

# An application of universal distance using Space Syntax analysis

# 36

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## Abstract

Space Syntax is a spatial analysis technique that is mainly handled using the Ax-man software which analyses the axial model of a given spatial system. The Conventional Axial Model (CAM) is constituted of the fewest and longest set of axial lines of visibility and accessibility, and which cover all convex spaces in a spatial system. Despite the huge number of variables that can be produced by the analysis from a single spatial model analysis, the CAM's basic spatial property input is the number of intersections between each line and each other line in the system.

The concept of Universal Distance, defined as the average distance of each segment in a spatial system to every other segment, was first proposed by Hillier (1996) as a future development of the CAM of Space Syntax. A model to measure this Universal Distance has been developed by the Authors (Salheen and Forsyth, 2001). The model that accounts for this concept is constituted of equal segments replacing the axial lines and which are also analysed according to their connectivity to each other.

This paper explains on the way to build the Metric Axial Model (MAM) that counts for distance and which, if applied, represents a measure of universal distance. It includes an application of the proposed model and a comparison between the findings of both the CAM and the MAM analysis on five different districts within Cairo, Egypt. The aspects of comparison are the visual and the numerical analysis of the output of each of the five districts. The paper also links the MAM model to the concept of sustainability of urban form.

## Keywords

Space syntax, universal distance, spatial analysis, Cairo

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## 36.1