

## Spatial Growth and Function in a Javanese Coastal City

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### Abstract

Surabaya, the capital of eastern Java, was formed historically through the expansion of the early Indonesian (Indische) town and the absorption of local centres and European trading posts. The northern part of the city, which spread outwards from the historic core, preserved the distinctive morphological character of the old centre but under Dutch colonial control, there was increasing density and functional differentiation, as well as strengthening of the transport infrastructure. Since Independence in 1945, Surabaya has become, inter alia, the main business centre of eastern Java. These developments are traced here in six stages.

The study draws on Hillier's concept of the 'movement economy', which argues that the primary elements of urban form, such as land-use distribution and development densities, are the product of patterns of pedestrian and vehicular movement, which in turn are determined by the character of the urban grid. To explore this relation between land-use specialisation and the structure of urban space, we used the theory and methodology of space syntax. Axial representation and analysis of the street system were supported by the Geographical Information System (GIS) GRASS (Geographical Resources Analysis Support System).

Questions of function, distribution, densification and differentiation have been addressed through the available map series, with axial mapping as the basic representational tool. Social, economic and other data can be indexed to specific spatial units (plots, sites) within the study area, producing a rich and detailed picture of the natural and artificial environment and the patterns of daily life, work and movement of the local community. A spatial database is constructed, therefore, that goes beyond the configurational mapping of space syntax. Initial findings indicate the persistence of major integrating lines over time. While new attractors have emerged, these typically reinforce the inherited pattern of access and functional distribution. Some offices have been transformed into shopping malls, wholesale businesses, banks, even hotels to accommodate business visitors. The study provides a tool for use by local government in managing conflicts of land-use and preparing design solutions which take account of the role of the street within the configuration of the city as a whole. The decision can be obtained easily by selecting the expected street to be developed or improved.