

The Morphogenesis of an Informal Settlement: An Examination of Street Networks through the Informal Development Stages Framework

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Abstract : As cities struggle to incorporate informal settlements into the fabric of urban areas, the focus has often been on the provision of housing. This study explores the underlying structure of street networks, with the goal of understanding the morphogenesis of informal settlements through the lens of the access network. As the stages of development progress from infill to consolidation and eventually, to a planned in-situ settlement, the access networks retain the form of the core segments; however, a majority of street patterns are adapted to a grid design to support infrastructure in the final upgraded phase. A case study is presented to examine the street network in the informal settlement of Gobabis Namibia as it progresses from its initial stages to a planned, in-situ, and permanently upgraded development. The Informal Development Stages framework of foundation, infill, and consolidation, as developed by Dr. Jota Samper, is utilized to examine the evolution of street networks. Data is gathered from historical Google Earth satellite images for the time period between 2003 and 2022. The results demonstrate that during the foundation through infill stages, incremental changes follow similar patterns, with pathways extended, lengthened, and densified as housing is created and the settlement grows. In the final stage of consolidation, the resulting street layout is transformed to support the installation of infrastructure; however, some elements of the original street patterns remain. The core pathways remain intact to accommodate the installation of infrastructure and the creation of housing plots, defining the shape of the settlement and providing the basis of the urban form. The adaptations, growth, and consolidation of the street network are critical to the eventual formation of the spatial layout of the settlement. This study will include a comparative analysis of findings with those of recent research performed by Kamalipour, Dovey, and others regarding incremental urbanism within informal settlements. Further comparisons will also include studies of street networks of well-established urban centers that have shown links between the morphogenesis of access networks and the eventual spatial layout of the city. The findings of the study can be used to guide and inform strategies for in-situ upgrading and can contribute to the sustainable development of informal settlements.

Keywords : Gobabis Namibia, incremental urbanism, informal development stages, informal settlements, street networks

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