AMIR SIRJANI

ASSESSING URBAN WALKABILITY

A SPACE SYNTAX EVALUATION OF PUBLIC SPACE DESIGN

DLA Dissertation - THESIS BOOKLET

Supervisor: Szabó Árpád DLA

Budapest University of Technology and Economics
Doctoral School of Architecture, 2024

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SUMMARY

Urban public spaces are crucial components of the built environment, influencing social interactions, community well-being, and the overall functionality of cities. This research focuses on the role of space syntax analysis in enhancing public space design by introducing an evaluation stage between the design and implementation phases. By systematically examining spatial configurations and their impact on visibility, pedestrian movement, and user behavior, the study aims to optimize the functionality and inclusivity of urban public spaces.

The study begins with an in-depth review of public space design theories, highlighting the importance of spatial organization and visibility in creating environments that are accessible, engaging, and conducive to social interaction. The research draws on key theories to demonstrate how well-designed public spaces can be both physically navigable and psychologically inviting, fostering a strong sense of community and place.

A case study of Városháza Park is used to apply space syntax methodologies, including visibility graph analysis (VGA), isovist analysis, and axial line analysis. These tools are employed to evaluate the park's current layout, identifying how visual connectivity and spatial integration influence pedestrian flow and social interactions. The analysis shows that areas with high visibility and strong spatial integration tend to attract foot traffic and become active hubs, while zones with lower visibility and segregation often remain underutilized, leading to pockets of spatial isolation.

During the implementation phase, the research assesses proposed design interventions for Városháza Park. By overlapping space syntax analyses of the current and proposed designs, the study evaluates how modifications can enhance spatial integration, improve connectivity, and address issues of visual segregation. The findings underscore the importance of maintaining and enhancing central corridors with high integration values, as these areas are crucial for supporting pedestrian movement and social interaction. Additionally, the analysis identifies opportunities to reconfigure visually segregated spaces to improve their accessibility and usability, thereby enhancing the overall cohesion and functionality of the park.

Incorporating space syntax analysis as an intermediate evaluation stage between design and implementation provides a robust framework for refining public space designs. This approach ensures that public spaces are well-integrated within the urban fabric and responsive to the needs and behaviors of their users. The study concludes by advocating for the continuous application of space syntax tools throughout the design process, enabling urban planners to create public spaces that are both functional and reflective of community dynamics.

THESIS 1

ENHANCING WALKABILITY THROUGH STRATEGIC URBAN DESIGN

Introducing a systematic focus on walkability in the design of public spaces is essential for creating urban environments that are functional, promote social interaction, and support sustainability. Prioritizing walkability from the early stages of design ensures that urban spaces like parks, plazas, and streets are accessible and inviting for pedestrians, thereby reducing car dependency and encouraging healthier, more connected communities.

Emphasizing walkability in public space design addresses a critical need in urban planning, as it directly influences how people use and interact with these environments. By integrating walkability considerations into the design process, urban planners can create spaces that enhance the quality of life in cities. This strategy leads to the development of more sustainable and livable urban areas, where public spaces contribute positively to social, cultural, and environmental outcomes.

THESIS 2

INTEGRATING ENVIRONMENTAL AND SOCIAL CONSIDERATIONS IN PUBLIC SPACE DESIGN

Incorporating environmental and social factors into public space design is essential for developing urban environments that are sustainable and enhance community well-being. Public spaces must address the diverse needs of urban populations by considering how spatial arrangements influence behavior, movement, and interaction. By analyzing key elements like paths, edges, and landmarks, designers can create environments that are easy to navigate and inviting for pedestrians. Understanding how people experience spaces as they move through them allows for the creation of designs that evoke emotional and psychological responses, ensuring spaces are engaging and comfortable.

Additionally, observing how people actually use public spaces provides practical insights that inform more effective design strategies. This approach ensures that public spaces are designed to meet the practical needs and behaviors of the community, making them both functional and relevant in daily life. The goal is to create spaces that support social interaction, improve accessibility, and contribute to a higher quality of urban life.

THESIS 3

ENHANCING PUBLIC SPACE DESIGN THROUGH A POST-DESIGN EVALUATION STAGE

Introducing an evaluation stage between design and implementation, utilizing space syntax analysis, enhances the alignment of public space designs with human-scale needs. This evaluation phase focuses on the spatial configuration of proposed designs, ensuring that public spaces are functional, safe, and visually accessible before they are finalized. Space syntax analysis quantitatively examines the relationships between spatial elements, providing insights that help refine sightlines, optimize pedestrian flow, and improve overall safety.

However, while space syntax offers valuable quantitative data, it is crucial to pair this with observational methods to fully understand how these spaces will function in practice. Observational methods deliver qualitative insights into how people interact with and experience the environment. Integrating these approaches during the evaluation phase ensures that the final design is better aligned with human-scale needs and the broader urban context. This comprehensive strategy helps avoid design flaws and supports the long-term success and sustainability of public space projects.

THESIS 4

ENHANCING PUBLIC SPACE FUNCTIONALITY THROUGH INTEGRATED SPATIAL ANALYSIS

Integrating visibility analysis with spatial configuration techniques, such as isovist and axial line analysis, is essential for optimizing the functionality and user experience of public spaces. This approach systematically examines how visual connections and spatial layouts influence movement patterns and user behavior, offering critical insights into the design and management of public areas. Visibility analysis reveals how visual barriers like trees impact accessibility and movement within a park, while isovist analysis highlights areas of visual integration or isolation, directly affecting user engagement.

These methods demonstrate that spaces with high visual connectivity are perceived as more accessible and inviting, thereby encouraging greater interaction and use. In contrast, areas with reduced visibility or visual segregation tend to be underutilized, as they may feel enclosed or disconnected from the rest of the space. Addressing these disparities through informed design interventions can enhance the cohesion, accessibility, and attractiveness of public spaces, ultimately contributing to more effective and user-friendly urban environments.

THESIS 5

VERIFYING SPATIAL INTEGRATION THROUGH OVERLAPPING ANALYSIS

Verifying spatial integration through the overlapping of visibility analysis provides crucial insights into how proposed design interventions impact the connectivity and functionality of public spaces. This method allows for a comprehensive assessment of how visual and spatial modifications influence user experience and movement patterns within the environment. In the case of Városháza Park, the overlapping of visibility analysis between the current layout and proposed designs reveals how central corridors and key pathways are maintained or enhanced, ensuring that these spaces remain accessible and inviting to the public.

The overlapping analysis highlights areas where design interventions have successfully expanded visually integrated zones, making the park more cohesive and interconnected. However, it also identifies persistent areas of visual segregation, where low visibility may continue to impact user engagement. By layering visibility data, the analysis confirms which design elements enhance or detract from the park's overall spatial integration, providing a validated approach for optimizing public space layouts to better support user needs and urban functionality. This method underscores the importance of continuous verification in the design process to ensure that public spaces remain functional, accessible, and aligned with both theoretical goals and practical use.

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