

Identification of Spatial and Visual Connectivity using Space Syntax to Support the Strategy for Developing the Characteristic of Urban Spaces (Case Study: Jeron Benteng Area, Kraton, Yogyakarta)

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ABSTRACT

The Jeron Benteng area as a strategic area in the center of Yogyakarta is a vital part of developing the city's identity and performance in increasing interest in social, cultural, economic, tourism, and other strategic activities. The Jeron Benteng area is currently one of the main tourist references in Yogyakarta, but besides that, this area is also a center of dense settlements. So that both internal and external activities, as they should, need to run side by side on an ongoing basis. This study aims to identify spatial connectivity in the distribution of occupant and visitor movements, as well as visual connectivity of spatial physical elements in realizing regional characteristics so that they can play an optimal role in supporting sustainable activities. As it is known that the road network is a vital component in meeting the needs of movement and realizing the spatial characteristics and identity of an area. This study uses an exploratory qualitative method in defining the results of the analysis of space syntax through the help of the DepthMapX software. The results of this paper are a description of the appropriate strategy to be applied in managing the use of space and roads in the Jeron Benteng area, Kraton, Yogyakarta in order to realize the characteristics of a more optimal cultural, historical, and tourism area.

Keywords: Space syntax, Spatial and visual connectivity, Characteristic of urban space.

1. INTRODUCTION

The Kraton District or better known by the local community as 'Njeron Benteng' is an administrative area that has been the center of government from the past to the present. This area is the heart of the 'Cultural City' which is also supported by the efforts of the local government and UNSECO to become a world cultural heritage. In addition, in 2021, a Building and Environmental Planning Plan for the Kraton Sub-district is underway with the main vision being "A Sustainable City of History and Culture". So that through these conditions, to support planning efforts, an analytical approach is needed to support the vision of sustainability in the functional and visual aspects in realizing the identity and characteristics of the City of History and Culture.



Figure 1 The spatial pattern of the jeron Benteng area of the Yogyakarta palace fort.

This study aims to identify spatial and visual connectivity patterns in the accessibility network corridor in the Njeron Benteng area as an effort to find ideal conditions and strategies for improving spatial characteristics [1]. This study aims to find/optimize the use of DepthMapX – Space Syntax as a software or

analytical method in assessing the level of spatial and visual connectivity, especially in the scope of road space [2,3]. The results of the research or identification carried out are aimed at finding strategic possibilities in planning for the road/corridor space element.



Figure 2 Corridor situation between density of Jeron Benteng Area.

2. METHODS

The research delineation in this case is the area of the Kraton District, after entering the main gate "Plengkung" and inside the walls of "Benteng Baluwerti". The study used a qualitative descriptive method by translating the results of the DepthMapx – Space Syntax analysis and matched it with field conditions [4]. The research uses a descriptive research framework, simulation and modeling for its analysis. Descriptive research is aimed at presenting things that are numerical and accurate in a systematic way. The methodology used is quantitative research using a spatial network depthmap program developed by Hillier [5] which relies on measurements and variables on numbers and the variables have been determined from the start (space syntax).

The description of the results of the analysis that has been carried out is translated its value based on the parameters of the high or low level of existing spatial and visual connectivity qualities [6]. The results of the analysis and discussion carried out are carried out segmentally, by discussing the results of a review of spatial connectivity (connectivity, intensity, integration). The results of the analysis of spatial connectivity are integrated with the level of visual connectivity, the conclusions of the quality of the existing space are formulated to improve its characteristics [7].

3. RESULTS AND DISCUSSION

Based on the results of the analysis, the spatial connectivity of the road/corridor space in the study area is quite good where there is a hierarchy of spatial relationships between roads that distributes movement well throughout the area. However, the connectivity must be considered in the flow/direction of movement, so that there is no buildup or congestion because the intensity of the vehicle speed is only concentrated in a few corridors. The highest intensity and integrity leads to the South Square area so that the flow of movement

to that area needs to be supported with good visual quality by increasing the characteristics of the space so that it is able to interpret the identity of a sustainable cultural area.



Figure 3 Spatial connectivity of Jeron Benteng Area.



Figure 4 Spatial connectivity by intensity of Jeron Benteng Area.



Figure 5 Spatial connectivity by integration space of Jeron Benteng Area.

Visual connectivity analysis in the Njeron Benteng area managed to find that the dominant visual connectivity is still low. This is possible because the dimensions of the road space are quite small and the density of buildings in the area is quite high. The highest level of visual quality is in the South Alun-alun

area and the surrounding corridors (Jl. Patehan Lor, Jl. Ngadisuryan, Jl. Langenastran Lor and Kidul), so that this area needs to be well planned in terms of visual elements both in terms of architecture. Buildings and street furniture that represent local culture.



Figure 6 Visual connectivity of Jeron Benteng Area.

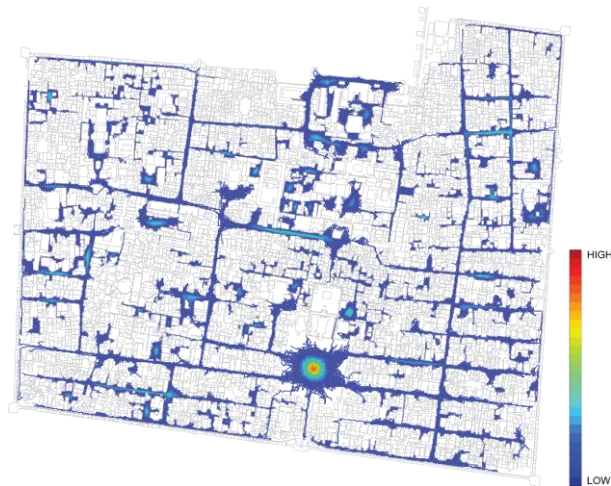


Figure 7 Agent analysis walkability using path of Jeron Benteng Area.

4. CONCLUSION

It is necessary to engineer accessibility patterns by utilizing the existing road network, to improve the performance of the area and reduce vehicle density. There is a need for strategic planning related to the physical elements of space, both buildings and other space-forming elements (street scape) with character so that they are able to represent the identity of the Region. Space Syntax is a method that is quite effective and relevant in identifying spatial and visual connectivity.

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