

Spatial Transitions: Cape Town Case Study (PhD)

with computational support from the UCT ICTS High Performance Computing Cluster

The research is guided by the following question: ***What are the spatial dimensions of social justice when thinking about Cape Town as a post-apartheid city?***

In principle the research intends, by advancing a diachronic approach to the examination of spatial form, **to critically analyse the spatial (physical) structure of the city at a range of scales and relate these to both the higher level normative /cultural imperatives as well as the associated functional organisational aspects that have been institutionalised at different moments in the history of Cape Town.**

The study will be supported by the socio-spatial theories and mapping techniques of space syntax analysis (Hillier and Hanson, 1984, Hillier, 1996). The latter is particularly aimed at developing an understanding of the relationship between spatial configuration and social practice. The underlying premise is that there is a strong relationship between the layout of a place or building and its social use. In this regard, the primary measure used in space syntax analysis is accessibility (spatial integration) which is determined using axial maps. Over the past 30 years, there has been substantial academic research as well as case studies of more than 50 cities across the world. At this stage, preliminary studies of the Cape Town metropolitan region as well as parts of the city have revealed very promising results, including:

- i. New insights regarding spatial connectivity and segregation (access and control) across a range of spatial scales that make-up the metropolitan area (Figure 2 below). This can be represented by the space syntax integration measure, which can be likened to mapping the *spatial flood plains* of the city. In other words, the spatially dense areas of the city, or those regions of the spatial network that is topologically very well connected.
- ii. Insights gained into the socio-spatial dialectic within an informal settlement (unplanned in the conventional sense). In this case, syntactical mappings of the TR Section informal settlement in Khayelitsha (Figure 3 below), which may appear to be randomly ordered and chaotic, offered strong correlations between the space syntax measures and existing land use patterns and areas of high social activity.

All the metropolitan scale syntactical analyses have to date been undertaken using the Depthmap software and the University of Cape Town ICTS-HPC cluster.

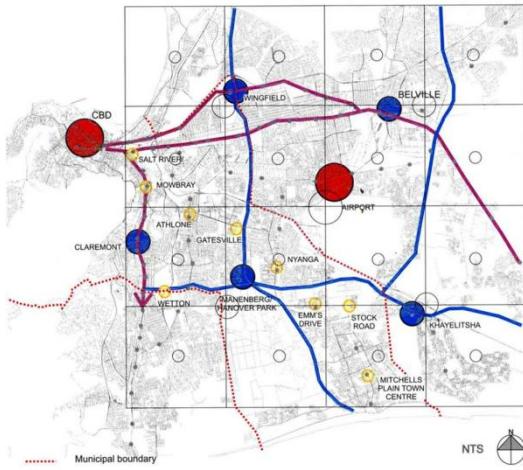


Figure 1
MSDF 1999

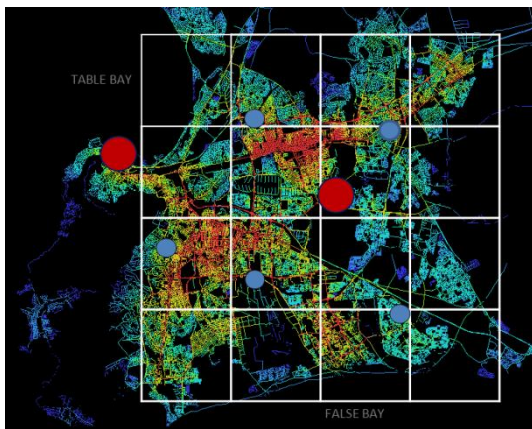


Figure 2
Cape Town Metro | Space Syntax INTEGRATION
5km SPATIAL FLOOD PLAINS with MSDF
reference grid and proposed nodes overlaid for
comparative reference.

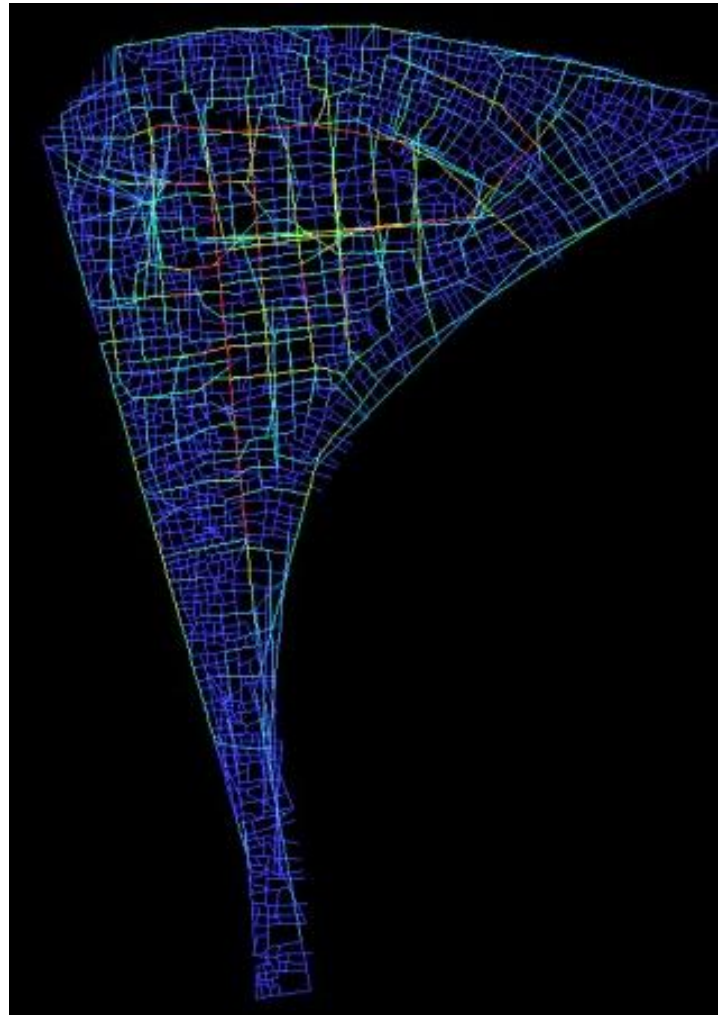


Figure 3
TR Section Informal Settlement, Khayelitsha | Choice 200m
Red axis correlates strongly with existing high integration social
activity routes.

Figures 1-2

Above left: A preliminary space syntax map of the Cape Town metropolitan area (2009 data) compared to the MSDF equitable city planning proposal (Municipal Spatial Development Framework, 1999). The symmetry and differences between the two maps, especially the areas identified as potential new centres, open up new areas for further analysis.

Selected References

HILLIER, B. (1996) Cities as Movement Economies. *Intelligent Environments: Spatial Aspects of the Information Revolution*, 295-342.
 HILLIER, B. & HANSON, J. (1984) *The Social Logic of Space*, Cambridge, Cambridge University Press.
 City of Cape Town (1999) Municipal Spatial Development Framework.

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