UNVEILING THE IN-BETWEEN: A TYPOLOGICAL FRAMEWORK FOR REGENERATING URBAN VOIDS

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Abstract
Urban voids, frequently perceived as residual or dysfunctional fragments of compact cities, remain insufficiently addressed within systematic urban regeneration frameworks. Despite growing interest in adaptive reuse and green infrastructure, a clear typological and scenario-based model for their reintegration is still lacking. This paper addresses this gap by proposing a spatial classification of urban voids according to their position within the urban structure and by developing scenario-based transformation models applicable to different morphological contexts. The research combines typological analysis with a qualitative comparative case-study method, examining selected international examples of successful regeneration through eco-stabilizing and socially responsive design strategies. The study evaluates spatial configuration, functional adaptability, ecological integration, and social activation as key performance parameters. The findings demonstrate that small-scale, strategically designed interventions can significantly enhance urban resilience, biodiversity, and community interaction when embedded within coherent planning frameworks. The proposed model contributes a transferable analytical tool for identifying and transforming in-between spaces from neglected gaps into structurally integrated and environmentally productive components of the urban fabric. The research expands contemporary discourse on sustainable urban regeneration by linking morphological typology with adaptive design strategies and policy-oriented planning approaches.

Key words: urban gaps, adaptive reuse, regeneration strategies, sustainability, resilience

Introduction

The ongoing transformation of contemporary cities is often accompanied by the emergence of underutilized or abandoned spaces, commonly referred to as urban voids. These spaces, which include vacant lots, residual gaps between buildings, and inner-block areas, are typically perceived as disruptions within the urban fabric. However, in the context of sustainable urban development, they represent significant opportunities for ecological enhancement, social interaction, and the expansion of public space. In recent years, increasing attention has been given to adaptive reuse, green infrastructure (Tóth, 2016), and small-scale urban interventions as tools for improving environmental quality and urban livability (Tóth, 2022). Urban voids offer a unique potential to support biodiversity, improve microclimatic conditions, and provide accessible spaces for everyday recreation (Bellérová and Hus, 2025; Bihuňová et al., 2017). The transformation of such spaces is often linked to participatory approaches and bottom-up initiatives, which can significantly contribute to the creation of meaningful public environments (Miklášová et al., 2021). Despite this growing interest, a clear typological framework that would enable their systematic identification and transformation is still lacking. This paper addresses this gap by proposing a spatial classification of urban voids based on their position within the urban structure and by developing scenario-based models for their regeneration. The research focuses on compact urban environments, where spatial constraints intensify the need for efficient and multifunctional use of available space.

Materials and methods

Urban voids exhibit diverse characteristics in terms of size, shape, form, and function. Their nature varies depending on location, ownership, and intended use (permanent or temporary). This research develops a categorization of urban voids based on spatial typology and their position within the urban structure. To support this framework, a set of representative scenarios was conceptualized and graphically interpreted (Fig. 1).

Three primary urban contexts were identified:

1. **City Centre** – characterized by a compact urban structure, including historic city centers and dense built-up areas.

2. **Inner City** – comprising inner-block spaces, campuses, larger residential complexes, and transitional zones between the city center and suburbia.
3. **Outer City and Peripheral Areas** – including industrial zones, brownfields, and undeveloped land.

Based on these contexts, five typical scenarios of urban voids were defined:

- **Scenario 1 – Linear gap:** A passable space between two buildings, open on both sides. In some cases, one side may be visually enclosed by a retained façade, while the space behind remains accessible.
- **Scenario 2 – Setback micro-space:** A small space created by a building setback from the street line. Its depth varies and it is typically unsuitable for further construction.
- **Scenario 3 – Inner-block void:** A hidden space located within a block, accessible through a narrow passage between buildings. These spaces are often secluded and weakly connected to surrounding urban activity.
- **Scenario 4 – Narrow residual gap:** A constrained space between structures, often too narrow for development but potentially usable as a transitional or ecological corridor.
- **Scenario 5 – Edge void:** An open space located at the termination of a built structure, typically at street corners or edges of urban blocks.

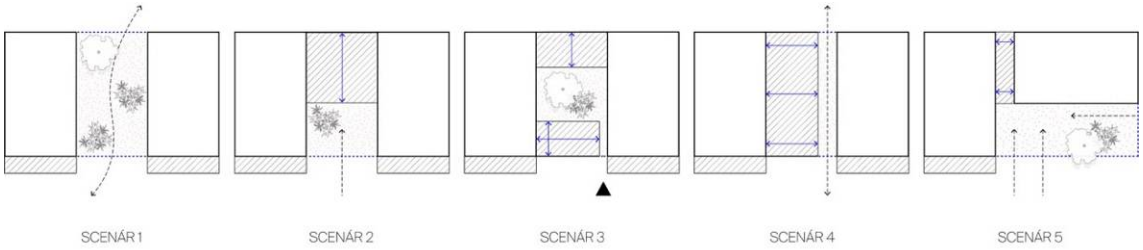

Fig. 1: Typology of urban voids located within compact urban structures. Various scenarios that may vary in real conditions. Source: author.

The proposed scenarios represent common spatial conditions and origins of urban voids in contemporary cities. They are expressed through simplified graphic schemes to enhance clarity and support comparative analysis. The morphology of these spaces remains inherently variable, reflecting the dynamic and evolving nature of urban environments. Their applicability is further illustrated through selected case studies focused on compact urban contexts.

Case-study method: For the purposes of this article, three case studies were selected to illustrate the regeneration and integration of urban voids into compact urban structures through eco-stabilizing and sustainable design strategies. The case study method enables the comparison of analogous spatial situations in different urban contexts.

Results

The selected case studies represent different spatial scenarios of urban voids within compact urban structures and serve to illustrate the applicability of the proposed typological framework. Each example reflects a specific morphological condition and demonstrates how targeted, small-scale interventions can transform underutilized spaces into functional and ecologically responsive environments. The analysis focuses on key parameters, including spatial configuration, functional adaptability, ecological integration, and social activation. Particular attention is given to the role of vegetation, microclimatic improvements, and the capacity of these spaces to support everyday urban life within dense city contexts.

Fahle Gallery Street

Scenario: 1
Location: Tallinn, Estonia
Authors: LUMIA, studio ARGUS
Year of completion: 2020
Area: 740 m^2

The Fahle Gallery Street in Tallinn, Estonia (Fig. 2), represents the transformation of a linear urban void through adaptive reuse with a strong ecological dimension. The former industrial passage has

been converted into a semi-enclosed space integrating vegetation, which contributes to improved microclimatic conditions and environmental quality. The introduction of greenery within a dense urban structure enhances biodiversity and creates a more comfortable and attractive environment for users. The space now functions as a multifunctional corridor supporting social interaction and everyday use. This case demonstrates the potential of small-scale interventions to transform residual urban spaces into ecologically responsive and socially active environments.

Fig. 2: Fahle Gallery Street in Tallinn, Estonia. Source: archdaily.com

Paley Park
Scenario: 2
Location: New York, USA
Authors: Zion & Breen Associates
Year of completion: 1967
Area: 390 m^2

Paley Park in New York (Fig. 3) represents a transformation of a small residual urban space into a highly functional green environment. The integration of vegetation and a cascading water feature improves microclimatic conditions, reduces noise, and enhances environmental quality within a dense urban setting. Despite its limited size, the space supports strong social use and provides a restorative environment for users. This case highlights the role of small-scale green interventions in improving urban livability, biodiversity, and everyday public space experience.

Fig. 3: Paley Park. Source: paleypark.org

Pocket Park on Xinhua Road
Scenario: 4
Location: Shanghai, China
Authors: SHUISHI
Year of completion: 2020
Area: 106 m^2

The Pocket Park on Xinhua Road in Shanghai (Fig. 4) represents the transformation of a small urban void into a multifunctional green space. The intervention integrates vegetation and flexible design elements, enhancing biodiversity and improving environmental conditions within a dense urban context. Despite its limited size, the space supports both recreational and cultural functions, strengthening social interaction and user engagement. This case demonstrates how small-scale interventions can effectively activate residual urban spaces and contribute to ecological and social sustainability.

Fig. 4: Pocket Park on Xinhua Road in Shanghai, China. Source: archdaily.com

Conclusion
The analysis confirms that the proposed typological framework reflects common spatial conditions of urban voids in compact urban environments and can serve as a useful tool for their interpretation and regeneration. Although the selected case studies differ in scale, context, and design approach, they share several common features. In all cases, small-scale interventions improved the environmental quality of the space, introduced ecological elements, and strengthened its social function within the urban structure. The comparison shows that the success of urban void transformation depends primarily on spatial configuration, accessibility, and the ability to combine ecological and social functions. Vegetation and water elements contribute to biodiversity and microclimatic regulation, while flexible and human-scaled design supports everyday use and community interaction. These findings suggest that urban voids should not be understood as residual fragments of the city, but as spaces with regenerative potential. When integrated into coherent planning frameworks, they can become environmentally productive and socially active components of the urban fabric. The proposed typological model therefore offers a transferable basis for future scenario-based design strategies in compact urban contexts.

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Souhrn
Městské prázdnoty představují potenciál pro ekologickou stabilizaci a sociální aktivaci v kompaktních městských strukturách. Studie navrhuje typologii těchto prostorů a scénáře jejich transformace na základě případových studií. Výsledky ukazují, že malé, cílené zásahy mohou významně zlepšit kvalitu prostředí, biodiverzitu a každodenní využití těchto míst.

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