

# ROLES OF PEDESTRIAN WAYS IN SPATIAL NETWORK TO CREATE CITY IMAGE The Case of Tunjungan Surabaya

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## ROLES OF PEDESTRIAN WAYS IN SPATIAL NETWORK TO CREATE CITY IMAGE The Case of Tunjungan Surabaya

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**Abstract.** Pedestrian way is one important element in urban planning. It builds spatial network which interconnect spaces in the city. The pedestrian path has important roles which support green open space network. Network of pedestrian ways are in some cases abandoned and disregard its importance as compared to other open space determined as public space or plaza. In many cities of developing countries, pedestrian way is also malfunctioned as parking space, selling area, not even people-friendly at all. From several case studies of people friendly pedestrian in cities, this study would like to identify roles of pedestrian way in building character of city image. To sustain, the character of people friendly-pedestrian has to be included when planning pedestrian as connecting space network in the city. The results are important to give recommendations of how to implement people friendly pedestrian which serves its function, but is also convenient and builds character of the city image.

**Keywords:** Pedestrian, network, open space, people-friendly, city image

### 1. INTRODUCTION

Sustainable urban space is essential in order to achieve great quality of life. In good spatial planning, it is important to have interconnecting space and create space network in the city. Pedestrian way is one important element in creating spatial network. It has roles in supporting green transport system and green open space network. However, existences of pedestrian ways are in some cases abandoned and disregarded its importance. Vehicles as mode of transportation are still preferred as compared to walking in pedestrian ways. This is exacerbated by malfunction of pedestrian ways as parking space, selling and buying area. Even worse, the pedestrians are often left to secondary options when it comes to maintenance priority as compared to street as vehicles way. The pedestrian are losing its roles and importance, since people were hesitated to walk for kilometers.

Surabaya, as one of big cities in Indonesia, is also in the process of fixing its pedestrians, especially on main roads of the city. The Municipality of Surabaya has developed pedestrian renovation projects since 2005. The pedestrian concept has been thought and included into Surabaya City Spatial Planning 2010-2030. One of the renovated pedestrian is located in Tunjungan Street Surabaya. Through times, the stores along the Street are closed, the pedestrian are less active than before, the street character is missing. Therefore, there is a need to preserve the character of pedestrian ways, thus it can be convenient for people or passers-by and builds the character of the city image.

This research would like to study roles of pedestrian in building character of city image. Pedestrian plays important roles in achieving sustainability of cities. To sustain, the character of people friendly pedestrian has to be included when planning pedestrian as connecting space network in the city. The results are important to give recommendations of how to implement people friendly pedestrian which serves its function.

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## 2. METODOLOGY

This study is a qualitative research, using direct observation method to collect primary data. Observation was done during daytime and nighttime, also during car free day (Sunday morning). Besides direct observation, literature study from previous researches and books are used to collect secondary data. All data collected were analyzed using SWOT Analysis to find strengths, weaknesses, opportunities, and threats which can be used to fix and improve roles of the pedestrians. The analysis will be done for each role of pedestrians: physical mental health, social, economic, environmental, and perceptual roles.

## 3. PEDESTRIAN WAYS AND ITS IMPORTANCE

### 1.1 ROLES OF PEDESTRIAN WAYS IN SPATIAL PLANNING

Asl, et al [1] acknowledged pedestrian as the main context of urban life, since it provides large presence of people. Pedestrian is a part of urban space as ways for passers-by [13]. To sustain urban space, many researchers have mentioned the importance of pedestrian streets as part of transportation and public space network. Moayed (2014) defined the roles of pedestrian street in urban sustainable development as: (1) physical mental health role, (2) social role, (3) economical role, (4) ecological perception role, and (5) perceptual role. For physical health role, pedestrians activate people, thus improve the quality of life [7]. The social role shows how pedestrian streets function as beds of social interaction. Pedestrian can create dynamic life in city, increase the social communication. It also facilitates financial activities, entertainment, buying activities, which prove the economic role of pedestrian. In terms of ecological role or environmental role, pedestrian is used as transportation system which reduces or has lower energy consumption. Walking is main feature for sustainable cities, and people friendly pedestrians are needed to further motivate people to use green transportation system. In perceptual roles, pedestrian builds character and image of the city. It shows how lively a city is, especially when there are many people walk on the street, thus made the city seems very active and reduce energy consumption.

### 1.2 CREATING CITY IMAGE

Kevin Lynch has proposed five spatial elements to build the image of the city: paths, edges, districts, nodes, and landmarks. Here street and pedestrians play important roles to build paths in the city and create city image. People always have association with an urban space, through collective memories. This creates sense of belonging to a city. The pedestrian streets in city will shape people perception of the city since street activities and pedestrians' attendance are connected and influence each other. This is why improvement of streets is necessary by enhancing pedestrian to create city's image and people's perception. [4]

Through the years, pedestrian streets have been recognized as a fundamental part of city center development. [5] In present era, there is a trend in making pedestrian movement as free space from vehicle, with increase of pedestrian portion. Countries in Europe, like Denmark, Germany have limited traffic in all pedestrians' area in order to create safe, proper space and attract people to city center. These countries began to separate vehicle and pedestrians, putting pedestrians in an enclosed zone, especially in the city center. [2] People can walk freely without being afraid of cross circulation with vehicles and this has been seen as an effective way to regenerate urban life. The streets will make the city is known, thus increasing passersby in pedestrian will enhance the city's appearance. [1]

### 3.3 PEOPLE FRIENDLY PEDESTRIAN WAYS

There are factors in designing pedestrian ways according to [7]: <sup>1</sup> proper site selection and charisma to attract people to constant use of the space [7]. Qalami, et al. [9] defined 3 factors necessary in pedestrians: safety, flexibility, and liveliness. Safety is important to make sure that people want to use pedestrian ways as means of transport. Flexibility here refers to inclusive design of pedestrians. Liveliness is closely related to diverse activities and multipurpose space to accommodate the needs of people after long walk. [9] According to [11], pedestrian will not stand more than 1000 feet without resting. [12] Thus it is necessary to put facilities for pedestrians' convenience and comfort. Other studies mentioned comfort, continuousness and greenery. [6,8]

According to [3], there are seven ways to create people friendly pedestrians: (1) Create compact structure pedestrian circulation, with sidewalks café to encourage people to walk; (2) Put building orientation to streets to encourage people to walk in to buildings; (3) Organize diverse balance activities to support public needs, (4) Place parking behind buildings, and put pedestrian first before vehicles, (5) Address the human scale to buildings and landscape details on pedestrians; (6) Provide clear signage and continuous pedestrian network; (7) Build complete streets who accommodate all functions on the street. [3]

#### 3.3.1 Copenhagen, Denmark

The transformation of Copenhagen provides example of how a change from a car-orientated to a people orientated place has brought positive implications to the image of the city and quality of the public space (see Figure 1). Change of pedestrian zone in Copenhagen has begun since 40 years ago, and has been analyzed by researchers of what made such radical changes to people's behavior. The pedestrian ways contributed to increasing activities on the street, as well as diversification of activities. [11] Gemzøe pointed out: "A good pedestrian network offers a pleasant experience through the centre", thus pedestrian ways cannot be disconnected from the consistency of the network. This will make people walk for kilometers. Pedestrian Crossing Bridge can be one feature to increase continuousness in pedestrians. [8] Besides the network and the continuity of linkages, element of safety and convenience also induces the expansion of pedestrians. People have feelings of safety to walk around, and the urban designers had prepared area for sitting and resting to make their stay longer in the city center.



Source: Tan, E. (2006)

**Figure 1. Copenhagen before and after pedestrianisation**

#### 3.3.2 Dortmund City Center, Germany

The same example can be seen in cities in Germany. One of the examples is Dortmund City, which also has inner city zone (see Figure 2). The inner city zone is privately designed for pedestrian. People can walk inside the inner city zone without being afraid of vehicles. The stores along the street open day and night. Different kind of economic and entertainment activities are available on the pedestrian areas, such as: street music, food kiosk, flowers selling, fruit selling. The pedestrians are safe, convenience, and well maintained.



Source: Tan, E. (2006)

**Figure 2. Dortmund downtown pedestrian enclosed zone**

### 3.3.3 Orchard Road, Singapore

Different example of people friendly pedestrian is the case of Orchard Road, Singapore (see Figure 3). Orchard road does not close the street exclusively for pedestrian, but vehicles are still active on the big road. The pedestrian pathways are differentiated with different materials, separated by shrubs or bushes. The pedestrian are wide enough, thus open chances for different kind of activities to happen. Street performance, ice cream sellers are often found along the pedestrian way. To cross the road, people can choose whether to cross the road on the way or using underpass.



Source: Tan, E. (2006)

**Figure 3. Orchard Road Singapore**

### 3.3.4 Braga Street Bandung, Indonesia

Braga Street is one example of historical street located Bandung City. The street is surrounded by heritage architecture with art deco style. Besides offices, there are restaurants and cafes. Some paintings for sale can be found on the pedestrians. To strengthen the historical image of the street, the street features and furniture were added to build the character (see Figure 4). Vintage style is chosen for street lamps and street benches to make the street looks old and antique.

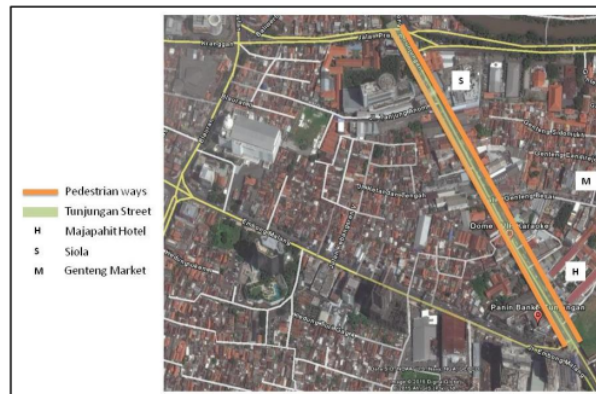


Source: [www.dexfikri.com](http://www.dexfikri.com) (2015) – right picture

**Figure 4. Braga Street Bandung before and after addition of street features**

#### 4. CASE STUDY: TUNJUNGAN PEDESTRIANS

The case study selected is pedestrian ways in Tunjungan Street, Surabaya, Indonesia. Tunjungan Street is located in the heart of Surabaya City. It is considered as a historical street and an urban heritage area. The majorities of buildings in Tunjungan Street have historical importance and protected as Surabaya Urban Heritage. The historical Tunjungan Street was important during the war era to gain the country's independence. The Street was famous as shopping street during 1980s to 1990s. It is also a historical street where many old buildings located, including the famous Majapahit Hotel (previously named: Oranje Hotel or Yamato Hotel). People loved to walk since all stores are available along the street, from book store (Sari Agung), clothes store (Metro), stationeries (Sarinah, Sari Agung), to electronic shops (Aurora, etc). After shopping malls expansion in the city, the Street is not as lively as it was before. The local government tries to build the city image back. Some programs are prepared to bring back live to Tunjungan Street like the local song *Mlaku-mlaku nang Tunjungan* (walking in Tunjungan) during old days. One way is renovating pedestrian ways along the Street. Still, the place is not similar as before. The Municipality also prepares Tunjungan Walk to provide entertainment facilities on the Street.



Source: Modified from Google Image (2015)

Figure 5. Tunjungan Street location



Source: Soenarjo, H. and Aminuddin, K. (2006)

Figure 6. Tunjungan Street in the year of 1935 (left) and 1949 (right)

##### 4.1 PHYSICAL CHARACTERISTICS

Pedestrians along Tunjungan Street are varied from 1.5 meters to 4 meters wide. The average of pedestrians is 3 meters wide. Existing trees are preserved. The pedestrians finishing material is natural stone. Street furnitures available are: lighting and garbage can. There were no opportunities for people to sit and rest after some walk.



**Figure 7. Physical characteristic of the pedestrians**

#### 4.2 PEDESTRIANS FUNCTIONS

During daytime, the pedestrians are used for walkers passing by. Stores along the street sometimes use the pedestrians as motor parking place. Some stores put their selling stuffs in front of them, thus take away some areas of the pedestrians.



**Figure 8. Pedestrian activities: walking, trading, parking**

#### 4.3 PEDESTRIANS FEATURES

The pedestrian features in this study are defined in the three following terms: safety, flexibility, and liveliness. In terms of safety, pedestrians along Tunjungan Street are safe for people to walk. However, since there are vehicles encroaching the pedestrian ways, this could be dangerous. In terms of liveliness, the pedestrians in Tunjungan Street are supposed to welcome all users from: children, youths, adults, older people, and disables. For disables, in some area there are ramps. Some parts of the pedestrian ways are damage (see Figure 9). This can be unsafe, especially for older people. In terms of liveliness, some of the buildings are deteriorated, thus make the surrounding of pedestrians not friendly for people to walk. The pedestrians are only active during daytime, where offices and stores are open. Since some parts of the area are not actively used, it was smelly and dirty.



**Figure 9. Pedestrian ways are damage and vehicles parking on the pedestrian**

During nighttime, the pedestrians are not active (see Figure 10). Most people pass by on the street use vehicles (cars and motorcycles) as mode of transportation. The situation is different on Sunday morning. Every Sunday morning from 6 am to 8 am approximately, the Tunjungan Street is closed for vehicles, for Car Free Day venue. People can walk freely on the street.



Figure 10. Tunjungan Street at night

## 5. ANALYSIS AND DISCUSSIONS

Tunjungan Street is evaluated based on criteria of: physical mental health, social, economic, environmental, and perceptual role.

Table 1. SWOT Analysis for Roles of pedestrian

	Strengths	Weakness	Opportunities	Threats
Physical	<ul style="list-style-type: none"> <li>Historical area in city center</li> <li>Facilitate people to walk (green transport)</li> </ul>	<ul style="list-style-type: none"> <li>Deteriorated buildings surrounding</li> <li>Inconvenience to walk since the pave ways are mostly have different elevation</li> </ul>	<ul style="list-style-type: none"> <li>Walking in Tunjungan Street as one promotion method for historical tourism</li> </ul>	<ul style="list-style-type: none"> <li>Lack of attention for pedestrian maintenance</li> <li>New vehicles keep on entering the City</li> </ul>
Social	<ul style="list-style-type: none"> <li>Users from different groups: youth, adults, and old people</li> </ul>	<ul style="list-style-type: none"> <li>The street became less important for social needs</li> </ul>	<ul style="list-style-type: none"> <li>Bringing back street life for city center tourism spot</li> <li>Street walk with resting facilities for more social interaction</li> </ul>	<ul style="list-style-type: none"> <li>Growing numbers of shopping centers and malls for people to approach easily using vehicles</li> </ul>
Economic	<ul style="list-style-type: none"> <li>Center of economic during 1990s</li> <li>Location in the city center</li> </ul>	<ul style="list-style-type: none"> <li>Important stores which were the landmark of the street (Metro, Sari Agung, Sarinah, Ramayana) are closed</li> </ul>	<ul style="list-style-type: none"> <li>Increasing need for expanding city's tourism</li> <li>Create attractive sidewalk cafes for people to stop and rest while walking</li> <li>Opportunity to use for public facilities</li> </ul>	<ul style="list-style-type: none"> <li>Other shopping malls offers varies of economic activities and trading</li> </ul>
Environmental	<ul style="list-style-type: none"> <li>Trees along the Street provide greeneries</li> <li>Reducing energy consumption by walking</li> </ul>	<ul style="list-style-type: none"> <li>Trees in some places become obstruction to passersby</li> <li>People are hesitated to walk</li> </ul>	<ul style="list-style-type: none"> <li>Greeneries along the street to promote walking in pedestrians</li> </ul>	<ul style="list-style-type: none"> <li>Stores are closed, thus make the choices of activities limited</li> </ul>
Perceptual	<ul style="list-style-type: none"> <li>Historical area in city center</li> <li>The Street is the identity of the city – <i>Mlaku-mlaku nang Tunjungan</i> (Let's walk in Tunjungan)</li> </ul>	<ul style="list-style-type: none"> <li>Lack of functions: social, commercial, public transport to support the pedestrian use</li> </ul>	<ul style="list-style-type: none"> <li>Historical importance image can be a tourism potential</li> <li>Pedestrian with human scales facing building oriented to street makes it convenient to passersby</li> </ul>	<ul style="list-style-type: none"> <li>Shopping malls and parking place shape cities into vehicles oriented place</li> </ul>



Based on the analysis, the Tunjungan Street have important physical, social, economic, and perceptual role. For the pedestrian features, some improvement needs to be done. In terms of safety, the street needs to be more conducive for pedestrians to feel safe. The renovation for building facades are necessary, especially to remove street vandalism. In terms of flexibility, it is an urgent need to repair the damage parts of pedestrian ways, since these limits and endangers people to walk. To make the street back to live and bring back the city image, functions available need to be more diverse, not only banks, hotels, and offices, but also entertainment facilities like sidewalk cafes, food and drink vendors. To strengthen the historical image, the old heritage buildings have to be conserved, and street furniture should support this by design. To improve the pedestrian street network, it may be necessary to provide safe pedestrian crossing bridge, as transparent as possible to reduce crime.

## 6. CONCLUSIONS

Tunjungan Street needs to be preserved in order to make pedestrians function optimally. From the study, it can be concluded that Tunjungan Street has importance in physical, social, economic, and perceptual role. Considering the potential of pedestrian to build the city image, especially as historical area in the city, the Municipality should strengthen the historical image. This is not only supported by the surrounding colonial buildings, but also the story behind independence war. The safer, the more convenient, and the more diverse activities in pedestrians, it will be more reasonable for people to walk instead of using vehicles to explore the city.

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