



Integração da morfologia urbana no planejamento contemporâneo: Abordagens, Desafios e Potencialidades

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Integração da morfologia urbana no planejamento contemporâneo: Abordagens, Desafios e Potencialidades

RESUMO

Este estudo investiga a integração entre morfologia urbana e planejamento urbano, com o objetivo de analisar os desafios e potencialidades dessa abordagem, apontando possíveis direções para pesquisas futuras. A relevância do tema se justifica pela necessidade de aprimorar os instrumentos teóricos e metodológicos do planejamento urbano, em resposta às e incertezas das cidades contemporâneas. Por meio de uma metodologia qualitativa, que inclui revisão bibliográfica e análise de estudos de caso, o artigo explora diferentes abordagens da morfologia urbana e suas aplicações práticas, ilustradas nos estudos de caso do Porto, Brasília e São Paulo. O referencial teórico fundamenta-se nos conceitos e métodos da morfologia urbana, bem como nas teorias e práticas do planejamento urbano, com ênfase nas abordagens mais recentes, como o planejamento colaborativo e o desenho urbano sustentável. Os resultados alcançados apontam a relevância da morfologia urbana para o planejamento urbano, ao oferecer subsídios para a análise e intervenção na forma urbana, como demonstrado nos estudos de caso, mas ainda enfrenta desafios importantes, como a tradução dos conhecimentos analíticos em soluções práticas, a incorporação de dimensões sociais e políticas. Por fim, foram apontadas potencialidades da integração entre morfologia urbana e planejamento urbano, como a possibilidade de construir um planejamento mais contextualizado, participativo e sustentável, assim como, sugeridas direções para pesquisas futuras, abordando o desenvolvimento de métodos e ferramentas mais acessíveis e, ainda a investigação dos impactos das novas tecnologias e formas de produção do espaço urbano na morfologia das cidades contemporâneas.

Palavras-chave: Morfologia urbana. Planejamento urbano. Forma urbana. Sustentabilidade.

Integration of urban morphology in contemporary planning: Approaches, Challenges, and Potentialities

ABSTRACT

This study investigates the integration between urban morphology and urban planning, aiming to analyze the challenges and potentialities of this approach, while identifying possible directions for future research. The relevance of the topic is justified by the need to enhance the theoretical and methodological tools of urban planning in response to the complexities and uncertainties of contemporary cities. Through a qualitative methodology that includes a literature review and case study analysis, the article explores different approaches to urban morphology and their practical applications, illustrated by case studies from Porto, Brasília, and São Paulo. The theoretical framework is based on the concepts and methods of urban morphology, as well as urban planning theories and practices, with a focus on more recent approaches, such as collaborative planning and sustainable urban design. The results highlight the significance of urban morphology for urban planning by providing insights for analyzing and intervening in urban form, as demonstrated by the case studies. However, it still faces significant challenges, such as translating analytical knowledge into practical solutions and incorporating social and political dimensions. Finally, the study points out the potentialities of integrating urban morphology and urban planning, such as the possibility of creating more contextualized, participatory, and sustainable planning, and suggests directions for future research, including the development of more accessible methods and tools, as well as investigating the impacts of new technologies and modes of urban space production on the morphology of contemporary cities.

Keywords: Urban morphology. Urban planning. Sustainability.

Integración de la morfología urbana en la planificación contemporánea: Enfoques, Desafíos y Potencialidades

RESUMEN

Este estudio investiga la integración entre morfología urbana y planificación urbana, con el objetivo de analizar los desafíos y potencialidades de este enfoque, señalando posibles direcciones para futuras investigaciones. La relevancia del tema se justifica por la necesidad de mejorar los instrumentos teóricos y metodológicos de la planificación urbana en respuesta a las complejidades e incertidumbres de las ciudades contemporáneas. A través de una metodología cualitativa que incluye revisión bibliográfica y análisis de estudios de caso, el artículo explora diferentes enfoques de la morfología urbana y sus aplicaciones prácticas, ilustradas en los estudios de caso de Oporto, Brasilia y São Paulo. El marco teórico se fundamenta en los conceptos y métodos de la morfología urbana, así como en las teorías y prácticas de la planificación urbana, con énfasis en los enfoques más recientes, como la planificación colaborativa y el diseño urbano sostenible. Los resultados alcanzados destacan la relevancia de la morfología urbana para la planificación urbana al ofrecer insumos para el análisis e intervención en la forma urbana, como se demuestra en los estudios de caso, pero aún enfrenta desafíos importantes, como la traducción del conocimiento analítico en soluciones prácticas y la incorporación de dimensiones sociales y políticas. Finalmente, se señalaron las potencialidades de la integración entre morfología urbana y planificación urbana, como la posibilidad de construir una planificación más contextualizada, participativa y sostenible, y se sugirieron direcciones para futuras investigaciones, abordando el desarrollo de métodos y herramientas más accesibles, así como la investigación de los impactos de las nuevas tecnologías y formas de producción del espacio urbano en la morfología de las ciudades contemporáneas.

Palabras clave: Morfología urbana. Planificación urbana. Sostenibilidad.

1 INTRODUCTION

Urban morphology studies the form and structure of cities, investigating the processes of formation, transformation, and evolution of the urban fabric over time. This knowledge is essential for urban planning, as the configuration of a city directly affects the quality of life of its inhabitants, the efficiency of urban infrastructures, and the sustainability of urban development.

In recent decades, urban morphology has gained increasing recognition as an important tool for urban planning. By analyzing spatial patterns and the organizational logic of cities, morphological studies help identify urban issues related to urban form, such as fragmentation of the urban fabric, lack of connectivity between neighborhoods, and inadequacies in public spaces. Moreover, urban morphology provides the foundation for proposing urban design guidelines that promote the creation of more integrated, accessible spaces with higher environmental quality.

However, despite the potential of urban morphology to support urban planning processes, challenges remain in achieving effective integration between these two fields. Morphological studies are often perceived as overly descriptive and insufficiently prescriptive, while urban planning tends to prioritize functional and quantitative aspects over urban form. Furthermore, the complexity and diversity of morphological approaches can make their adoption by urban planning professionals more challenging.

This article's primary objective is to discuss the main approaches to urban morphology and their applications in urban planning. It aims to foster greater integration between these two fields, highlighting the potential of morphological analysis to support urban planning practices in building more sustainable cities with improved quality of life.

To achieve this, the article is structured into four main sections. The first section presents a literature review of the principal approaches to urban morphology, emphasizing their theoretical and methodological contributions. The second section discusses the applications of urban morphology in urban planning, with a focus on analyzing urban evolution, diagnosing urban issues, proposing urban design guidelines, and evaluating the impacts of urban interventions. The third section introduces case studies illustrating the application of morphological approaches in real-world urban planning scenarios. Finally, the fourth section addresses the challenges and potentialities of integrating urban morphology and urban planning, pointing to possible directions for future research.

By addressing these issues, this essay aims to contribute to this field of knowledge by exploring the interface between urban morphology and urban planning. It seeks to offer insights for a more integrated and effective approach to urban form, ultimately contributing to the creation of more sustainable cities with enhanced quality of life.

2 LITERATURE REVIEW: APPROACHES TO URBAN MORPHOLOGY

Urban morphology, as a field of study, has been the subject of various theoretical and methodological approaches over time. These approaches aim to understand the form and structure of cities from different perspectives, contributing to the development of more comprehensive and in-depth knowledge on the subject. This section presents the main approaches to urban morphology, highlighting their theoretical and methodological contributions.

The **historical-geographical approach**, represented by the works of Conzen (1960) and Whitehand (2001), focuses primarily on analyzing the evolution of urban form over time. Conzen (1960) proposed the "tripartite division," a methodology that considers three fundamental elements: the urban plan, the building fabric, and land use. The urban plan refers to the layout of streets and lot divisions; the building fabric pertains to the architectural characteristics of buildings; and land use relates to the activities conducted in each city area. Through this perspective, analyzing the relationships between these three elements allows for an understanding of how urban form changes over time in response to different social, economic, and cultural contexts. Whitehand (2001) expanded this approach by introducing the concept of "fringe belts" to study peripheral urban areas, which exhibit distinct morphological characteristics compared to central areas, including greater diversity in land use and lower density. This approach has been widely applied in case studies of European cities and has contributed to understanding the processes of formation and transformation of urban form throughout history.

The **typological-design approach**, developed by Saverio Muratori and Gianfranco Caniggia in Italy from the 1950s onwards, emphasizes the analysis of building types and their aggregation within the urban fabric. Caniggia and Maffei (2001) introduced the concept of the "leading type" (tipo portante), referring to the most recurrent building type in a specific historical period, serving as a reference for architectural and urban production. In this approach, the authors argue that the leading type is not a fixed form but a principle of spatial organization that can be adapted and transformed over time, resulting in typological variations. Analyzing the processes of formation and transformation of building types provides insights into the structuring logic of the urban fabric and helps identify recurring morphological patterns (Cataldi, Maffei, Vaccaro, 2002). This approach has been applied in urban morphology studies of Italian cities, contributing to the development of methodologies for analyzing and intervening in existing urban fabrics, with an emphasis on valuing local identity and promoting urban quality of life.

The **perceptual-visual approach**, represented by the works of Kevin Lynch (1960) and Gordon Cullen (1961), emphasizes analyzing individuals' sensory experience in urban spaces. Lynch (1960) proposed a methodology for analyzing urban form based on identifying five key elements: paths, edges, districts, nodes, and landmarks. Paths are

circulation channels along which individuals move; edges are linear elements separating different city areas; districts are urban regions with distinctive characteristics; nodes are strategic locations of concentrated activities; and landmarks are reference points that stand out in the urban landscape. According to Lynch (1960), these elements are fundamental in shaping the mental image individuals form of the city, contributing to spatial orientation and legibility. Cullen (1961), in turn, introduced the concept of "townscape" to analyze the visual and aesthetic dimensions of urban form. He argued that the urban landscape comprises a sequence of spaces and visual elements perceived by individuals as they move through the city, creating a unique sensory experience. Analyzing the urban landscape identifies elements contributing to the city's visual quality, such as the relationship between solids and voids, surface textures, lighting, and the presence of natural features. This approach has been widely applied in environmental perception studies and has informed urban design strategies that enhance users' sensory experiences.

Finally, the **spatial-configurational approach**, developed by Hillier and Hanson (1984) within the framework of space syntax theory, seeks to understand urban form by analyzing the spatial relationships between elements of the urban fabric. Hillier and Hanson (1984) proposed various measures and analytical techniques, such as integration and connectivity, to evaluate urban space accessibility and permeability. Integration measures how accessible a particular space is in relation to all other spaces in the urban system, while connectivity assesses the number of spaces directly linked to a given space. The authors argue that the spatial configuration of a city directly impacts pedestrian movement and land use distribution, influencing urban spaces' vitality and safety. More integrated and connected spaces tend to have higher pedestrian traffic and greater land use diversity, whereas more segregated and less connected spaces are less utilized and more prone to degradation (Hillier, Hanson, 1984). This approach has been widely applied in urban morphology studies and has contributed to urban planning strategies that consider the relationship between spatial configuration and the social dynamics of cities.

These diverse approaches to urban morphology, with their specific theoretical and methodological contributions, have been fundamental in understanding the complexity of urban form and developing strategies for urban space intervention.

The **historical-geographical approach** helps understand urban form evolution over time, while the typological-design approach emphasizes analyzing building types and their aggregation in the urban fabric. The **perceptual-visual approach** highlights the importance of individuals' sensory experiences in urban spaces, whereas the **spatial-configurational approach** focuses on analyzing spatial relationships between elements of the urban fabric. Each approach offers a unique perspective on urban form, contributing to a more comprehensive and in-depth understanding of cities.

3 APPLICATIONS OF URBAN MORPHOLOGY IN URBAN PLANNING

3.1 Analysis of Urban Evolution

Analyzing urban evolution through urban morphology provides insights into the transformations of urban structure over time, identifying the agents and processes responsible for these changes. The historical-geographical approach, as proposed by Conzen (1960) and Whitehand (2001), emphasizes the importance of studying cities across different historical periods, investigating the relationships between urban form and the socioeconomic, political, and cultural contexts of each era.

This approach enables the identification of land parceling patterns, building typologies, and forms of urban fabric aggregation characteristic of each historical period. It also facilitates an understanding of the locational logic of various urban activities over time (Oliveira, 2016). For instance, this analysis can identify areas of the city that have experienced urban expansion, building densification, or population decline, offering a deeper understanding of the causes and consequences of these processes for both morphology and urban life dynamics (Costa & Netto, 2015).

Moreover, analyzing urban evolution through urban morphology allows for the identification of continuities and disruptions in urban form over time, providing critical insights for the preservation of historical heritage and the revitalization of degraded areas (Costa & Netto, 2015). By understanding the logic behind the formation and transformation of the urban fabric, it becomes possible to propose urban interventions that respect the identity and memory of the city, valuing its morphological characteristics and sociocultural diversity (Del Rio, 1990).

3.2 Diagnosis of Urban Problems

Diagnosing urban problems through urban morphology enables a more comprehensive understanding of the relationships between urban form and the social dynamics of cities, identifying elements that contribute to poor urban quality of life. The perceptual-visual approach, proposed by Lynch (1960) and Cullen (1961), highlights the importance of analyzing individuals' sensory experiences in urban spaces, identifying elements that enhance the legibility, identity, and imageability¹ of the city.

This approach allows for the identification of issues such as the lack of reference points, visual monotony, and the absence of surprising elements in the urban

¹ The "imageability" of a city is a concept introduced by Kevin Lynch in his book *The Image of the City* (Lynch, 1960). It refers to the quality of an urban environment that facilitates the formation of a clear and distinct mental image of the city by its inhabitants and visitors. In other words, it is the ability of a place to be easily recognizable, memorable, and identifiable by those who experience it. Lynch argues that a city with high imageability possesses urban elements that are easily understood and remembered, such as main streets, landmarks, edges, districts, and nodes. These elements help people orient themselves, locate their position, and develop a sense of identity and belonging within the urban space.

landscape—factors that can contribute to user disorientation and a lack of engagement (Lynch, 1960). Additionally, it can reveal problems like the lack of integration between public spaces and buildings, the absence of active façades, and the predominance of walls and fences, which may contribute to feelings of insecurity and reduced public space usage (Cullen, 1961).

The spatial-configurational approach, developed by Hillier and Hanson (1984), emphasizes analyzing the accessibility and permeability of the urban fabric, identifying areas with greater or lesser integration and connectivity. This approach can uncover issues such as urban fabric fragmentation, the presence of physical barriers, and the lack of continuity in road networks, all of which can contribute to socio-spatial segregation and limited access to urban facilities and services (Hillier & Hanson, 1984).

Diagnosing urban problems through urban morphology enables a more systemic and integrated understanding of urban form, providing valuable insights for proposing more effective and comprehensive solutions aimed at improving urban quality of life (Del Rio, 1990). By identifying elements that contribute to urban vitality and sustainability, it becomes possible to propose urban interventions better suited to the needs and expectations of users, promoting social inclusion, valuing public spaces, and preserving cultural heritage (Lamas, 1993).

2.3. Proposal of Urban Design Guidelines

The proposal of urban design guidelines through urban morphology seeks to translate theoretical and empirical knowledge about urban form into practical recommendations for improving urban spaces. The typological-design approach, proposed by Caniggia and Maffei (2001), emphasizes the importance of identifying building typologies and patterns of urban fabric aggregation that are most suitable for the local context, considering the environmental, cultural, and socioeconomic characteristics of each city.

Using this approach, it is possible to propose urban design guidelines that value the typological and morphological diversity of the city, avoiding the homogenization and standardization of urban spaces (Caniggia & Maffei, 2001). These guidelines may include, for instance, defining differentiated building heights and setbacks for each area of the city, promoting mixed-use developments and active façades, enhancing public spaces and green areas, and prioritizing non-motorized modes of transportation (Del Rio, 1990).

On a broader scale, urban design guidelines based on urban morphology also aim to promote integration among the various elements that compose urban form, such as the street network, lots, buildings, and open spaces (Lamas, 1993). Through the spatial-configurational approach, guidelines can be proposed to improve the accessibility and permeability of the urban fabric, such as creating new road connections, removing physical barriers, and promoting more integrated and connected public spaces (Hillier & Hanson, 1984).

Additionally, urban design guidelines informed by urban morphology can incorporate principles of urban sustainability, such as energy efficiency in buildings, the use of local materials and construction techniques, and the promotion of green infrastructure and urban agriculture (Costa & Netto, 2015). By integrating these principles into urban design, it is possible to create urban spaces that are more resilient and better adapted to climate change, contributing to improved environmental quality and public health (Oliveira, 2016).

3.4 Assessment of the Impacts of Urban Interventions

The assessment of the impacts of urban interventions through urban morphology allows for a more comprehensive and systemic analysis of the effects of urban transformations on the form and dynamics of cities. The historical-geographical approach enables an examination of how different urban interventions, such as the opening of new avenues, the construction of large urban facilities, and the verticalization of central areas, have transformed the urban landscape over time, identifying their impacts on land structure, building typology, and the social appropriation of urban space (Conzen, 1960; Whitehand, 2001).

This analysis can, for example, identify processes of gentrification and social exclusion resulting from urban interventions that have prioritized certain areas of the city over others. It can also evaluate the impacts of such interventions on the preservation of historical heritage and the cultural identity of affected communities (Costa & Netto, 2015). This approach makes it possible to propose mitigating and compensatory measures to reduce the negative impacts of urban interventions, such as creating instruments for cultural heritage protection, promoting social housing policies, and valuing local practices and knowledge (Del Rio, 1990).

The spatial-configurational approach allows for evaluating the impacts of urban interventions on the accessibility and permeability of the urban fabric, identifying potential disruptions and discontinuities in the urban network (Hillier & Hanson, 1984). Through this approach, it is possible to analyze how the implementation of new road axes, the construction of large real estate developments, and the privatization of public spaces may alter movement patterns and the distribution of flows within the city. These changes can have significant impacts on urban mobility, public safety, and the vitality of public spaces (Lamas, 1993).

This analysis can identify, for example, areas of the city that became more segregated and less accessible after the implementation of specific urban interventions, as well as evaluate the impacts of these interventions on the population's quality of life and health (Oliveira, 2016). By applying this approach, it is possible to propose urban redesign measures aimed at improving the connectivity and integration of the urban fabric, such as creating new pedestrian crossings and pathways, implementing bike lanes, and revitalizing underutilized public spaces (Del Rio, 1990).

The assessment of urban intervention impacts through urban morphology enables a more critical and proactive analysis of urban transformations, supporting more informed and participatory decision-making by those involved in urban planning and management (Costa & Netto, 2015). By incorporating the morphological dimension into impact assessments, it is possible to identify the effects of urban interventions on the form and dynamics of cities, proposing more appropriate and sustainable solutions to enhance urban quality of life (Oliveira, 2016).

In summary, the applications of urban morphology in urban planning are vast and interdisciplinary, ranging from the analysis of urban evolution to the assessment of the impacts of urban interventions. By integrating different approaches and methods for analyzing urban form, urban morphology provides theoretical and practical support for a more contextualized, participatory, and sustainable urban planning process capable of addressing the challenges and demands of contemporary cities (Costa & Netto, 2015; Del Rio, 1990; Lamas, 1993; Oliveira, 2016).

4 CASE STUDIES OF THE APPLICATION OF URBAN MORPHOLOGY IN URBAN PLANNING

This section presents several case studies illustrating the application of morphological approaches in practical urban planning scenarios. These examples demonstrate how the analysis of urban form can support decision-making and the proposal of more qualified and sustainable urban interventions.

4.1 The Case of Porto, Portugal

The study by Oliveira (2016) on the evolution of the urban form of Porto highlights how morphological analysis can inform urban interventions that are more sensitive to the local context. By identifying morphological periods and the agents responsible for urban transformation, the author proposes planning guidelines that value the city's identity and memory.

One of the key contributions of this study to urban planning was the identification of areas with high potential for transformation, such as former industrial and port zones that had undergone functional obsolescence and physical degradation. Based on this analysis, urban revitalization strategies were proposed, aiming to reconcile the preservation of historical heritage with the introduction of new uses and activities, such as housing, commerce, and services.

Another significant contribution was the identification of traditional building typologies, such as bourgeois houses and mansions, which provide identity and legibility to Porto's urban fabric. From this analysis, urban design guidelines were proposed to value and reinterpret these typologies in new interventions, ensuring the continuity and coherence of the urban landscape.

4.2 The Case of Brasília, Brazil

Holanda's (2018) study on the urban morphology of Brasília demonstrates how spatial configuration analysis can support more integrated and accessible urban interventions. Through the application of Space Syntax, the author identifies key issues of socio-spatial segregation and lack of urbanity in the city, proposing urban revitalization strategies aimed at improving the integration and vitality of the urban fabric.

One of the study's contributions to urban planning was the identification of areas with the greatest potential for integration, such as the structural axes of the Plano Piloto, which concentrate the main movement flows and activities in the city. Based on this analysis, urban interventions were proposed to enhance the urbanity of these areas, including the creation of public spaces, diversification of land uses, and improvements in pedestrian and cyclist accessibility.

Another significant contribution was the identification of areas with lower integration, such as the satellite cities and peripheral areas, which suffer from poor accessibility and inadequate urban infrastructure. From this analysis, regional integration strategies were proposed, such as the creation of new public transport corridors and the decentralization of activities and services. These strategies aim to reduce dependence on the Plano Piloto and improve the quality of life for the population.

4.3 The Case of São Paulo, Brazil

The study by Meyer, Grostein, and Biderman (2004) on the urban morphology of São Paulo demonstrates how typological analysis can inform urban planning tools better suited to the local context. By identifying building types and patterns of urban fabric aggregation, the authors propose regulatory and incentive strategies aimed at balancing building densification with environmental quality and the provision of public spaces.

One of the study's contributions to urban planning was the proposal of tools such as the *onerous concession of building rights* and the *transfer of development rights*, which allow for controlling building density and capturing part of the real estate value generated by public works. Morphological analysis identified areas with greater potential for densification, such as public transport corridors, and areas requiring greater preservation, such as exclusively residential zones.

Another significant contribution was the proposal of more flexible urban planning parameters adapted to the city's diverse building typologies, such as mixed-use buildings and housing complexes. Based on typological analysis, the study identified the most common aggregation patterns and the typologies most suitable for each zone of

the city, supporting the development of a more contextualized and less generic urban legislation.

In summary, these case studies demonstrate how urban morphology can contribute to urban planning, providing a foundation for analyzing urban form and proposing more qualified and sustainable interventions. By integrating different approaches and scales of analysis, urban morphology enables a more comprehensive and systemic understanding of the city, supporting strategies for urban revitalization, regulation, and design that are better tailored to each specific context.

5 CHALLENGES AND POTENTIALITIES OF THE INTEGRATION BETWEEN URBAN MORPHOLOGY AND URBAN PLANNING

The integration of urban morphology and urban planning presents various challenges and potentialities that deserve critical discussion. On one hand, urban morphology provides a consistent theoretical and methodological framework for analyzing urban form, enabling a deeper understanding of the processes of city formation and transformation. On the other hand, urban planning faces increasing complexity and uncertainty, requiring more flexible and adaptive approaches to address rapid social, economic, and environmental changes.

One of the main challenges in integrating urban morphology and urban planning is translating analytical knowledge into practical design and regulatory proposals. Morphological studies often focus on describing and explaining urban form without advancing concrete solutions for identified problems. Furthermore, the language and concepts used in urban morphology are not always accessible or applicable to urban planning professionals, making communication and collaboration between the two fields more difficult.

Another significant challenge is incorporating social and political dimensions into the study of urban form. While urban morphology acknowledges the importance of social agents and processes in the production of urban space, analyses often emphasize the physical and functional aspects of the city, overlooking issues of power, conflict, and inequality that permeate urban development. In this regard, it is essential for urban morphology to engage with other disciplines, such as sociology, anthropology, and political science, to construct a more comprehensive and critical perspective on urban form.

Despite these challenges, the integration of urban morphology and urban planning also offers several potentialities. One of them is the possibility of creating urban planning that is more contextualized and sensitive to local specificities. By analyzing the historical evolution and morphological characteristics of each city or neighborhood, it is possible to identify the spatial organization patterns and identity elements that provide legibility and meaning to the urban fabric. These elements can be valued and

reinterpreted in new urban interventions, ensuring the continuity and coherence of the urban landscape.

Another potentiality is the opportunity to foster more participatory and inclusive urban planning. By recognizing the diversity of agents and processes that shape urban form, urban morphology can contribute to identifying different social groups and their interests in city development. These groups can be involved in the urban planning process through participatory and collaborative methodologies, ensuring that their needs and aspirations are considered in decision-making.

Lastly, the integration of urban morphology and urban planning can support the creation of more sustainable and resilient cities. By analyzing urban form across multiple dimensions (environmental, social, economic, and cultural), it is possible to identify spatial organization patterns best suited to each context, considering aspects such as density, diversity, connectivity, and adaptability. These patterns can be translated into urban design strategies and regulatory frameworks that promote energy efficiency, social inclusion, economic vitality, and cultural heritage preservation.

To advance the integration between urban morphology and urban planning, it is necessary to invest in interdisciplinary and applied research that bridges the theoretical and methodological knowledge of both fields. Potential directions for future research include:

- The development of morphological analysis methods and tools that are more accessible and applicable for urban planning professionals, such as modeling and simulation software for urban form;
- The investigation of the impacts of new technologies and modes of urban space production (such as digital fabrication and the sharing economy) on the morphology of contemporary cities;
- The comparative analysis of different morphological approaches and their contributions to urban planning in various geographic and cultural contexts;
- The proposal of more participatory and collaborative urban planning methodologies, involving diverse agents and social groups in the creation of shared visions for the future of cities;
- The evaluation of the impacts of urban policies and projects on urban form through longitudinal and multidimensional studies that consider the physical, functional, environmental, social, and symbolic aspects of the city.

In summary, the integration of urban morphology and urban planning presents challenges and potentialities that must be addressed critically and creatively. By acknowledging the complexity and diversity of urban form and striving to bridge the analytical and prescriptive knowledge of both fields, it is possible to develop urban planning that is more contextualized, participatory, and sustainable, contributing to the improvement of quality of life in contemporary cities.

5 CONCLUSION

From the discussions presented in this study, we can conclude that urban morphology plays a fundamental role in urban planning, providing theoretical and methodological support for analyzing and intervening in urban form. By investigating the processes of city formation and transformation, urban morphology enables a deeper understanding of the relationships between the built environment and society, underpinning more contextualized and sustainable planning strategies.

The analyzed case studies demonstrate the relevance of urban morphology for urban planning in different geographic and cultural contexts. In the case of Porto, morphological analysis identified areas with greater potential for transformation and traditional building typologies, supporting urban revitalization strategies that value the city's identity and memory. In Brasília, the application of Space Syntax revealed issues of socio-spatial segregation and lack of urbanity, forming the basis for interventions aimed at improving the integration and vitality of the urban fabric. In São Paulo, typological analysis informed the proposal of urban planning tools better suited to the local context, such as the *onerous concession of building rights* and the *transfer of development rights*.

However, integrating urban morphology and urban planning also presents significant challenges, such as translating analytical knowledge into practical design and regulatory proposals, incorporating social and political dimensions into the study of urban form, and collaborating with other disciplines to develop a more comprehensive and critical understanding of cities. To address these challenges, it is essential to invest in interdisciplinary and applied research, aimed at developing more accessible and participatory methods and tools, investigating the impacts of new technologies and modes of urban space production, and evaluating the effects of urban policies and projects on urban form.

Despite these challenges, the integration of urban morphology and urban planning also offers numerous potentialities, including the ability to create more contextualized and locally sensitive planning, more participatory and inclusive processes, and more sustainable and resilient urban environments. By recognizing the diversity of agents and processes that shape urban form, and by seeking to bridge the analytical and prescriptive knowledge of both fields, it is possible to develop more effective and transformative urban planning that contributes to improving the quality of life in contemporary cities.

In this sense, this study aimed to explore the possibilities of integrating urban morphology and urban planning by critically discussing the challenges and potentialities of this approach and pointing to possible directions for future research. We hope the reflections presented here will inspire new studies and practical experiences that explore the applications of urban morphology in urban planning, contributing to the development of fairer, more democratic, and more sustainable cities.



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STATEMENTS

AUTHOR CONTRIBUTIONS

When describing each author's contribution to the manuscript, use the following criteria:

- **Study Conception and Design:** Jeane Aparecida Rombi de Godoy
 - **Data Curation:** Jeane Aparecida Rombi de Godoy
 - **Formal Analysis:** Jeane Aparecida Rombi de Godoy
 - **Funding Acquisition:** No financial ties
 - **Investigation:** Jeane Aparecida Rombi de Godoy and Sandra Medina Benini
 - **Methodology:** Jeane Aparecida Rombi de Godoy and Sandra Medina Benini
 - **Writing – Original Draft:** Jeane Aparecida Rombi de Godoy and Sandra Medina Benini
 - **Writing – Critical Review:** Jeane Aparecida Rombi de Godoy and Sandra Medina Benini
 - **Final Review and Editing:** Jeane Aparecida Rombi de Godoy and Sandra Medina Benini
 - **Supervision:** Jeane Aparecida Rombi de Godoy
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CONFLICT OF INTEREST STATEMENT

We, Jeane Aparecida Rombi de Godoy and Sandra Medina Benini, declare that the manuscript entitled “Integration of Urban Morphology in Contemporary Planning: Approaches, Challenges, and Potentialities”

1. **Financial Ties:** There are no financial ties that could influence the results or interpretation of this work.
 2. **Professional Relationships:** There are no professional relationships that could impact the analysis, interpretation, or presentation of the results. No relevant professional relationships connected to the content of this manuscript have been established.
 3. **Personal Conflicts:** There are no personal conflicts of interest related to the content of the manuscript.
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