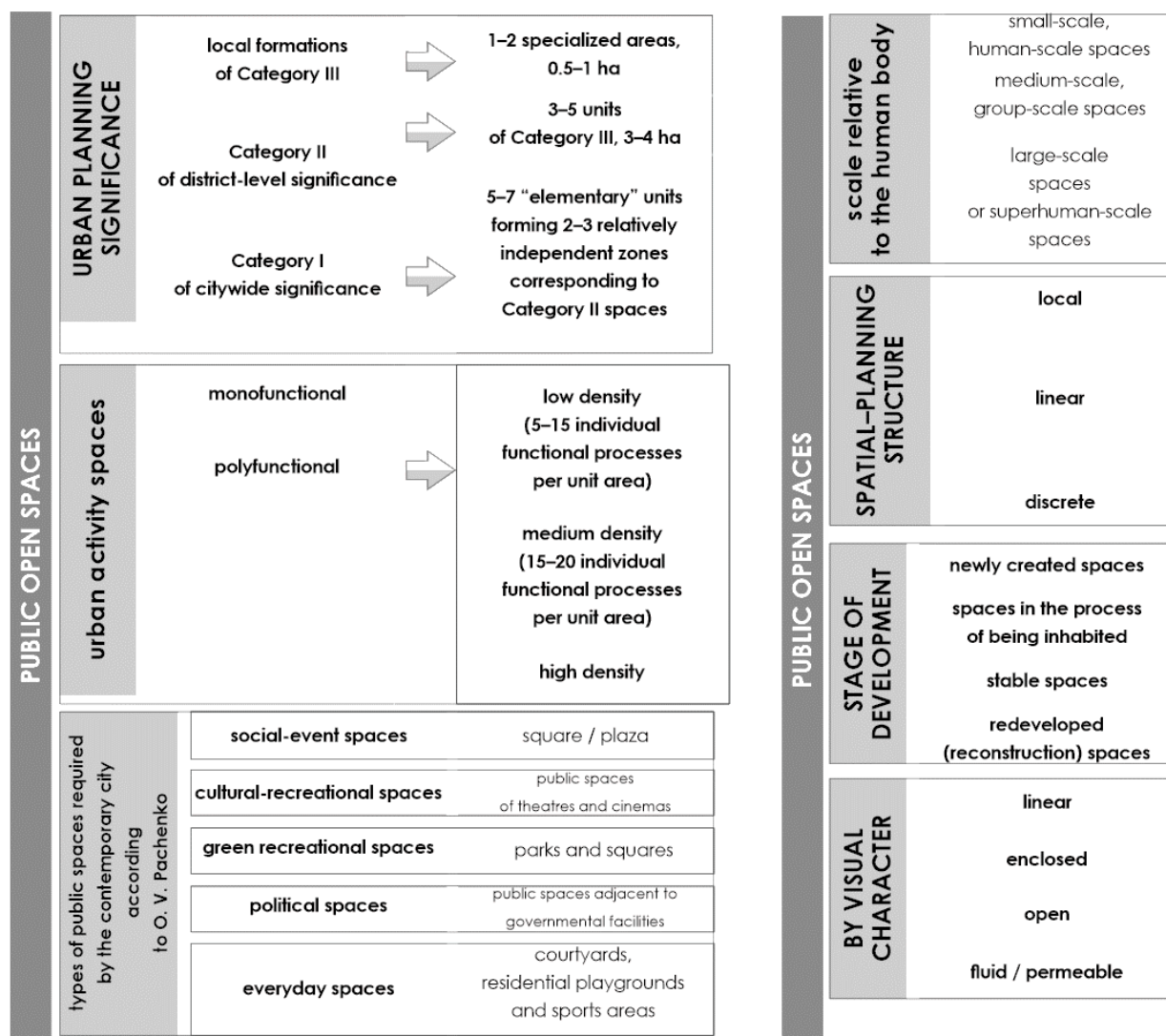
Figure 1 – Classification of Public Open Spaces (author's material)

The diagram illustrates how various authors classify public spaces according to a wide range of criteria, including:
1. urban-planning significance;
2. spatial activity;
3. types of public spaces required by modern citizens (according to O.V. Pachenkov);
4. visual characteristics;
5. stages of development;
6. volumetric–planning structure;
7. scale;
8. element of the planning structure;
9. time of use;

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10. functional purpose;
11. type of process;
12. urban-planning needs;
13. socio-political factors;
14. location within the urban structure;
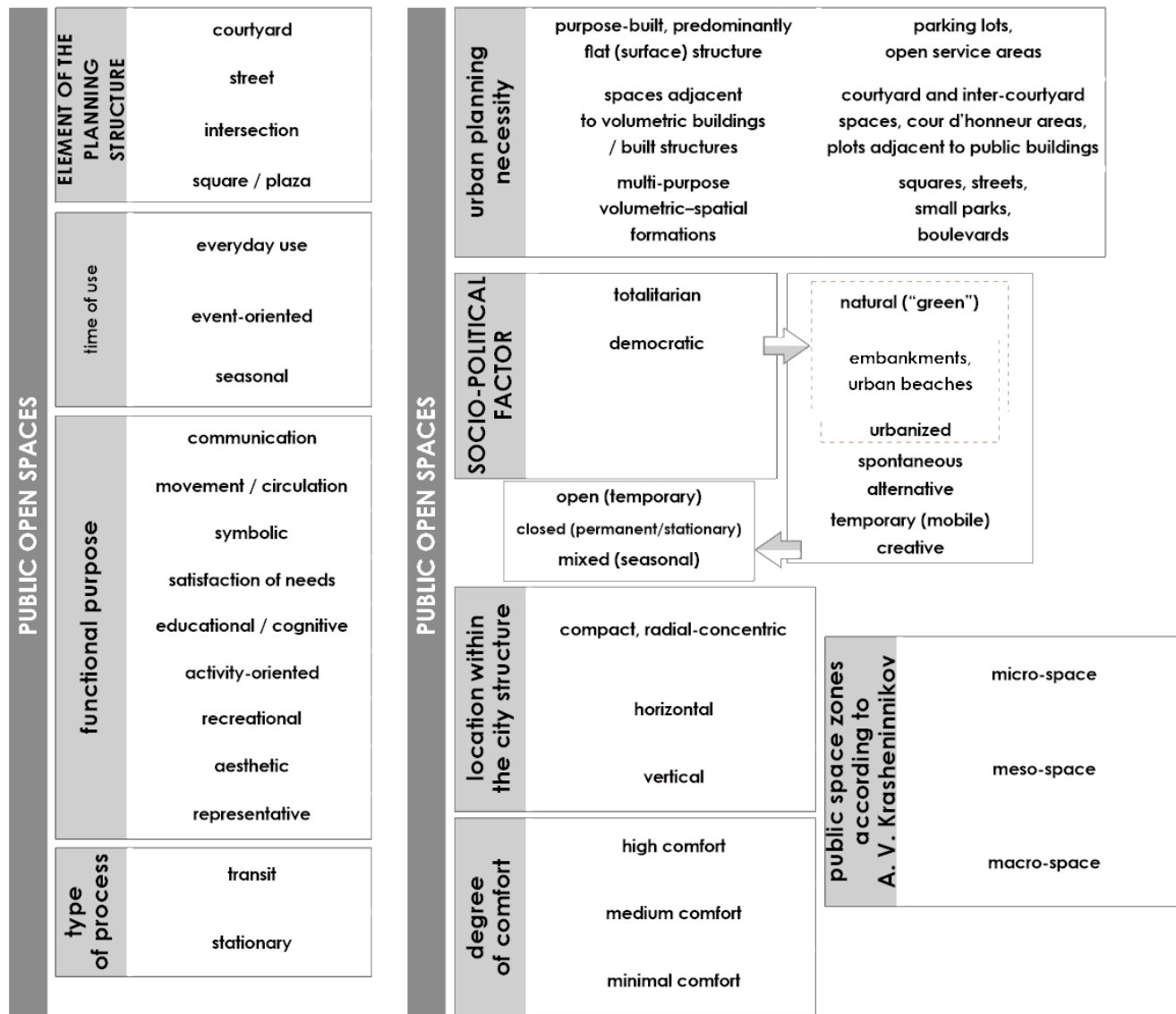15. degree of comfort and others.

Figure 2 – Classification of Public Open Spaces (author's material)

The proposed classification includes the following main categories:

1. Degree of social activity, encompassing the level of openness, intensity of social interaction, and the socio-political factor;

2. Temporal regime, taking into account the frequency and duration of space use;

3. Significance at the city scale, determined by territorial location and role within the urban structure. This category also includes the spatial and planning structure of the spaces;

4. Functional composition in relation to the position within the territorial framework, characterized by monofunctionality or multifunctionality, the nature of activities, and functional purpose;

5. Stage of development, reflecting the degree of formation and transformation of the space;

6. Degree of comfort, including visual qualities and human-scale characteristics.

For parameters such as the degree of greenery, barrier-free design, safety, and intensity of flows, only the extent or expression of these characteristics is evaluated, as there is no universal scale for their quantitative measurement (Figure 3).

Often, the significance and geometry of open public spaces are the most important criteria for their classification, as their primary purpose in the city is communication. This function of open spaces is crucial to the urban structure. Thus, in the city, the compositional linear systems of streets and squares serve to facilitate pedestrian and vehicular traffic, while open spaces serve as a magnet for people or vehicles, concentrating additional activities such as retail and communications, which in one way or another contribute to the formation of the environment, determined by the communication function of the public open space.
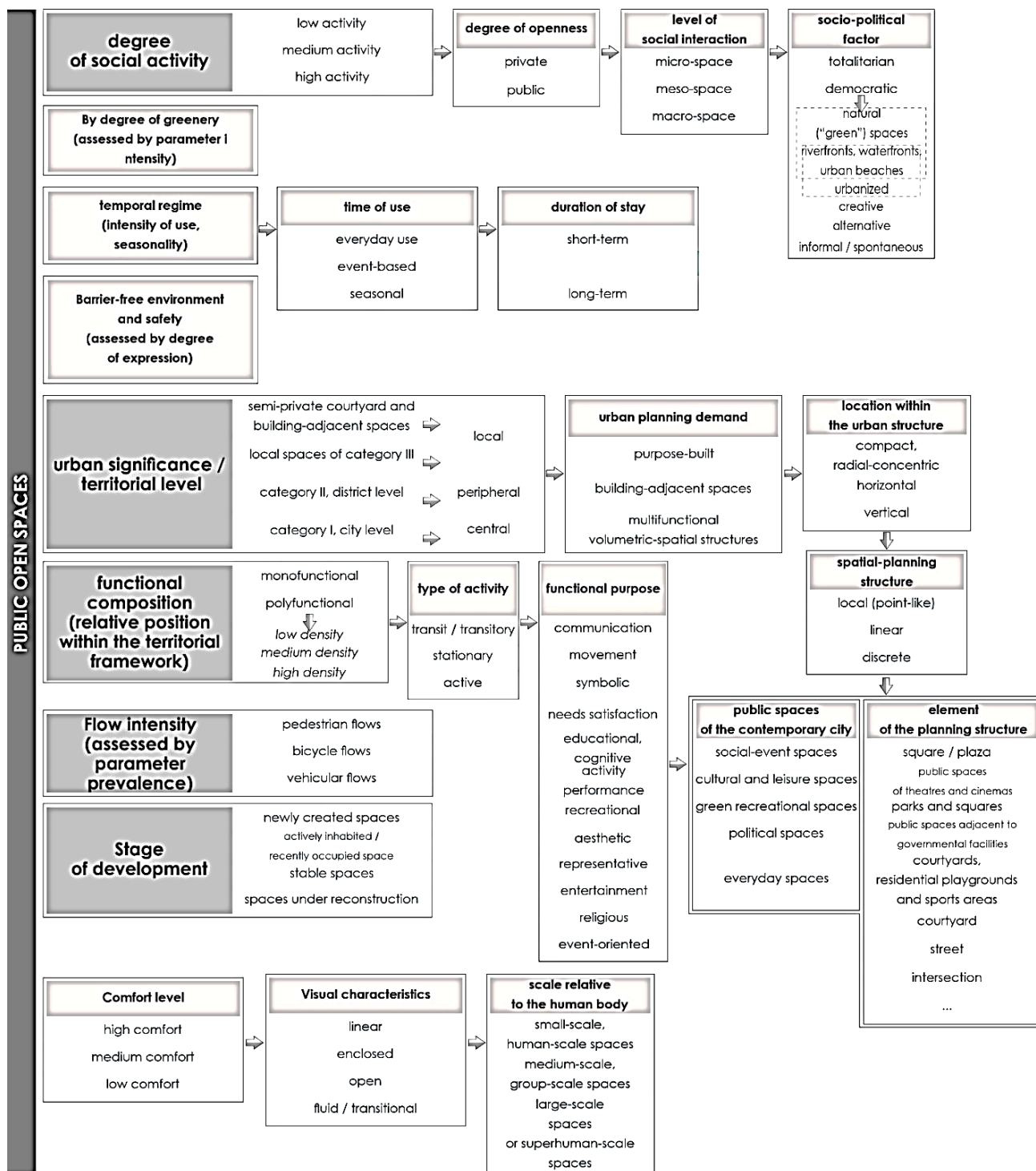

Figure 3 – Proposed Classification of Public Open Spaces (author's material)

The same principle is observed in various districts of the city: territorial formations are a vibrant venue for the interaction of distributed processes of work and everyday life (recreation, living environment, industrial zone). This type of spatial organization of open spaces typically features alternating residential courtyards, public institution sites, and recreational areas within a residential area.

The proposed classification integrates key characteristics necessary for the contemporary analysis and design of urban public open spaces (POS) and allows for adaptation and modification of the classification structure depending on the specific objectives of the study or urban planning projects. Thus, it enables the systematization of existing knowledge and practices, providing both a scientific foundation and practical applicability.

5 CONCLUSIONS

1. During the study, a comprehensive analysis of existing approaches to the classification of public open spaces (POS) was conducted. The literature review revealed a significant diversity of typologies incorporating urban-planning, functional, morphological, social, and environmental characteristics. It was established that a number of classifications are outdated or insufficiently reflect contemporary user requirements, such as comfort, social activity, and environmental quality.

2. Based on the systematization of the collected data, an integrated classification scheme of public open spaces was developed. This scheme incorporates the analyzed attributes and categories reflecting the diversity of planning structures, functions, patterns of use, and spatial characteristics. The scheme combines typologies proposed by different authors into a unified and comparable format.

3. The developed classification scheme was further analyzed and optimized. During this process, overlapping or semantically similar elements were eliminated, which made it possible to improve the logical consistency, structural clarity, and analytical precision of the classification model.

4. As a result of the analytical work, an original authorial classification scheme of public open spaces was developed. It represents a refined and systematized typology of POS, adapted to the specifics of the studied material and free from repetitive or redundant elements. The key parameters of the proposed scheme include the degree of social activity, temporal regime, city-scale significance, functional composition, stage of development, and degree of comfort.

The proposed classification enables the systematization of existing knowledge, the identification of gaps in urban planning, and their consideration in the design of new public spaces. It demonstrates the potential of using structural characteristics of spaces to analyze their functioning and assess their role within the urban environment.

The classification has significant applied potential for the design of new public open spaces and the regeneration of existing ones. Its flexibility allows the structure to be adapted to various research objectives and practical needs, taking into account requirements for environmental sustainability, accessibility, safety, and intensity of use.

The scientific novelty of this study lies in the development of an integrated classification of public open spaces (POS), which systematically combines morphological, functional, and social characteristics. Unlike existing typologies, which often focus on individual parameters such as spatial structure, visual perception, or functional purpose, the proposed classification represents a comprehensive system applicable to the contemporary urban context.

The obtained results form a methodological foundation for further studies of the planning structure of public open spaces. The research enhances the understanding of the role of structural typology in shaping the urban environment and contributes to the development of practical recommendations for creating comfortable and functionally rich urban spaces.

Future research perspectives include the refinement and further detailing of structural types of public open spaces, their correlation with data on intensity of use, and the expansion of the analysis to other urban territories in order to test the universality of the proposed classification scheme.

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