Unveiling the Ground(line) Hidden Potential. A Morphological Analysis of Torino’s Threshold and its Role in Shaping the City’s Identity

DASP YEARBOOK 2025

ENVIRONMENTS

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How does the groundline function as a dynamic threshold in the morphological evolution of the city, and what impact does it have on urban design, with particular reference to the case of Turin?

This research explores the groundline as a dynamic threshold in the morphological evolution of the city, investigating its role in shaping urban space and mobility. In traditional city models, the groundline is often conceived as a static boundary between the built environment and the sub-surface. However, this study challenges this notion by examining how the ground line shifts over time due to excavation, adaptation and construction altering the spatial and social dynamics of the city. The research investigates the interplay between solids and voids, the creation of lost spaces, and the impact of underground mobility on urban form. Particular attention is paid to the relationship between surface and underground spaces, exploring their historical, social and political implications. By applying this framework to the city of Turin, the study assesses the impact of underground infrastructure on land use, property values and accessibility. Ultimately, this research offers new perspectives on urban planning, arguing for an integrated design approach that considers the evolving nature of the ground in contemporary cities.

The concept of the subsoil focuses on the human experience of what lies beneath our feet. This contrasts with the notion of landscape, which evokes a sense of frontality, representing everything within our line of sight. The subterranean, however, remains hidden. Thus, there is an apparent opposition between landscape and subterranean: the landscape is the space we can immediately perceive and articulate, whereas the subterranean requires time and exploration. Therefore, the superficial urban landscape changed its form with underground transport, defining a space based on its temporal achievement. It created a city that could no longer be assimilated as a unicum but as separate areas that could only be ideally connected.

Since the beginning, humans have had a complex relationship with the underground, initially perceived as a place of darkness and danger. In ancient Greece, for instance, Hades (ἀ- ἰδ, "invisible") ruled the realm of the dead, a world hidden from sight that reinforced the cultural fear of what lay beneath the earth. Through a historical analysis of underground urbanism and a focus on the vertical layering of the subterranean city, the research introduces a new perspective to analyse the city as a three-dimensional object. By the concepts described in the Figure-Ground Theory introduced by Trancik et al. (1990), the study seeks to understand the relationship between different areas and levels in the city. The usual relationship between solids and voids in the two-dimensional city is extended to the vertical, creating a paradox: what is usually perceived as solid above ground is represented as void underground, and vice versa. Furthermore, the ground line, which serves as a boundary in traditional figure-ground analysis, becomes a problematic threshold. Rather than acting as a simple divider, it highlights the ambiguity of interpreting solids and voids across vertical levels: it appears as a support for built forms but also defines a solid container for underground excavations. Moreover, the movement of the ground line has changed over the centuries, adapting to social and economic needs. If, from a geographical point of view, it is mainly influenced by the topography, historically and socially, the threshold has moved according to technological inventions such as the sewerage system, the lift or the need for anti-aircraft protection. These oscillations have brought about some changes in the perception of the ground: it has gone from being a spiritual object to be venerated in the traditional city to being the remnants of the Flood in the modern city and a structural reference in the contemporary world.

The city of Turin has been chosen as a case study, and through the study of its historical maps after the arrival of the underground line, the number of people using underground public transport, the changes in land use and the value of the land, it is provided with a mirror of how the city has changed according to the land transformations. Then, according to the results obtained, the previous ones are added to the new metropolitan line.

#groundline dynamics, #threshold shift in urban space, #subterranean spatial morphology

Captions

Figure 1 - Mundus subterraneous by Athanasius Kircher, 1865.

Figure 2 - The Map of Hell by Sandro Botticelli, 1480–1495.

Figure 3 - The Otis Bulletin: Special 125th Anniversary Edition by Otis Elevator Comapny, 1978.

Figure 4 - Nuova Topografia di Roma by Giambattista Nolli, 1748.

Sources

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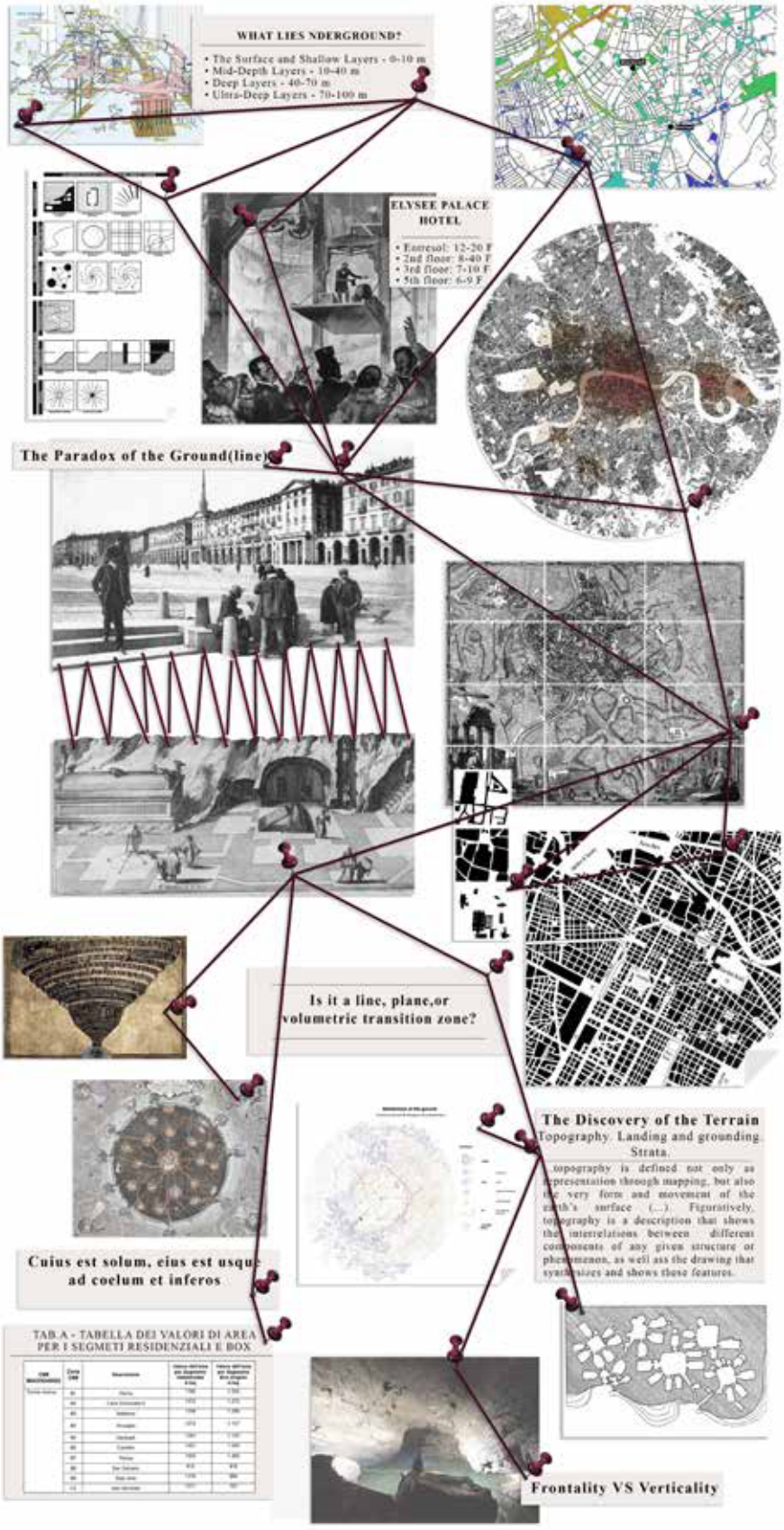
WHAT LIES NDERGROUND?
• The Surface and Shallow Layers - 0-10 m
• Mid-Depth Layers - 10-40 m
• Deep Layers - 40-70 m
• Ultra-Deep Layers - 70-100 m
ELYSEE PALACE HOTEL
• Entresol: 12-20 F
• 2nd floor: 8-40 F
• 3rd floor: 7-10 F
• 5th floor: 6-9 F
The Paradox of the Ground(line)
Is it a line, plane,or volumetric transition zone?
The Discovery of the Terrain
Topography. Landing and grounding Strata.
Topography is defined not only as representation through mapping, but also the very form and movement of the earth's surface (...). Figuratively, topography is a description that shows the interrelations between different components of any given structure or phenomenon, as well ass the drawing that synthesizes and shows these features.
Cuius est solum, eius est usque ad coelum et inferos
TAB.A - TABELLA DEI VALORI DI AREA PER I SEGMETI RESIDENZIALI E BOX
Frontality VS Verticality