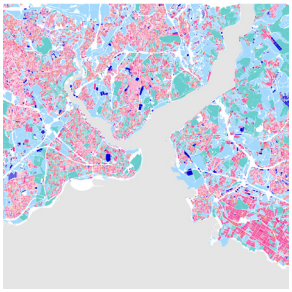

Porosity in transition: Identifying Ambiguous edges through AI-driven plot clustering

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Porosity, an urban phenomenon, is often associated with the adaptability of urban fabric, the reuse of voids, and the urban forms' capacity to accommodate diversity. It marks a shift from perceiving the city as a static entity to understanding urbanization as a dynamic process. However, existing discussions often overlook how porosity can be systematically measured or detected. This study argues that AI-driven analysis can provide an objective method for assessing porosity using contextually defined parameters.

Describing porosity as an urban agenda, Paola Viganò coins "porosity of fracture" as disruptions/discontinuities within the urban fabric. This research argues that fracture porosity manifests differently depending on the context. Particularly in neoliberal cities where land speculation reshapes urban porosity through creating enclaves, plot configuration is of vital importance. While porosity is often examined through spatial voids and infrastructure, the role of plot configurations remains underexplored. Analysing fracture porosity thus requires a systematic evaluation of plot patterns.

Since the 1980s, neoliberal policies in Istanbul have intensified enclave formation, producing ambiguous edges—areas that deviate from a coherent urban fabric. Despite this, the city continues to expand by consuming and reshaping its porosity, generating internal barriers that fragment its urban structure.

To address how enclaves exploit porosity, this study employs AI-based clustering techniques to categorize plot group patterns, detect enclave formations, and classify fracture porosity. It assumes that plot diversity and configuration reveal ambiguous edges, as plot structures regulate urban development. Furthermore, it examines the scale of plot groupings, arguing that larger, less subdivided clusters contribute to greater urban ambiguity by reducing constraints on building size and distribution. To assess the intensity of diverse and large plot groups, the study employs deep learning techniques for similarity recognition. Rather than analysing individual plots, it identifies and classifies plot groups forming urban blocks, aiming to detect ambiguous edges.