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An Overview of Fractal Geometry Applied to Urban Planning

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Abstract

Since computing advances in the last 30 years have allowed automated calculation of fractal dimensions, fractals have been established as ubiquitous signatures of urban form and socioeconomic function. Yet, applications of fractal concepts in urban planning have lagged the evolution of technical analysis methods. Through a narrative literature review around a series of big questions and automated bibliometric analysis, we offer a primer on fractal applications in urban planning, targeted to urban scholars and participatory planners. We find that developing evidence demonstrates linkages between urban history, planning context, and urban form and between ideal fractal dimension values and urban aesthetics. However, we identify gaps in the literature around findings that directly link planning regulations to fractal patterns, from both positive and normative lenses. We also find an increasing trend of most literature on fractals in planning being published outside of planning. We hypothesize that this trend results from communication gaps between technical analysts and applied planners, and hope that our overview will help to bridge that gap.

Keywords: fractal geometry, fractal dimension, urban form, urban planning, urban aesthetics, planning regulati

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