

# Space Syntax Analysis in Kampung Tenun's Urban Corridor

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## ABSTRACT

Pangeran Bendahara Street as the urban corridor for Kampung Tenun, Samarinda has not optimized its potential to be a tourism village. This issues led to the urgency where it is difficult for the craftsmens to find the next generation. Therefore, the purpose of this research is to understand the relationship between spatial configuration and activities in Kampung Tenun's urban corridor to its potential as tourism village. This research uses space syntax approach to discover an understanding of the way tourist, local resident, and craftswomen use space in urban corridor, so that it can become a reference in developing sustainable tourism in Kampung Tenun.

**Keywords:** Urban corridors, Space syntax, Activity pattern, Spatial configuration.

## 1. INTRODUCTION



**Figure 1** Kampung Tenun location and photos [1].

Kampung Tenun is a cultural heritage district and the centre production of Samarinda woven fabrics which is located on one of the banks of the Mahakam River. This village is more than just a tourist destination, but also one of the first village in Samarinda. It has a complete range of tourism potentials ranging from historical narratives, woven cultural commodities, to the natural attraction of the Mahakam River. Hence, since 2012 the National Crafts Council (DEKRANAS) has declared Kampung Tenun as one of the national tourist destination [2]. This national supports supposed to help developing a sustainable tourism economic ecosystem.



**Figure 2** Pangeran Bendahara Street as the urban corridor [1].

Pangeran Bendahara Street is an urban corridor and the main access to Kampung Tenun which plays a big role in introducing the image of tourism village. This street is capable to create the first impression that can affects the intention of tourist to revisit the place and their availability to recommend the destination to others people [3]. Meanwhile, tourists develop these impression through tourism activities and bonds with local resident [4].

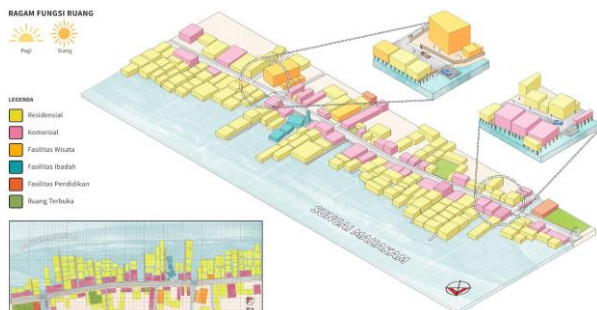
Despite all of its potential, Pangeran Bendahara Street has not been able to guarantee the sustainability of Kampung Tenun. Some craftswomen have difficulty finding the next generation who wants to preserve the weaving culture and the emergence of printed fabrics make the competition even tougher [5].

## 2. SPACE SYNTAX: ANALYZING THE RELATIONSHIP BETWEEN SPACE CONFIGURATION AND HUMANS

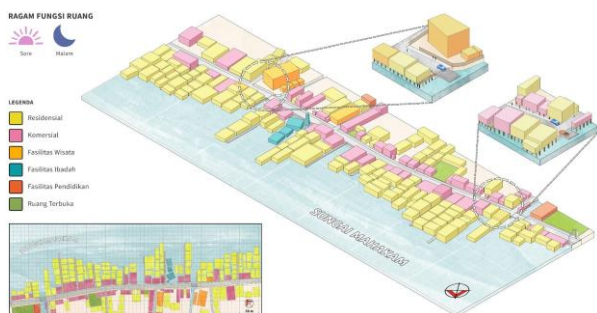
Space syntax is a method of analyzing the relationship between space configuration and human as space users, both on a small or urban scale. Two essential elements of space syntax are configuration of space and human activity patterns [6,7]. Space syntax discusses the relationship between spatial configurations and humans in a measurable way through graphics and mathematical language.

Thus, space syntax serves to understand how spaces, buildings, areas and cities operate with a scalable approach. Space syntax uses graphics to model the way the spaces in a city are connected together in several diagrams. There are four types of diagrams that show the graphical stages of the space syntax method [8,9], such as fictive urban system, axial map, connectivity graph, and justified graph. As a scalable method of analysis, space syntax uses several mathematical measures in its application. Some of these measures are used as a basis for analyzing space configurations [7,8], these benchmarks include connectivity, depth, control value, local integration, and global integration.

## 3. EXISTING SPATIAL LAYOUT OF URBAN CORRIDOR AND VARIETY OF FUNCTIONS



**Figure 3** Existing space configuration in urban corridors (morning-afternoon) [1].

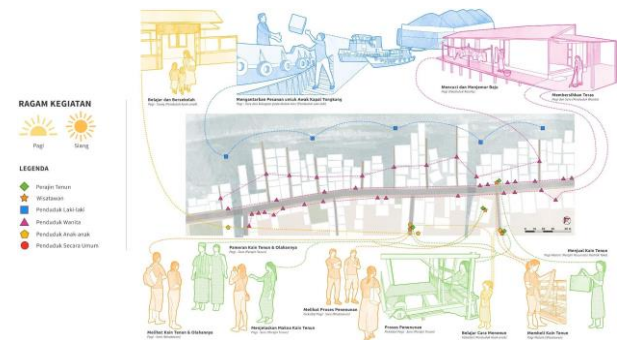


**Figure 4** Existing space configuration in urban corridors (evening-night) [1].

The urban corridor of Kampung Tenun has various spatial functions, such as residential, commercial, tourism facilities, worship facilities, education, and public spaces that can be accessed within walking distance. Most local residents use spaces that are in direct contact with urban corridors as a place to make a living. Meanwhile, tourist facilities, are centered on the right side of the map and are located about 200 m from the Kampung Tenun gate.

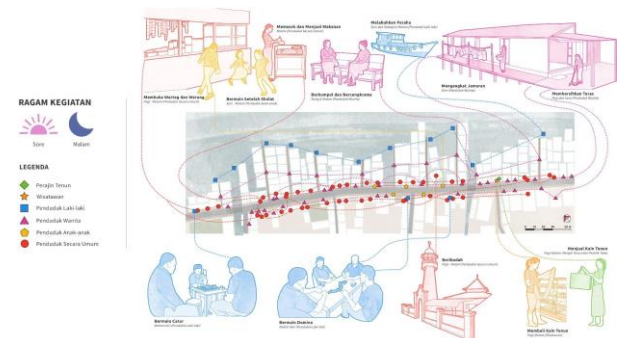
At night, several residential functions near the Kampung Tenun gate turn into commercial functions as residents open food stalls (Fig. 4). In addition, some local residents also set up temporary spaces that increase the intensity of various activities, such as street stalls in several front yards. Thus, the variety of functions in the public corridor in Kampung Weaving provides an opportunity for the formation of a variety of activities for local residents, craftswomen, and tourists.

## 4. ACTIVITY PATTERNS AND THEIR DISTRIBUTION IN URBAN CORRIDORS



**Figure 5** Variety of activity in the urban corridors (morning-afternoon) [1].

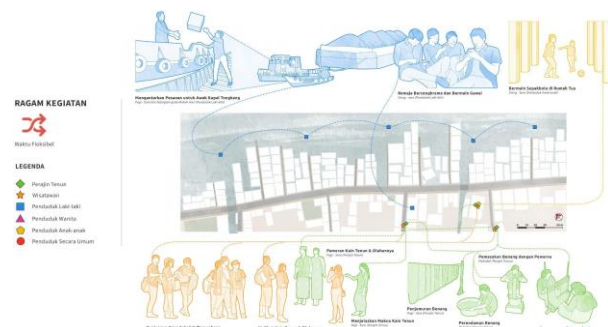
The morning-afternoon activities in the urban corridors are mainly related to earning a living. There many kinds of tourist activities that take place in the residential area of the craftswomen. Meanwhile, in the urban corridor there are only weaving shops with active activities.



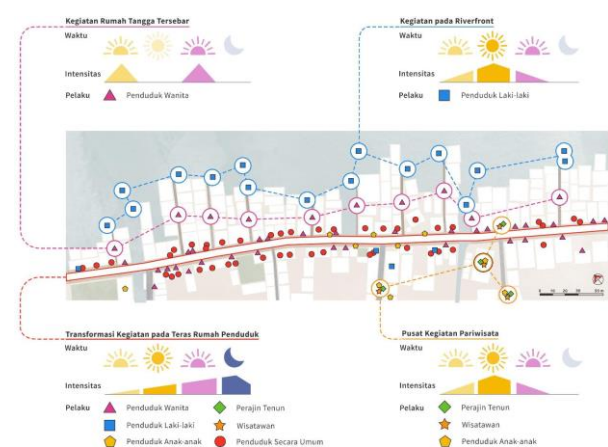
**Figure 6** Variety of activity in the urban corridors (evening-night) [1].

The evening-night activities in the urban corridors are mainly related to social activities among local residents. Social activities among local residents are mostly found in the middle area of the public corridor. These roadside stall on the terraces of several houses play an important role in shaping social activities.

Meanwhile, there are some flexible activities which quite difficult to understand the time pattern (Fig. 7). For example, the woven yarn preparation is mainly affected by the weather condition because it requires light and heat. Therefore, the yarn preparation does not have certain number of days. Other unpredictable activities is such as a group visit from a company or school.



**Figure 7** Variety of activity in the urban corridors (unpredictable) [1].

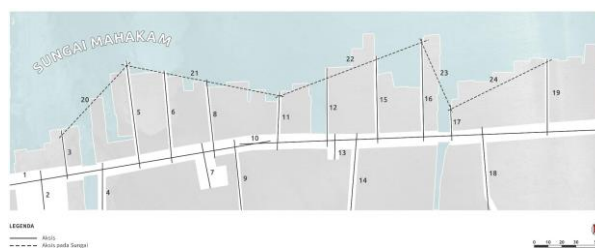


**Figure 8** Activity pattern in the urban corridors [1].

The activity pattern in the urban corridors show the distribution of activities, both separate, centralized, and transformed. Tourist activities are centered on the right side of the research area and the two alleys of the craftsmen's residence from morning to evening. The density of activity along the public corridor changes from morning to night as at night there is more social activity among local residents. More private household activities such as women drying clothes are carried out separately on each wooden bridge. Activities on the riverfront are dominated by male residents either to earn a living or to anchor their boats. The pattern of activities also adds aspects of space and time in understanding its relationship to the spatial configuration.

## 5. SPACE SYNTAX ANALYSIS BETWEEN SPATIAL LAYOUT AND ACTIVITY PATTERN

Space syntax analysis aims to understand the relation between the spatial configuration and activity pattern. The axial map shows that there are 24 axes that represent the longest line of the spatial arrangement, including the river area (Fig. 9). This axis then becomes the unit for calculating the four space syntax indicators. The results of the analysis are then mapped according to the indicators along with the activity points to see the association between the two.

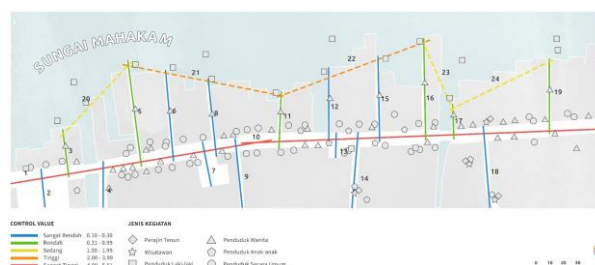


**Figure 9** Axial map on the urban corridor [1].



**Figure 10** Connectivity value diagram on the urban corridor [1].

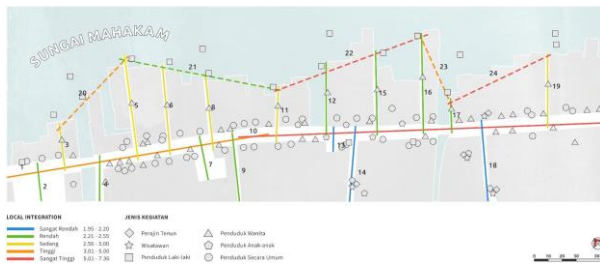
Connectivity value describe the association between spaces that are directly related. Based on the calculation, the spatial connectivity value in public corridors varies from 1 to 10. Roads with high connectivity values attract more public activities. On the other hand, some roads have low connectivity values because they lead to open land or lead to alleys that are outside the research boundaries.



**Figure 11** Control value diagram on the urban corridor [1].

Control Value describes the potential of a space to provide the activities that occur. The higher the control value of a space, then the space may controls many

activities as well. Based on the calculation, the urban corridor is the space with the highest control value so that it can be seen that the public corridor also plays a role in accommodating various activities. There is also space with a low control value on a wooden bridge between riverside housings. However, this is not a bad thing as these spaces accommodate female residents' activities that require more privacy, such as washing and drying clothes. In addition, the river area has a high control value so that it can be used to accommodate various activities including tourism activities. Currently, this space is only used by male residents to anchor boats and earn income.



**Figure 12** Local integration diagram on the urban corridor [1].

Local integration relates to the accessibility of space in urban corridors for pedestrians. Spaces with higher local integration have the potential to form social interactions. Based on the calculation, the two accesses to the craftswomen's residence are in areas with low local integration. This may explain the reason why many tourists are not aware of or do not know the location of the craftsman's residence. Urban corridors have high local integration so that it can be seen in accommodating the social activities of local residents at night. In addition, the river area has the highest local integration, especially as access for local residents on the banks of the river.



**Figure 13** Global integration diagram on the urban corridor [1].

Global integration relates to accessibility to all spaces in the Kampung Tenun's urban corridor. Global integration shows the integration of the entire space, especially for the movement of vehicles. Based on the calculation, the spaces with the highest global integration are in the middle area from public corridors, wooden bridges, to river areas. These areas can be used to maximize tourism activities. Apart from that, the

residential area of the craftsmen also has low global integration, so there needs to be a way to highlight the area that is the center of tourism activities in Kampung Tenun.

From the map, it can be seen that the river area as a whole does not have global integration as high as local integration. Another space syntax indicator, namely intelligibility, correlates connectivity value with global integration of a space. If the value of both is high, it means that the users will easily understand the spatial configuration and know their position when navigating. The river area in the middle has high connectivity value, but its global integration is still relatively low when compared to public corridors (see Appendix C). The low intelligibility can be explained by access to riverbank areas that need to pass through a wooden bridge that has a low control value (see Figure 9). Thus, it is possible for local residents of the river area to be easily recognized (high local integration). As for tourists who are new to the area, the area has not succeeded in attracting their interest to go there.

## 6. CONCLUSION

The existing condition of the spatial configuration shows that local residents use the area that is in direct contact with the public corridor as a commercial function. The transformation of the function of the space at night also enriches the variety of functions to form a new variety of activities for space users.

The variety of activities that take place continuously from morning to night produces a pattern of activities based on the types of space users and their activity. Activities in the morning are centered on meeting daily needs and the culmination of tourism activities. Activities at night are centered on social interactions between local residents. The pattern of activities provides the dimensions of space and time in relation to the spatial arrangement.

Based on the analysis of space syntax, several spaces have an important role in accommodating various activities, including public corridors, wooden bridges in the middle area and river areas. The results of the integration calculation also show the reason why many tourists are not aware of access to craftsmen's residences as a center for tourism activities. The results of the analysis also explain the reason the riverfront area has not attracted the attention of tourists, namely because its access is via a wooden bridge with a low control value and there are no tourist activities there.

The urban corridor at Kampung Tenun, Samarinda actually has the potential for attraction from historical, cultural, and natural narratives in the riverfront area. However, these potentials have not been able to produce a memorable experience for tourists. In order for Kampung Tenun to build a sustainable tourism

ecosystem, this village needs to be able to provide a memorable experience so tourists want to tell other people. The results of the analysis conclude that there are several relationships between spatial arrangements and activity patterns on the application of riverfront-based creative tourism, including:

- Tourist spaces have not played a maximum role in realizing activities related to tourism.
- About half the length of the urban corridor from the gate does not yet have tourism activities so it cannot convey the image of a tourism village.
- Residents of craftswomen as centers of creative tourism activities are in areas with low integration.
- The difference in activity time between tourists and local residents reduces the opportunity for interaction between the two.
- Utilization of the riverfront as access and tourist attraction is not optimal because the access is via a wooden bridge with a low control value.
- Local residents can develop tourism support facilities in urban corridors, such as tourism centers, parking areas, weaving centers, and lodging facilities.

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