

Abstract of PhD thesis

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"Underground Metro Stations as an Element of Urban Public Space"

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Underground metro stations, which have the potential to relieve the city by reducing noise, improving air quality, and providing higher efficiency of the land use, significantly contribute to the urban development of several contemporary metropolises. As in the case of other non-infrastructure facilities, their subsurface locations, however, cause many concerns predominantly related to the personal experience of their users. The underground environment may evoke fears and anxieties, disturb cognitive and physiological reactions, and affect personal safety.

The main purpose of this dissertation was to examine the extent to which specific spatial characteristics in underground metro stations determine their success as attractive elements of urban public space. The initial phase involved an epistemological examination aimed at identifying psychological and physiological issues that arise in underground spaces, as well as identifying potential spatial factors that affect users' personal experiences. The subsequent phase encompassed original research, utilizing a multi-layered research approach. By analyzing data obtained from *space syntax* analyses, on-site investigations of 28 metro stations located in Warsaw, Poland, and questionnaires completed by a research sample of 1,400 users, the study assessed the influence of spatial characteristics on subjective indicators of comfort and safety. The research encompassed both architectural aspects, such as the entrance zone, functional and spatial layout, aesthetics, and interior design, as well as urban-scale considerations, including pedestrian accessibility, neighborhood characteristics, and position within the city. The analyses presented in this dissertation employed quantitative methods for statistical data analysis.

The findings revealed that users' comfort and safety are influenced not only by the architectural design of the station but also by its location within the urban fabric. The user experience is primarily shaped by factors such as the spatial configuration of the station's concourse level, access to natural light, the incorporation of elements of art, and the geometry of the platform hall. The research demonstrated that spatial characteristics of the station surroundings and the social activity associated with it play a crucial role as urban factors. The

research highlighted that through strategic architectural and urban design interventions, both newly designed and existing stations can be transformed into spaces that are comfortable and secure for users. By carefully selecting appropriate design solutions and seamlessly integrating them within the existing city structure, it becomes possible to contribute to the development of a new quality of urban space.

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