Urban Riverside Morphology in Cultural Heritage Area Tourism Planning

Soni Pratomo[1,2(✉)], Widya Fransiska Febriati Anwar[2], and Muhammad Sani Roychansyah[3]

[1] Universitas Adiwangsa Jambi, Jambi, Indonesia
soniprato mo@unaja.ac.id
[2] Universitas Sriwijaya, Palembang, Indonesia
[3] Universitas Gadjah Mada, Yogyakarta, Indonesia

Abstract. Morphology is the science of understanding urban form. As an analysis tool, it can help understand the development of the city. Waterfront cities have different morphology from mainland cities as a result of morphological assimilation between the water and the land. The influence of geographical elements of the waterfront, including rivers, affects people's lives and urban forms. Riverside cities are often old urban areas. As an old area, Kawasan Seberang Kota Jambi through the Jambi City Spatial Planning has been made as Heritage Area. Kawasan Seberang Kota Jambi has been pushed back by development and urbanization. Seeing such conditions, what are the morphological conditions of the riverfront of Kawasan Seberang Kota Jambi as a cultural heritage area? This study aims to investigate the urban morphology of the riverfront in Kawasan Seberang Kota Jambi. Knowledge of the morphology of Kawasan Seberang Kota Jambi can be used as an initial concept for planning riverfront cultural heritage areas. The study uses a literature review and studying the map documentation. The research was mainly carried out in the old Pasar Olak Kemang area. The Olak Kemang Market is located on the axis road across Kawasan Seberang Kota Jambi which was built during the Dutch era. The street is different from residential areas which are structured by the spaces created between houses. The results show that morphological assimilation is seen in the orientation direction. People recognize the orientation towards the river as Laut and towards the land as Darat. The direction to upstream is called Ulu and downstream is called Eler. The study concludes that the river has an influence on people's lives and the riverfront city form.

Keywords: Conzenian · Heritage tourism · Morphological Assimilation · *Pelayangan* · Riverside town

1 Introduction

Different geographical conditions in a city can affect the morphology or shape of the city. The existence of a river in an urban area will influence the formation of the city or the lives of its people. At present, cities with local wisdom in the past are not fully able to cope with environmental conditions. Humans with all their activities demand greater

J. Damanik et al. (Eds.): INTACT 2022, ASSEHR 699, pp. 462–471, 2022.
https://doi.org/10.2991/978-2-494069-73-2_33

use of resources than before. Urban development mainly consumes the most important resource, namely land. Urban space is experiencing a decline in quality, developing less directed and less anticipatory toward its environment. This happens not only in parts of the city that have developed recently but can also occur in parts of the city that are the starting point of its growth.

The old area which is also often the starting point for urban development at this time tends to experience a decline in environmental quality. Waterfronts including rivers are often the starting point for urban development. At present, the condition of riverside urban areas due to technological developments and especially the needs of the community are slowly being abandoned. One of the things that can be seen is the change in the housing orientation, which starts from the river and gradually turns to the road.

City morphology research is a comprehensive study of the physical environment in the form of geographical conditions, urban functions, city structure and urban spatial patterns along with the non-physical environment in the form of community socio-economic, cultural and political. The morphological study approach can help understand the condition of an area or urban area by looking at the changes and trends that occur.

Kawasan Seberang Kota Jambi is a Cultural Conservation area by the Jambi City Spatial Planning. This area is starting to have several Cultural Heritage relics that have also been determined by the government such as the Batu House, the Tomb of Prince Wirokusumo and traditional houses. At the moment, the condition of the area has decreased with the abandonment of local customs and the physical condition of the environment is not being paid attention to. Some traditional buildings or houses began to undergo changes either partially or completely. As an area on the edge of the water, this area is not too tied to the waters anymore.

Seeing these conditions, the research question posed is "What is the morphological condition of Seberang Kota Jambi as an area on the edge of the water?" The purpose of this study was to investigate the morphological condition of Seberang Kota Jambi with the aim of identifying the structure of roads, plots and buildings in the Seberang area of Jambi City. The research findings are expected to be the input for the development of tourism in the Riverside Cultural Heritage Tourism area.

2 Literature Review

Urban space and architecture are influenced by nature and its environment (Rapoport, 1969). Understanding nature and the environment is also required to understand the conditions of culture and society (Kostof, 1991). In addition to the physical and environmental elements, the development and growth of the city are influenced by several non-physical factors such as socio-cultural conditions and the economy. Different geographical conditions in a city can also affect the morphology or shape of the city. The shape of the city that is owned at this time does not just happen. The city starts from a small settlement to become a metropolitan city that agglomerates with the surrounding areas. The shape of the city due to internal and external developments and dynamics often results in the city experiencing degradation. Urban space is experiencing a decline in quality, developing less directed and less anticipatory toward its environment. This happens not only in parts of the city that have developed recently but can also occur in parts of the city that are the starting point of its growth.

Morphology is the study of the form of urban space formed by changes in the space used by city dwellers. Community activities or residents of a city result in changes in the shape and structure of urban space and the elements that make up the space. There are several approaches to studying the morphology or form of urban space, including geographic, architectural, and social approaches (Kristjánsdóttir, 2019). The geographical approach incorporates geographical elements as factors that are part of the spatial structure. In subsequent developments, urban geography is a branch of geography that focuses on urban development. The main figure in urban geography is M.R.G Conzen. The architectural approach sees that architectural works must be integrated into the development of a city. Architects cannot work without looking at the historical roots of a part of the city and then planning architectural works without looking at the context. Furthermore, there is a broader approach developed in France that sees urban development as a result of the social interactions of its inhabitants.

Morphology about geographical investigations has an instrument of urban planning, building patterns and land use patterns (Conzen, 1960) which conducts a geographical study of urban planning. This geographic approach is widely used in the revitalization or conservation approach of cities and settlements. The study of geographic morphology uses a diachronic approach in conducting its analysis. Components of concern in the study of geographic morphology:

1. Street
2. Plots
3. Building

These three morphological components are interrelated. A road is a space that is bounded by a road line and is used for traffic, be it people or goods. Overall, the streets within the city form the urban road network. The main component in urban development in this morphological study is plots or land. Plots are land areas that are wholly or partly adjacent to a road or road network. Land or land use plays an important role in the development of the shape of the city. A land is a place for buildings or building blocks that are tied together in a road network. The next section is a building block or building which is a building or several buildings that are bounded by walls. Buildings are an important part of urban planning. The linkages between the road network, plots and buildings form the structure of urban spaces. The structure of this urban space develops from linear, chessboard, centred, circular, single-core, double core or compound core.

Before the road network existed, the water network had become the main transportation route, especially in cities that have rivers. Rivers are an important element in the development of cities in a watershed along with passageways/other circulation routes such as canals, roads, rails and footpaths (Jittiwasurat and Rattanathavorn, 2018). Rivers in waterfront cities have a role in forming cultural landscapes, creating spatial networks/urban layers (urban tissue), generating economic in terms of food production and processing and industrial generation, connecting space and society in the transportation and flow of goods and marketing, flood control and as a generator of urban improvement (Mosler, 2021). Rivers are the main circulation route for river cities (Ruofei, 2020).

The riverside city is then formed due to the interaction between the river and the developing road network, so the river plays an important role in forming a riverside

city. The riverside city initially only developed on one side and then developed on both sides. Developments on both sides were mainly driven by the existence of bridges. The interaction relationship between rivers and road networks including bridges provides three main variants in the form of riverside cities, namely river cities with road networks along the river, cities with bridges and hybrid cities in the form of road networks on the riverside and bridges that connect the two sides of the river (Pattacini, 2021). The relationship between roads and rivers about the river's urban structure presents three variants, namely roads that are parallel to the river, roads (bridges) that connect two sides of the river and hybrid roads in the form of riverside roads and roads that connect two sides of the river. The river has become a part of life for the people who live around the river. Waterfront cities and especially rivers are generally the starting point for the development of a city. As a starting point, this part of the city becomes very attached to its water body (Mamun et al., 2020) and develops according to the times even though it is sometimes abandoned (Wardhani and Bahri, 2020). Morphology as a science that observes the development of the shape of the city becomes important in understanding the dynamics that occur in urban space, including riverside urban space. In river cities, there is morphological assimilation between rivers and their urban spaces. Rivers are also not only natural bodies that channel water from upstream to downstream, but in some cities, they are integrated into watersheds in the form of swamps. This condition affects the shape and typology of existing buildings in cities that have rivers (Mamun et al., 2020; Afdholy, Hamka and Sri Winarni, 2021; Oktarini, Johannes and Prima, 2021).

3 Materials and Methods

3.1 Materials

This research was conducted from December 2021 to April 2022 which included observations of Kampung Olak Kemang Seberang Kota Jambi (Olak Kemang Urban Village) as a part of Kawasan Seberang Kota Jambi. Administratively, Kampung Olak Kemang is located in Kelurahan Olak Kemang, which borders the north side of Muaro Jambi Regency, the south side of the Batanghari River/Legok Village, the east side of Ulu Gedong Village and the west side of Tanjung Pasir Village. The research was mainly carried out at the Old Kemang Market and its surroundings considering that this area is an area that is dominated by built-up areas. Most of the Kelurahan Olak Kemang consists of green and blue areas. The map of Olak Kemang as a research area can be seen in Fig. 1. Olak Kemang is one of the urban villages in Jambi City which has quite busy urban activities.

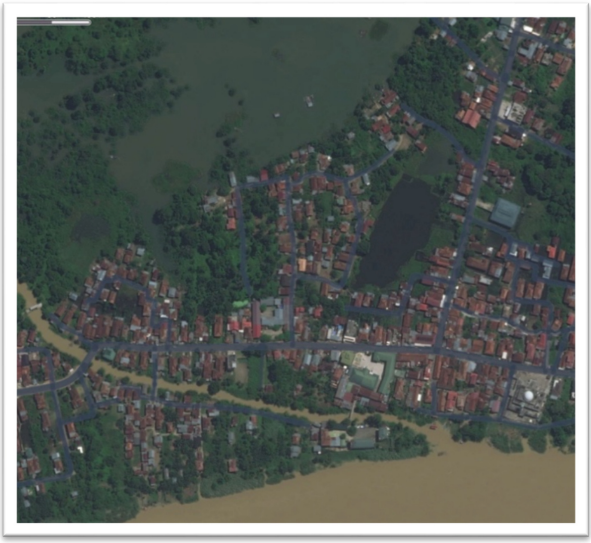

Fig. 1. Olak Kemang and Its surroundings

In the Olak Kemang area, there is an Old Olak Kemang Market, As Aad Islamic Boarding School, mosque and residential areas. In the center of the Olak Kemang area, there is a T-junction in the road that is the axis of this area. Buildings in the center of the area are mainly dominated by high-rise buildings with commercial functions. In this area, the prominent buildings are the Stone House, As Aad Islamic Boarding School, and the Al-Ihsaniyah Mosque Complex along with the tomb of Prince Wirokusumo.

3.2 Methods

This study reviews the literature on research on urban morphology and waterfront urban areas. Direct observations were also carried out on the city of Jambi which was traversed by the Batanghari River. At this research stage, a content analysis was carried out on the old documentation and maps obtained. This old documentation and maps were needed to strengthen the analysis of the condition of the development layers of Jambi city. Direct observation is mainly to see the current condition of the research pilot. The analysis was carried out on the morphological aspects of roads, plots and buildings and the morphological assimilation of the river passing through Jambi City. The analysis was carried out mainly on the elements that characterize the difference between the morphology of the mainland city and the morphological assimilation of the river city. In morphological research, it is recommended to use a map with an accuracy of 1:2,500 (Conzen, 1960), but in this study utilized satellite imagery from Google Map. High resolution images are also needed in morphological research. High-resolution images are needed in order to get clearer and more detailed urban objects, making it easier to analyze (Neupane, Horanont and Aryal, 2021). The maps displayed in this study are still original maps in various scales that have not been redrawn using GIS or CAD software Table 1.

Table 1. Observation Variable

Analysis	Analysis Technique	Result
Literature	Literature Review	Physical element
Map	Map interpretation	Morphology

4 Results and Discussion

Morphological research mainly observes the physical attributes of urban areas. This riverside urban morphological study was conducted a study of morphological elements in the form of (a) roads and road networks, (b) plots and land and (c) buildings and building blocks.

4.1 Street

The road network in Olak Kemang Village consists of two levels, namely the axis road and the environmental road. There are three main roads, namely Jl. K.H.A. Qodir Ibrahim-Jl. K.H. Ibrahim, Jl. K.H. Hasan Anang and Jl. K.H.A. Somad. The Qodir Ibrahim axis road stretches in a west-east direction which is a road parallel to the Batanghari River. Other villages in Seberang Kota Jambi are also on this axis road. This road is also the road to the Aur Duri bridge which connects the city of Jambi. The second axis road Jl. K.H. Hasan Anang stretches north-south direction that divides Jl. K.H.A. Qodir Ibrahim and Jl. K.H. Abraham. The third axis road Jl. K.H.A. Somad is on the north side of Olak Kemang. In addition to the axis road, there is an environmental road formed from the spaces between the houses in Olak Kemang Village. These neighborhood roads were originally not paved, only dirt trails. If the axis road follows or parallels with the Batanghari River, the environmental road in Olak Kemang develops organically following the development of house construction in the village.

The pattern of the road network and buildings across Jambi City is formed organically as often occurs in traditional areas. The pattern of the road network in this area does not clearly have a road line like in other traditional residential areas. There is no clear boundary between the lot and the road. It can be seen that the road in traditional society is not just a physical form but a means to achieve goals (Wiryomartono, 1995). In Javanese society, this is often expressed by the term "nyambut gawe" when someone is asked about the purpose. This also happened to the people of Jambi by answering "ado lokak" which means more or less looking for sustenance.

The axis road is at a higher position than the environmental road so that it is flooded during the rainy season, the environmental road becomes submerged in water. During the rainy season, the transportation used is a boat. Each house in Olak Kemang has a boat which is a means of transportation during floods. The environmental road conditions in the research area can be seen in Fig. 2.

The Olak Kemang Seberang Kota Jambi in the past had not been connected by a bridge. The connection between the two sides of the city using a bridge occurred at the end of the 1980s with the inauguration of the Aur Duri Bridge or Batanghari 1 Bridge

Fig. 2. Road and Settlement Conditions **Source:** Survey, 2022

on the west side, followed in early 2010 by the inauguration of the Batanghari 2 bridge on the east side. These bridges are not located in the middle of the city but on the border with Muaro Jambi District. The bridge in the middle of the city was inaugurated in 2015 and is known as the Gentala Arasy Pedestrian Bridge. Different from the previous bridge that serves vehicles, this third bridge is a bridge that specifically serves pedestrians.

Services and transportation routes between the two sides of the river were previously carried out by traditional boats called *Ketek*. In every village across Jambi City, there is a crossing. This crossing is known to the public as *Pelayangan.* The *Pelayangan* is a typical element of riverbank urban morphology that is not served by a bridge. As with other traditional settlements, this *Pelayangan* also does not have clear plots and buildings that are identified as outlines bounded by walls.

4.2 Plot

Olak Kemang Village is dominated by an open area in the form of open land and a swamp known as Teluk Lake, while Olak Kemang Village as a research location is part of Olak Kemang Village is a residential area dominated by housing. Buildings with commercial functions dominate the T-junction of Jl. K.H.A. Qodir Ibrahim-Jl. K.H. Hasan Anang-Jl. K.H. Abraham. The plot in this area is not very clear, and the boundaries of ownership are not marked by clear boundaries. The boundary between houses is understood as the centerline between the distance of two buildings or houses.

4.3 Buildings and Blocks

The arrangement of buildings and building blocks in the research area has an organic form, although it looks like they are arranged in a grid. The research area of Olak Kemang is dominated by housing with a typology of houses on stilts. The stilt houses are mainly oriented to the Batanghari River so that the longest part of the house faces east and west directly facing the sun (Pratomo et al., 2022). The shape of this grid is due to the shape of the building which is dominated by residential buildings which are on the average

square so that the house that later stands will follow the position of the previous house. The houses and buildings in the Olak Kemang Seberang Kota Jambi grew following the orientation to the river. This orientation is not only to houses and buildings but also a direction orientation. The river is often referred to as the sea and the area away from the river is called land. The direction of river water flow is also the orientation of the direction, namely *ulu* (upstream) and *eler* (downstream).

Rumah Batu in the Olak Kemang area is the residence of the Jambi Sultanate family who is also propagators and leaders of Islam. This building is currently poorly maintained because it has been abandoned by its owner for a long time. This building has access and is oriented to the tributary of the Batanghari River. Another building that stands out is the Al-Ihsaniyah Mosque Complex and the tomb of Prince Wirokusumo. This mosque is located on the banks of the Batanghari River so that apart from the land side which can also be reached via the river. This mosque has been renovated several times.

In this area, there is an As-Aad Islamic Boarding School. This Islamic boarding school was once a madrasa, so there was no accommodation. The students who study came from the community around the village as well as from outside the city of Jambi. In the past, before becoming a boarding school, the students stayed at people's homes. In recent times, boarding houses have been built for the students to stay overnight.

4.4 Character and Identity

The people of Olak Kemang are a mixed population. As a village with a fairly large madrasa in Jambi, this village has a strong Islamic nuance even though the average population of the Seberang Area of Jambi City is famous for its strong Islamic characteristics. Olak Kemang is the center of trading activities across Jambi City. Economic activities in Olak Kemang are not only carried out by residents of Olak Kemang but also by residents outside the village. Currently, Olak Kemang Market has been abandoned after a newer market was created but is still in Olak Kemang.

5 Conclusion

The results showed that the structure of the road network in the research area was formed due to the space between buildings, especially traditional houses. The structure of the road network is organic. The plot is dominated by the use of residential activities. The buildings in the research area are dominated by residential buildings with a typology of wooden houses on stilts. The tourism potential that can be developed in the research area is cultural heritage tourism. Preservation of the research area is necessary considering that several buildings have been destroyed or damaged.

Acknowledgments. The author would like to thank Maulidia Citra Rizki who helped in collecting field data.

References

Afdholy, A. R., Hamka and Sri Winarni (2021) 'Tipologi Pola Tata Letak Rumah Pada Permukiman Tepian Sungai Kota Banjarmasin', *Pawon: Jurnal Arsitektur*, 5(1), pp. 95–106. doi: https://doi.org/10.36040/pawon.v5i1.3310.

MR Conzen 1960 Alnwick A Study in Town-Plan Analysis, Wiley. Orge Philip & Son, Ltd. Northumberland https://doi.org/10.2307/1790293

P Jittiwasurat T Rattanathavorn 2018 'Urban Morphological Transformation of Riverfront Communities in the Nakhon Chaisri Basin Thailand', MANUSYA: Journal of Humanities 21 1 85 105 https://doi.org/10.1163/26659077-02101005

S Kostof 1991 The City Shaped. Urban Patterns and Meanings Through History Thames and Hudson Ltd London

Kristjánsdóttir, S. (2019) 'Roots of Urban Morphology', *Iconarp International J. of Architecture and Planning*, 7(Special Issue 'Urban Morphology'), pp. 15–36. doi: https://doi.org/10.15320/iconarp.2019.79.

Mamun, M. M. Al *et al.* (2020) 'Reviving the Urban Water-Edge: History and Heritage Morphology in the Envisaging of Chittagong City', *eTropic*, 19(2), pp. 97–118. doi: https://doi.org/10.25120/ETROPIC.19.2.2020.3775.

S Mosler 2021 The transformative role of rivers in the evolution of urban landscapes: a case study from urban rivers of Chelmsford in Essex Journal of Urban Design. Routledge 26 1 95 116 https://doi.org/10.1080/13574809.2020.1835466

B Neupane T Horanont J Aryal 2021 Deep learning-based semantic segmentation of urban features in satellite images: A review and meta-analysis Remote Sensing 13 4 1 41 https://doi.org/10.3390/rs13040808

MF Oktarini A Johannes L Prima 2021 the Preservation of Riverbank Settlement As a Tourism Potential in the City of Palembang, South Sumatera Indonesian Journal of Urban and Environmental Technology 4 2 164 https://doi.org/10.25105/urbanenvirotech.v4i2.8305

Pattacini, L. (2021) 'Urban design and rivers: A critical review of theories devising planning and design concepts to define riverside urbanity', *Sustainability (Switzerland)*, 13(13). doi: https://doi.org/10.3390/su13137039.

Pratomo, S. *et al.* (2022) 'Natural daylighting performance at stilt house in jambi city', *Journal of Applied Science and Engineering (Taiwan)*, 25(1). doi: https://doi.org/10.6180/jase.202202_25(1).0023.

A Rapoport 1969 House Form and Culture. Englewood Cliffs Prentice Hall Inc NJ

Ruofei, X. (2020) 'Research on Nanjing Ancient Urban Morphology Evolution Based on Climate Adaptability', *IOP Conference Series: Materials Science and Engineering*, 794(1). doi: https://doi.org/10.1088/1757-899X/794/1/012021.

Wardhani, F. and Bahri, S. (2020) 'Comparative Study of the Patterns and Characteristics Urban Morphology in the Old CIty, Case Study Road and Blocks Patterns Bengkulu and Singapore', *Geographia Technica*, 15(Special Issue), pp. 169–181. doi: 10.21163/GT_2020.151.34.

Wiryomartono, A. B. P. (1995) *Seni Bangunan dan Seni Bina Kota di Indonesia*. Jakarta: Gramedia.