The human dimension and its effect on multi-function streets in settlement on water of Buloa Kareppa and Marbor Tallo

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Abstract
Street infrastructure is very important in a settlement, functioning as a link between one place and another. Its presence has an impact on the smooth running of community activities. Karabba village and marbor a wild settlement that stands on water, built by the community in very simple conditions. The way that connects houses with homes and houses with land have conditions that are of concern from the physical aspect. But the absence of public space and limited land causes the community to make streets function not only as of the main circulation and access but also as a community space and a place for all utility networks. The goal to be achieved is to find out how the application of the human dimension and its effect on multi-function streets. The method used by the survey. In the survey, recordings of every activity occurring on the road, both domestic, social activities, and main activities as a means of transportation. In addition, review the material and dimensions of the street to determine its suitability with existing standards. The result is that streets in residential areas should be multi-functional pedestrians, all semi-public and public community activities take place on it, pathway should not be reserved for vehicles such as motorbikes. From the standard aspect, it is not as of all aspects.

Keyword: Human Dimension; Multi-Function Streets; Settlement on Water

1. Introduction
In a settlement, the presence of infrastructure is important to create the survival of the community in it, and this is stated in the Housing Act No. 1 of 2011, the Republic of Indonesia [1], which states that Infrastructure is a complete physical basis of residential environment that meets certain standards for the needs of a decent, healthy, safe and comfortable residence. One form of infrastructure is the street. The street is a means of transportation used to connect one place to another. In settlements established on water, facilities that function as streets are generally narrow wooden bridges that are used as a medium of connection between houses in the neighborhood and towards the land. As a transportation infrastructure, streets in residential environments established on water also act as open space used for various activities both social and domestic. Classification of streets as open space, because according Danisworo [2], open space is not only public parks, plazas, and playgrounds, but also includes streets, waterfronts, rooftops and all spaces communal outside. As open space, streets have various functions
besides as transportation infrastructure. To be outside, especially if their house is small. Streets are places for trade and exchange of goods even to do work, especially in eastern countries [3].

2. Purpose
The goal to be achieved is to find out the character of the street on the water in kampong Karabba and Marbor Buloa, Tallo. Streets are places where people meet and socialize, and it becomes places for people to meet and interact.

3. Method
The method used is to explore in detail every activity that takes place on the street, both the main activities as a means of transportation and other companion activities such as social and domestic. After that, linking with existing theories and concepts to determine the suitability and incompatibility with street so that it can guide the concept of making streets on the water better.

![Figure 1. Makassar city map and Tallo district map (sumber google)](image)

Research location in Kampong (village) Karabba and Marbor. Buloa-Makassar Sulawesi-Indonesia housing location is in a tidal area, when the tide then the housing will be inundated with water until the boat can crawl into housing and if the water is receding then the surface of the settlement will dry up to tens of meters from the residential area and children can play on it.

4. Research Result
The following is an illustration of the research location in the Buloa area, tallo Sub-district, shown in Figure 2 below:

![Figure 2. Village of the Marbor and Karabba in Buloa](image)

Housing in the villages of Karabba and Marbor are built on land and some are built on water. Picture shows red boxes are houses that are erected on land whose land is part of the landfill, while blue squares are housing built on water bodies. Green is an open space that is still a swamp of water. The following is Figure 3, which shows visible settlements built on water.
When at low tide, the boat will be parked about 50 m from the settlement towards the sea (left picture), and village residents can play on the land, and if the tide is then the boat will dock in the settlement (right picture) until the water level can reach 1 m from street level / residents' house. Figure 4 shows the conditions and materials used for roads on water.

The shape and material of the road vary in settlements. Streets that can be used for wheeled vehicles are neater in shape with a wider size, around 1.2 m to 1 m. Whereas the collector street that connects the residential street with the back of the houses is generally narrower with bamboo material with a width of 40-60 cm, can only be traversed by pedestrians, but also from wood material, but it seems not neat/unorganized and only seen as a pile of wood. Streets generally do not have a safety fence on both sides of the road, if there is only bamboo or a plastic rope. The board material used for streets is easily weathered (grade 3 wood) so that it is feared that users will fall into the water, streets do not have sun protection or hoods, there are no public facilities such as street lights, seating, etc.). Figure 5 shows the function of streets as circulation and access in settlements.
Residents force themselves to use them because of security factors consideration. The main function of the street is as a pedestrian, although the width of the street is narrow, it can only be used by one vehicle, and cannot be used for two vehicles side by side. If there is a vehicle that wants to pass while others also use the pathway, then one vehicle must budge by parking on the bridge between the street and the residents’ house or on the motorcycle parking lot of the residents who are on the side of the street while waiting for another vehicle to pass (Figure 6).

Not only vehicles, adult of street users also have to tilt the body sideways if passing on the street.

Figure 6. Motor cycle parking palace

The street besides functioning as transportation, it also functions as a motorbike parking and boat dock. Some of the community carried some kind of ear on the side street body to park their vehicle, the place was also sometimes used for socialization sites, patrol posts for residents. Here are some Figure 7 which show other functions of the street, namely social and domestic functions

Figure 7. Social function of street

Other functions of roads in residential environments are social functions, streets are used as children's playgrounds, washing, and caring for children

Figure 8. Domestic function of street

Additional functions of the pedestrian are for domestic activities such as fish clothes, clothes lines, water treatment, and trash cans
5. Discussion

5.1. Street in terms of functional aspects and completeness
The main function of streets in a residential environment is as a means of circulation and access that connects one place to another. The main purpose of street network procurement is to facilitate a location to be connected to other locations with moving means of transport on it. In other words, a measure of convenience and convenience regarding spatial plots of land can interact with each other [4].

Many activities take place and carried out on the road in the Buloa neighborhood are commonplace in Asian countries, this is expressed by Dayaratne in Kiang et al., in Yuliastuti and Tanjung [5] that street in Asia country to evolve as distinct paths from the West, a path that reflects the unique Asian culture. Utaka and Fawzi [3] tells that Malaysia applies the multidimensional principle, i.e., multifunctional street, multiclass, multi-religion, and multi-race. The multifunctional street is the street use of various activities as a market, the place of organizing the festival, and the daily activities of the society in Malaysia.

Limitations of land in coastal areas and human nature which are social creatures who always have the desire to socialize (interact), and the nature of mutual cooperation owned by citizens make the street not only as a means of connecting to a place but also as a place to meet and socialize. Streets are places where people meet and socialize, streets become places for people to be outside, especially if their homes are small. A street is a place for trade and exchange of goods even to do work, especially in eastern countries [3]. The same was stated by Michael Southworth & Eran ben – Joseph [6] explained that streets in residential areas not only function as vehicle access but as places for social activities including children's playgrounds and recreation areas. J.B. Jackson [7] explaining the notion of streets is a circulation corridor, where people walk, social space, and the main open space for recreation. cooper dan Hewit [2], open spaces are not only public parks, plazas, and playgrounds, but also include streets, waterfronts, rooftops, and all communal outdoor spaces. Public spaces can be cluster or linear in open or closed spaces [8].

Lynch [9] argues that streets can also function as identities that reflect the character of a place and become a place that can be unforgettable [5].

Seeing the road conditions in the Marbor and Karabba villages, it is more appropriate to say as a pedestrian network, the Minister of Public Works Regulation NOMOR: 03/PRT/M/2014 article13 paragraph 2 [10] which confirms that the use of pedestrian network infrastructure is only permitted for the utilization of social and ecological functions in the form of cycling activities, social interactions, formal small business activities, open space exhibition activities, green lines, and pedestrian facilities [11]. In its development not only for pedestrian paths but also for activities that are recreational in nature, such as sitting relaxed enjoying the atmosphere of the city, to socialize and communicate among its citizens. In the housing required support facilities, one of which is the road infrastructure. J'afar M.[12] stated that street infrastructure has a positive role in economic growth. Infrastructure existing streets in Karabba and Marbor village housing is a bridge (skyway). The path of the bridge in a housing environment above the water of Marbor and Karabba is not able to accommodate the humanity aspect. The humanist side of road users, such as the sense of security, comfort, in using the road, also covers or cultural values adopted by the community. When referring to the street concept in Project for Public Space (PPS) an independent organization engaged in the field of Public Space development has the criteria of a Great Street, as follows:

1. Access and Linkage that includes the convenience to cross the road, the choice of transportation, as well as the convenience for pedestrians on the sidewalk.
2. Uses and Activities. These criteria include variations in functions such as restaurants, shops, services
3. Comfort and Image related to local identity and culture, good street furniture, trees and other amenities.
4. Sociability Related to the existence of children and parents on the road, as well as a sense
of pride and possession by people who gather.

According to Shirvani [13] in planning a pedestrian pathway needs to consider the planning of several aspects, namely:

1. Balance the interaction between pedestrians and vehicles
2. Safety factor, enough space for pedestrians
3. Facilities that offer pleasure along the pedestrian area
4. Availability of public facilities that are integrated and become supporting elements

According to Utterman [14] in [11] the elements that influence the comfort of a pedestrian are:

1. Circulation, namely circulation or circulation of the facility is good without obstacles
2. Accessibility,
3. Nature and climate style, namely the state of nature and climate that occur at a time. Microclimate factors that affect human comfort are temperature, solar radiation, relative humidity, and wind.

According to Laurie (1986) in Rahmiati [15], the standard of humidity for human comfort in activities ranges from 40% - 70% with temperatures between 15°C-27°C and Diena (2009) in Hadi [16], stating that comfort indexes are in ideal comfortable conditions for Indonesian people in the range of THI (Temperature Human Index) with a value of 20-26.
4. Security, intended for pedestrians both from the element of crime and other factors such as accidents.
5. Cleanliness is a condition free from dirt, including dust, garbage, and odor.
6. Beauty [11]

The aspects of security, comfort, and facilities supporting the existence of pedestrians are very poor and hardly owned by the street. The existence of a safety fence in the form of bamboo or a plastic rope is very dangerous for pedestrian users, especially children who are very active. Similarly, material that is easily weathered is feared that street users can fall into the water. Bamboo material is very slippery, especially in the rainy season, and street lighting is only obtained from residents’ houses in the form of fluorescent or incandescent lamps so that at night it feels rather dark and is only helped by the moonlight. So that the security aspect of the road which according to Shirvani [13] and Uttermman [14] is one of the important things in street planning is not found. Likewise the element of comfort using the street as said by such as the beauty of the road, the availability of supporting facilities, and other pleasures such as no view. So that the things that became the issue of the Project for Public Space (PPS) as a great conference were very unlikely.

5.2. The road from the human dimension aspect

Based on Minister of Public Works Regulation No: 03 / PRT / M / 2014 [17], the Pedestrian lane is a space that pedestrians need to stand and walk which is calculated based on the dimensions of the human body when carrying goods or walking along with other pedestrians both in silent and moving conditions. The following Figure 9 shows the size of the human body when walking and sitting, and when stretching the arms.
5.2.1. Principles of Pedestrian Pathway
Technical planning effective width of pedestrian/person lane = 60 cm width Additional space = 15 cm (moving without carrying goods). Calculation of the width of the sidewalks minimum total lane needs for two coupled pedestrians or two pedestrians crossing without there is a connection of at least 150 cm. So if it is associated with the real conditions in the field, the size of the widest street is only from 40 cm - 120 cm, then the width of the street in the environment both the main road and the collector is very inadequate to walk side by side in it. If pedestrians are established on land, the width of the provisions according to IRC 103-2012 [18] is shown in Figure 10.

Based on the size and material of the pathway (Figure 4), it can endanger the user, especially during the rainy season and at night, slippery and narrow road conditions, very low lighting, weathered material, and no other safety facilities. From the aspect of comfort of walking or driving, with the width of the road that can only be passed by 1 vehicle from one direction (Figure 5), so also pedestrians (adults) who have to tilt the body when side by side with other pedestrians inconvenience, and also hamper the smooth movement of objects above, and the condition is also not according to what Sirvani and Utterman said [13][14].

6. Conclusion
Streets in the Marbor and Karabba residential neighborhood are emergency streets that are equally far from good pedestrian requirements. From the security aspect, which concerns the size and material of the pedestrian, and comfort aspect, which concerns the shade, beauty of the street, the availability of supporting components is very unlikely. But the street is very rich with various functions on it, which includes the main activities as a means of circulation and access, economic, domestic, and social activities. This is due to limited land for other activities outside the road, the street is only the one public open space that exists in settlements, besides that the nature and culture of the people who adhere to the principle of mutual cooperation and human nature as social beings who always insist on encouraging other uses of the pedestrian.
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