

KING FAHD UNIVERSTIY OF PETROLEUM AND
MINERALS

College of Environmental Design
Department of City and Regional Planning

Understanding Spatial Configuration of
Calcutta City Using Space Syntax

Presented To
Dr. Baqer Al-Ramadan

By
Mohammed Riaz Jaweed
(200875)

INTRODUCTION

Space Syntax

- Space syntax models the spatial configurations of urban spaces by using a connectivity graph representation. Such a configuration of space identifies patterns that can be used to study urban structures and human behaviors.

- Space Syntax is a set of theories and tools used for spatial morphological analysis with particular applications in urban science
- Space Syntax focuses on free space and decompose an entire area of free space into small pieces of space each of which can be perceived from a single vantage point.

Spatial analysis is one of the key features that differentiates GIS from other forms of spatial information processing such as spatial databases, computer cartography and computer aided design (CAD)

Space syntax provides a configurational description of an urban structure and attempts to explain human behaviors and social activities from a spatial configuration point of view.

Space Syntax Applications

- It has been widely used for pedestrian modeling, crime analysis, traffic pollution control, and way-finding processes
- Advise property owners and investors on the functional performance of their building stock
- Construct spatial design strategies and design master plans for buildings and urban areas
- Support planning applications for major building and urban design projects

Space Syntax Parameters

- **Connectivity** is defined as the number of nodes directly linked to each individual node.
- **Control** value, is defined as a parameter, which expresses the degree of choice each node represents for nodes directly linked to it.
- **Integration** of a node is by definition expressed by a value that indicates the degree to which a node is integrated or segregated from a system as a whole

OBJECTIVES

- To generate Axial Line Map for the selected portion of City.
- To find the 10% most Integrated Area of the selected part of City.
- To find 10% most segregated area of the selected part of City.

METHODOLOGY

- A base map of CALCULTA city is obtained.
- The base maps have been digitized in Axman PPC2.5d software (Macintosh environment) to produce the axial maps.
- The 10% most Integrated Area and 10% most segregated area was obtained by transferring axial map in Adobe Illustrator and working on it.

Axman: Axman is effectively a computer aided design program where you draw with space rather than solid blocks. The results of this are that we can make statements about the nature of the space and its relationship to other spaces, which form the system (urban or building) of interest. The space has a number of properties: size, shape, lighting conditions, average temperature, number of people walking through it, the number of shops, or their average rent

- **Axial Map:** - The axial map is prepared by identifying the longest possible lines and then followed by less longer lines till the entire space is covered. The lines that do not cross each other like over-bridges should be un-linked by using the unlink tool provided by the software.

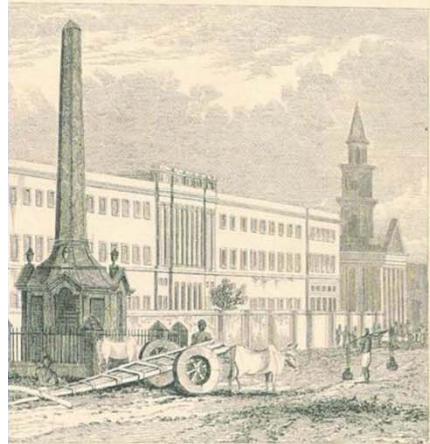


TO THE PUBLIC BUILDINGS.

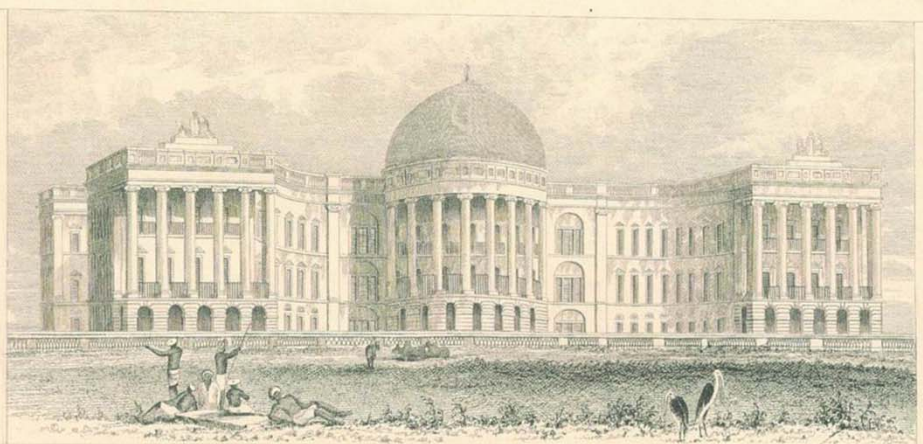
de Row	9	General Treasury	Government Place
Row	10	Old Hindoo College	Chowringhee Road
ur Street		New Hindoo College	College Square
hee Road		Hindoo College	Walkerley Square
ware	11	Import Warehouse	Clive Street
et	12	Native Hospital	Durantonallah Street
om House Street	13	Police Office	Lall Bazar Street
uare	14	Stamp Office	Chowringhee Road
ular Road	15	Supreme Court	Esplanade Row
ar 4 th Lane	16	Town Hall	Esplanade Row
st of Esplanade	17	Theatre Mechanique	Ducres Lane
hee Road		Upper Orphan School	Kyderpore

CHURCHES & CHAPELS

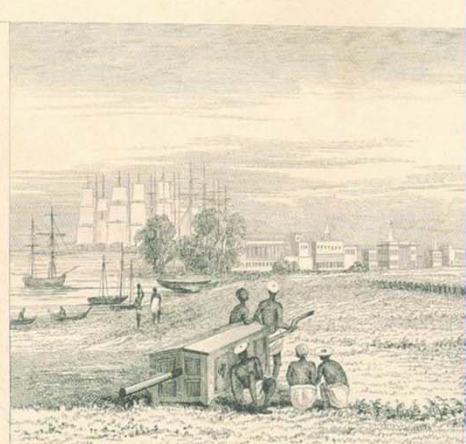
St John's Cathedral	Church Lane
Mission or Old Church	Mission Row
Boissac's Portuguese Ch.	Bow Bazar
Principal Portuguese Ch.	Moorybhattah
St James' Church	St James' Street
Armenian Church	Khongrapatty Street
Greek Church	Omrahallah Street
Bow Bazar Chapel	Bow Bazar Street
Union Chapel	Durantonallah Street
Baptist Chapel	Lower Circular Road
Chapel at Howrah	Howrah
Kirk	Lall Bazar Street



Writers Buildings



Government House



Esplanade Row

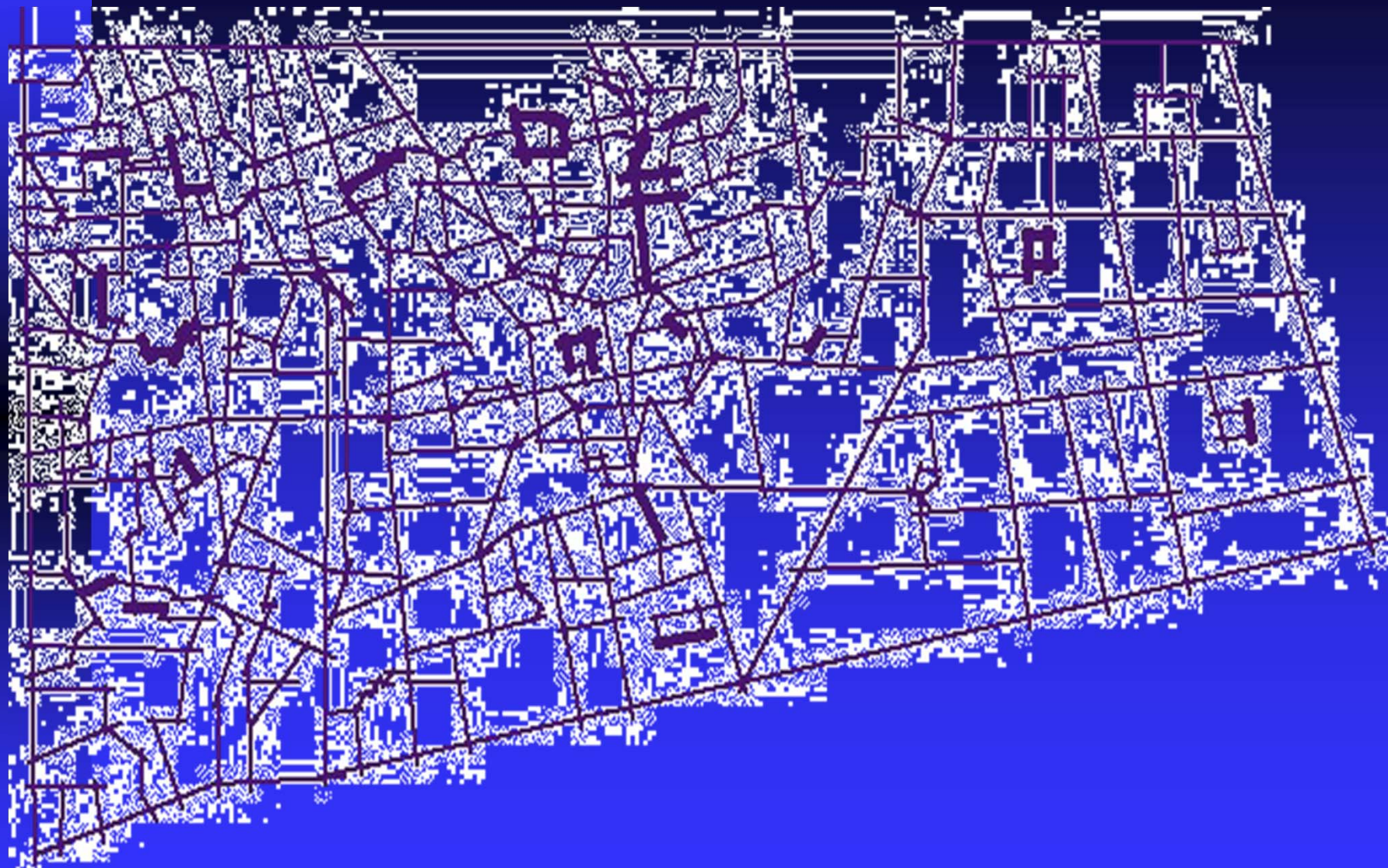
Axial Line Map for Integration of Calcutta



10 % Most Integrated Streets



10% Most Segregated Streets



Conclusions

- The area under study is integrated on its outer periphery where as inner portion is not Integrated.
- The 10% most segregated part lies on the outer boundary of the area.
- The 10% most segregated part lies in the upper middle portion of the area.

Thank U



Acknowledgment

- Dr. Baqer Al-Ramadan

Assistant Professor, CRP Department