

# The Study of Landscape Model in Semarang City

Edy Darmawan<sup>1,\*</sup>, Bambang Adji Murtomo<sup>2</sup>

<sup>1,2</sup> Architecture Department, Engineering Faculty, Diponegoro University, Semarang, Jawa Tengah, Indonesia

\*Corresponding author's email: edy\_darmawan [AT] yahoo.com

---

**ABSTRACT**---- *A landscape is the part of green open space that becomes one of urban supporting elements needed by society. The landscape in the form of city park supports the urban landscape. This urban landscape has a power to shape the city's character and to keep its sustainability, and this landscape is also needed by society as a public space. However, the number of green open spaces is increasingly depleted, and the number of existing green open spaces has not fulfilled the government's standard. Recently, the Municipal Government of Semarang is doing an effort to fulfill the need of green open spaces in the form of city parks. Nevertheless, these parks have not optimally functioned and have low quality, so they can not provide comforts and safety for people in the city. Based on this condition, the purpose of this research is to study landscape model of Semarang City. The method used in this research is descriptive qualitative method with case study approach able to describe a detailed landscape design, hence determining a better model of landscape development in Semarang City. The result of this research hopefully becomes an input into the development of sustainable landscape model in Semarang City.*

**Keywords** ; Study, Landscape Model, City Park, Semarang City.

---

## 1. INTRODUCTION

A landscape is one of elements composing urban space needed by society. As an open space, a landscape in urban area is understood as a space that contains natural elements and sceneries (created by diversity of vegetation), activities and artificial elements (functioning as social and recreational facilities and as the city's lung). A landscape in the form of a city park is also urgently needed by society as a public space. City parks support urban landscapes that have power to shape cities' character and keep their sustainability. According to Frick (2006), city parks functions as lungs of cities (improving their air quality), as living spaces of for local flora and fauna, and as rest areas for people. Without city parks, the mental condition of living creatures in the cities will be strained. Basically providing city parks is in accordance with the government policy related to environmental attention, and therefore the management of city parks is needed to fulfill the harmony between city's structure and its nature.

At present, city parks are not only seen as a physical part of a city, but they are also seen as a part of human life. Jessel (2006) stated that the image of city parks reflects the condition of the people inside the cities, so these parks are designed not only as an important attribute for orientation, but they also fulfill the need of human related to relaxation, identification, and stimulation. City parks give description about events in the life of a community that always changes and places that are always visited by many people who do various activities there. According to these facts, Darmawan (2015) stated that in arranging a city park, an interaction between must be created among elements in which humans act as the user so this city park keeps lively.

Semarang City, one of the big cities in Indonesia, experiences swift development. The development and the growth of the city have made the number of green open spaces reduced and have given bad impact to its environment. The data from The Office of Parks and Cleaning Management at Semarang in 2013 informed that the size of green open space in this city only reached 7.5% from total 373.67 Ha of the city's width. This number is indeed still far from the target determined by the law which requires that the size of green open space for public must be 20 % of total area of the city. In 2014, the Municipal Government of Semarang tried an effort to add and manage its city parks, but the existence of these parks was still unable to provide comfort and safety for its citizens. The quality of these parks is low due to the lack of proper planning and management. These problems need a study of landscape model of Semarang City that can be a reference in developing sustainable landscape in Semarang City.

## 2. RELATED STUDIES

Accordng to the Act of Republic Indonesia No. 26/2007 about The Space Management, green open space is defined as a lengthening area/path and/or grouping that its use is more open, as a place for plants to grow both naturally and intentionally while public green open space is a green open space that is owned and managed by the government and it is

generally used for public purposes. The existence of a green open space significantly improves the prosperity of citizens by creating a better urban environment particularly in its health. According to Hakim (2003), green open spaces have many functions such as:

1. Bio-ecological function (physical) that ensures the creation of green open spaces to be the part of the air circulation system (lungs of cities) and to be the micro climate controller, so the air and water circulation system can naturally work well as a shade, an oxygen producer, a rain absorber, a provider of habitat for animals, a pollutant absorber, and as a wind barrier.
2. Social, economic (productive), cultural functions that are able to describe local cultural expression and function as communication media for citizens, recreational facility, and as research and education facility
3. Urban ecosystem;
4. Aesthetical function.

Darmawan (2009) stated that an interesting green open space will always attract many visitors from various ethnicities, ages, education levels, socio-economic levels, and from different interest.

A landscape is a part of a green urban open space. Rob (1979) defined the landscape as an integrated system having connection between biotic and abiotic components inside including a human influence component. According to Naveh quoted by Restyanto (2011), the landscape connects to overall physical and ecological totality and it is also geographical integration of all humans' and nature's processes and patterns. In urban areas, the landscape is formed due to the change of natural landscape that is degraded and formed into the natural shape of a city caused by human activities. Through the time, the landscape continually changes because of human activities, and therefore it needs the proper management of landscape in order to maintain its components. Danier (2015) stated that the regulation of space and the management of landscape can give contribution for creating a unique character of a landscape. In designing landscape, principles of landscape design and elements of landscape should be considered. According to Hakim (2003), the principles of landscape design consist of balance, rhythm and repetition, stress and accentuation, simplicity, contrast, proportion, and unity while landscape elements that should be concerned are lines, fields, spaces, textures, and colors.

City parks support urban landscapes that have power to shape the character and keep the sustainability of cities. According to Carr (1992), the city park is the part of public space and the place for social life. The city park describes events of a community that always changes; it also functions as a space that can be visited by many people to do various activities. Without city parks, the human living inside will suffer mental strain because city parks are physically able to protect the surrounding environments. Susiloarifin (1994) stated that city parks that are well managed can be beautiful, comfortable, and safe for their users. In order to improve a park as a beautiful place, things like materials (*soft material* dan *hard material*), scales, circulation, parking facilities, lighting, tile patterns, comfort, drainages should be the focus in the application of city park design (Hakim, 2003).

### 3. RESEARCH METHODOLOGY











#### 3.1 Approach and Research Method

The research method is used for answering the formulation of research problem that has been determined. In this article, the research approach applied was qualitative approach that emphasized narrative construction or textual descriptive for the researched phenomenon. The method used in this research was descriptive method. According to Arikunto (2006), the qualitative descriptive method describes and explains collected findings in order to gather actual and detailed information, identify problems, and make comparison or evaluation. This method furthermore helps us to determine what other people do in dealing the same problem and how we learn from their experiences in order to make plan and decision for the future. In this article, descriptive qualitative method was used to describe physical condition of parks in Semarang City and explain the elements and principles of designing landscape in particular. The type of research method included surveys that can be used to collect data from certain places naturally. The data collected from observations, interviews, and study of literatures were then selected and grouped systematically based on the needs. After that, the result of data compilation was analyzed with qualitative descriptive analysis method consisting of steps of analysis using data that described the research object.

#### 3.2 Research Site and Sampling

This research was done in Semarang City having width 373.7 km<sup>2</sup> and having population 1.572.105 lives. The research was focused on the city parks of Semarang City. The parks chosen as the samples were selected according to their uniqueness, location, width, facilities, service areas, and the need of people surround them for public space. There were five parks used in this research as the samples which were described in the table 1 below. The physical condition and the facility completeness of the chosen parks were then observed through field observation to represent all characteristics of all parks that were in Semarang City.

**Tabel 1: Lokasi Penelitian**

No.	Nama	Lokasi
1.	Taman Pandanaran	Jalan Pandanaran, Kelurahan Mugasari, Kecamatan Semarang Selatan  
2.	Taman Menteri Supeno	Jalan Menteri Supeno, Kelurahan Mugasari, Kecamatan Semarang Selatan  
3.	Taman Srigunting	Jalan Letjend. Suprpto, Kelurahan Tanjung Mas, Kecamatan Semarang Utara  
4.	Taman Madukoro	Jalan Jenderal Sudirman, Kelurahan Cabean, Kecamatan Semarang Barat  
5.	Taman Diponegoro	Jalan Taman Diponegoro, Kelurahan Lemponsari, Kecamatan Gajah Mungkur  

Sumber: Dokumen Pribadi, 2017.

## 4. RESULTS AND DISCUSSION

### 4.1 Analysis of Physical Condition of the Park

The city of Semarang has several parks located at all kecamatan. The existence of the parks in Semarang City is one of the city government's efforts to provide comfort for its people in relation to fulfillment of public green open space. These parks are not only as a complement to the beauty of the city, but they also give positive contribution like providing

coolness, reducing temperature, making the city leafier, and functioning as both a rest area and a recreational area. These parks are:

**Table 2: Physical Condition of Parks in Semarang City**

No.	Location	Facilities	Activities
1.	Taman Pandanaran (Pandanaran Park) is located at Jalan Pandanaran, Kelurahan Mugasari, Kecamatan Semarang Selatan (South Semarang)	In the park with an area of $\pm 6.000$ m <sup>2</sup> , there is a Statue called Warak Ngendok (the Egging Rhino) that becomes a new icon for the city of Semarang and a symbol of ethnical, tribal, and religious diversity in the city. In addition, there are also fountains and green grass surrounding it. In the middle of the park, there is a plaza for citizens to do various activities. To provide comfort for visitors, benches, drinking water taps, public toilets, trash cans are provided. Around the park there are also stalls and minimarkets. However, facilities for children to play have not been provided.	The concept of Taman Pandanaran as an active park is used by people for a place to relax, a playground for children, a jogging track, a gymnastic area and as a place to conduct discussion. However, the lack of shading vegetation and the lack of maintenance and management have caused some damages on the facilities that makes so this park is rarely visited.
2.	Taman Menteri Supeno is located at Jalan Menteri Supeno, Kelurahan Mugasari, Kecamatan Semarang Selatan (South Semarang)	This $\pm 5.000$ m <sup>2</sup> park is located in the downtown and is surrounded by office buildings. This park has sitting place, park lamps, billboards, trash cans, pedestrian paths, bathrooms, vegetation, parking lots, playgrounds, areas for street vendors, and a skateboard ramp. In the middle there is a fountain with a statue that symbolizes the family planning program.	The number of trees and vegetation makes the atmosphere around the park cool,, so during the day people usually come to sit and relax or simply gather and go sightseeing. In the late afternoon until the evening there are some street vendors who sell various types of food. At night, this park is often used as a venue for various events in the city.
3.	Taman Srigunting is located at Jalan Letjend. Suprpto, Kelurahan Tanjung Mas, Kecamatan Semarang Utara (North Semarang)	Around the park there are trees and vegetation that can provide shade and enhance the beauty of the environment. This park, having length around 39 meters, looks clean and beautiful because it is provided by organic and non trash cans located at some points. There are benches, park lamps, parking lots located beside the parks, and there are also some food and beverages sellers.	The park's location which is adjacent to a church called "Gereja Blenduk" and is surrounded by historic buildings attracts various communities in Semarang to gather. This park is also used as a place to hang out and as a photographic object for tourists.
4.	Taman Madukoro is located at Jalan Jenderal Sudirman, Kelurahan Cabean, Kecamatan Semarang Barat (West Semarang)	In the park with an area of $\pm 1.555$ m <sup>2</sup> , there are several pigeon cages intentionally set up to maintain the balance of the city area. In addition, there are benches to relax. Banyan tree and palm trees and some other plants make this park look shady and beautiful. To keep the environment clean, trash can are also provided. Pedestrian paths and park lamps are built as attractive as possible to make visitors do activities in the park. However, this park has not been equipped with parking lots and areas for sellers.	The activities taking place in Taman Madukoro are relaxing and recreational activities and taking care of pigeons. However, without parking lots, the atmosphere in this park tends to be quiet because there are only few social interactions.
5.	Taman Diponegoro is located at Jalan Taman Diponegoro, Kelurahan Lemponsari, Kecamatan Gajah Mungkur.	This rectangular-shaped park with 50 x 15 meters size is equipped with park lamps to illuminate the park at night, benches for visitor to rest, trees for the shade, ornamental plants to add aesthetic visuals of the park. In addition, there are also pavements for the pedestrian path although they are still simply built.	This park was formed by embracing the concept of garder city used to make the environment cooler. The heavy traffic around the park and the absence of parking areas are the factors that make people rarely visit this park, and only some residents who occasionally come to sit and relax.

Source: Analysis Result, 2017.

#### 4.2 Analysis of Parks' Functions

The city's green open space has a bio-ecological (physical), social, economic (productive) and cultural functions which are capable of portraying local cultural expressions; as urban ecosystems; and aesthetic function. These functions are also found in the parks in Semarang with the following details:

**Table 3:** The Functions of the Parks in Semarang City




















No.	Name	The Functions			
		Ecological	Social	Aesthetical	Economical
1.	Taman Pandanaran	The function does not work properly, because it has not enough vegetation causing lack of air and water circulation. Recharge areas are also relatively small.	There is a lack of shading vegetation. This condition has made this park less attractive to visitors and eventually there is less social interaction.	The good design and arrangement and the presence of Warak Ngendok Statue have made this park fairly beautiful.	The condition where only few visitors coming to this park have caused the absence of economic activities in this park.
2.	Taman Menteri Supeno	The function works maximally because of large number of trees and plants that can absorb rainwater.	This function runs effectively, because this park is used by citizens to do social interaction, to be a playground for children, and to be a place for some communities in Semarang to do their activities.	Equipped with a fountain and attractive colors on objects in the park, the design of Taman Menteri Supeno has presented its own beauty.	The existence of kiosks facility at this park has brought economic value to traders.
3.	Taman Srigunting	The function has worked fairly well because of four large trees with recharge area even though it is not so wide.	The function has worked effectively because the park is often used by citizens to do social interaction and by tourists to relax and do photographic activities.	Good vegetation arrangement with a variety of species has brought beauty for this park.	The presence of antiques dealers around the park has brought economic value to these traders.
4.	Taman Madukoro	The function has worked fairly well due to the large amount of vegetation that creates good air and water circulation as well as a wide recharge area.	This function has not worked properly because there is no parking space, and therefore this park is quiet and rarely visited by people.	There has been diversity of well-preserved vegetation that displays the beauty of this park.	The lack of social interaction in this park has been the obstacle for its economic function.
5.	Taman Diponegoro	There have been much vegetation and a large recharge area, so the ecological function of this park has run well.	This function has not worked well due to the lack of parking space and the heavy traffic, making this quiet and only visited by few people.	The design of the park design still looks ordinary and less interesting. However, the abundance of vegetation that has been planted has increased the beauty of this park.	The economic function also has not run because of the lack of social interaction in this park.



Source: Analysis Result, 2017.

### 4.3 Analysis of Landscape Design Elements

Elements of landscape design are one of components in designing a landscape. For the parks in Semarang City, the elements of landscape design are described in table 4 below.

**Table 4: Elements of Landscape Design at Park in Semarang City**

No.	Nama	Taman Pandanaran	Taman Menteri Supeno	Taman Srigunting	Taman Madukoro	Taman Diponegoro
1.	Line	<p>The element of the line looks like a combination of straight lines and curved lines.</p> 	<p>The visible line element is dominated by curved lines.</p> 	<p>The line element applied are line curved lines and horizontal lines.</p> 	<p>The visible line element is dominated by curved lines.</p> 	<p>Combining between straight lines and curved lines with straight lines are more dominant.</p> 
2.	Field	<p>The visible field element is the rectangular field.</p> 	<p>Dominated by circular field.</p> 	<p>Applied in the form of square and circular fields.</p> 	<p>The most visible field is the circular field.</p> 	<p>The visible field element is the rectangular field.</p> 
3.	Space	<p>The space emphasized in this park is the transparent and circular space.</p> 	<p>The space which has been formed includes the transparent space having circular shape.</p> 	<p>The created space element is in the form of transparent space with circular and square shapes.</p> 	<p>Some transparent spaces are formed in this park, some look irregular and others have a circular shape.</p> 	<p>The created space is in the form of the rectangular transparent space and the circular area highlighted at the end of the park.</p> 
4.	Shape	<p>Seen at the statue of Warak Ngendok in the middle of the park that has been a new icon for Semarang City.</p> 	<p>Visible on public toilet and kiosks</p> 	<p>It is located at the kiosks of antique dealers.</p> 	<p>The shape element is visible on the wall of the park's name.</p> 	<p>It can be seen at the end of the park in semicircle form.</p> 
















5.	Texture	It is clearly visible on the composition of the attractively designed pavement. 	Texture impression is seen on the pavement for pedestrians that are given smooth and rough points. 	It can be seen from the arrangement of varied vegetation. 	It can be seen in the arrangement of diverse vegetation and the arrangement of rocks applied to the path of the park. 	It can be seen at the design of the objects of the park, especially at the pedestrian path. 
----	---------	--	---	--	--	--

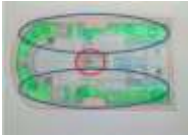

















Source: Analysis Result, 2017.

#### 4.4 The Analysis of Landscape Design Principles

The principles of landscape design are the basis for the realization of a design or shape engineering. The principles of landscape design interact with each other to produce the expected design. Therefore, in Semarang City the principles of landscape design in the parks' designs are also applied as described in table 5 below:

**Table 5: Principles of Landscape Design at Park in Semarang City**

No.	Design Principles	Taman Pandanaran	Taman Menteri Supeno	Taman Srigunting	Taman Madukoro	Taman Diponegoro
1.	Balance	The siteplan design of the park is made symmetrical between the two sides of the park site. 	The siteplan design of the park is triangular and made balanced in its all sides. 	The shape of the park site is rectangular, and the siteplan design is made symmetrical and balanced between all sides. 	The shape of the park site is oval, and the siteplan design is made balanced at both sides 	The shape of the park site is oval, and the siteplan design is made balanced at both sides in which they also have similar shape. 
2.	Rhythm and Repetition	The repetition of colors and shapes on the pedestrian paths gives the interesting impression. 	It can be seen from the repetition of in the path form and in the circle spaces. 	It can be seen from the repetition of in the path form and in the circle spaces. 	The repetition of colors and shapes on the path that gives the interesting impression. 	The repetition of colors and shapes on the pedestrian path that gives the interesting impression. 
3.	Emphasis and Accentuation	Warak Ngendok statue in the middle of the park has given good emphasis principle. 	It can be seen at the fountain pool in the middle of the park. 	In the center of siteplan design there is rectangular form while circular space repetition is made in the surrounds. 	There are two elements of emphasis and accentuation on the design They are at the center of siteplan design and at 	There are two elements of emphasis and accentuation at both ends of the park's siteplan. However this condition has 

					both ends of the park. However, such condition actually has lessened the principle of emphasis and accentuation on this park.	actually lessened the principle of emphasis and accentuation on this park.
4.	Simplicity	The parts of the park were not exaggeratedly built, but they have maximized the required function. 	The parts of the park were not exaggeratedly built, but they have maximized the required function. 	The parts of the park were not exaggeratedly built, but they have maximized the required function. 	The parts of the park were not exaggeratedly built, but they have maximized the required function. 	The parts of the park were not exaggeratedly built, but they have maximized the required function. 
5.	Contrast	It can be seen on the varied vegetation with different colors. 	A contrast impression is seen in the arrangement of the pavement that adds the visual aesthetic value. 	The most visible element giving the contrast impression is the variety of the vegetation. 	The element of contrast is seen at path and the vegetation. 	The principle of contrast is seen at the material element of the additional objects' color. 
6.	Proportion	The parts of the site are equally divided, so they form a good proportion of siteplan. 	The comparison between the size and the number of fields look balanced. 	The comparison between the size and the number of fields look balanced. 	The design of this park has a good proportion because it equally divides the site parts. 	The parts of the site are equally divided hence forming a good proportion of siteplan. 
7.	Unity	The Fulfillment of all landscape design principles has made this park has a good	The Fulfillment of all landscape design principles has made this park has a good	The Fulfillment of all landscape design principles has made this park has a good	The Fulfillment of all landscape design principles has made this park has a good	The lack of principle of emphasis in this park has also caused lack the



		unity design principle.	unity design principle.	unity design principle.	unity design principle.	principle of unity.
--	--	-------------------------	-------------------------	-------------------------	-------------------------	---------------------

#### 4.5 The Analysis of Landscape Model Study in Semarang City

The analysis of landscape model study in Semarang City was compared to the landscape models of the existing parks in Semarang City. The comparison was done by assessing the existing parks in Semarang City by using nominal data scale. The categories used in the assessment were 0 = not good / not complete / less functional; 1 = good / complete / functional; 2 = very good / very complete / very functional. The assessment of the five selected parks can be seen in table 6 below:

**Table 6: Landscape Model Evaluation at Park in Semarang City**

No.	Indicators	Variables	Taman Pandanaran	Taman Menteri Supeno	Taman Srigunting	Taman Madukoro	Taman Diponegoro
1.	Landscape Design Principles	Balance	2	2	2	2	2
		Rhythm	2	2	2	2	2
		Emphasis	2	2	2	0	0
		Simplicity	2	2	2	2	2
		Contrast	2	2	2	1	1
		Proportion	2	2	2	2	2
		Unity	1	1	1	1	1
2.	Park City Landscape Functions	Ecological	0	2	1	2	2
		Social	1	2	2	0	0
		Aesthetical	2	2	1	1	1
		Economical	0	2	1	0	0
3.	The Park's Quality	The Hard Element	2	2	1	1	1
		The Gentle Element	2	2	2	1	2
		The Facility Completeness	1	2	1	0	0
		The Park Design	2	2	1	1	1
Total Assessment			23	29	23	16	17

From the assessment above, it was known that Taman Menteri Supeno had the highest score (29 points) while Taman Madukoro got the lowest value (16 points). Taman Menteri Supeno achieved the highest value because it is very strategic and has a memorable marker. This park also works well and is supported with complete facilities for its users. Taman Madukoro, basically is a quite good park, but that it is located at high traffic area and that there is unavailability of parking facilities have made this park less desirable in the citizens' point of view. The third place having 23 points was Taman Pandanaran and Taman Srigunting. Why both parks are equal are that they have quality to be the icon for Semarang City. Taman Pandanaran with its "Warak Ngendok" statue represents ethnic, tribal, and religious diversity in Semarang City while Taman Srigunting, which is part of Kota Lama and located next to Gereja (Church) Blenduk, is frequently visited by tourists. In the fourth position there is Taman Diponegoro scoring 17 points. This park from the beginning is used for ecological functions, so its design is less interesting.

#### 5. CONCLUSION

The research location, consisting of Taman Pandanaran, Taman Menteri Supeno, Taman Srigunting, Taman Madukoro, and Taman Diponegoro, are active parks that can directly be used for various activities by various communities. Overall the physical conditions of the parks are good. Activities that take place in the parks are also quite varied, such as gathering, relaxing, strolling, recreation, sports, and children's playing activities, and even some of these parks are also used as a place for shows or events in Semarang City. When viewed from its function, most of the park development is intended for ecological functions, social functions, but not all of them can function properly. From the analysis result, it is known that only Taman Menteri Supeno that can function well while other parks have not functioned

optimally because of lack of complete facilities and lack of care. These five parks are suitable when associated with aesthetics because there has been a unity among the designs that create the parks, the parks' supporting elements, design elements, and design principles. The balance is seen from the form of the parks' sites in which they are made balanced between their sides, the composition of the color use and the texture with the parks as the focal point, the rhythm that can be seen from the repetition and the setting of varied vegetation with different heights. The combination of elements of design principles and the composition of plants at the five parks is able to give a beautiful, shady, and interesting impression.

## 6. REFERENCES

- Arikunto. (2006). *Procedure Research: A Practical Approach*. Jakarta: PT Rineka.
- Carr, Stephen et al. (1992). *Public Space*. Australia: Press Syndicate of University of Cambridge.
- Danier, L. (2015). *The Little Sustainable Landscape Book*. Oxford: Global Canopy Programme.
- Darmawan, Edy. (2009). *Ruang Publik Dalam Arsitektur Kota*. Semarang: Badan Penerbit Universitas Diponegoro.
- Darmawan, Edy dan Andy Wijaya Nugraha. (2015). *Visual Estetika Taman Arsitektur Kota*. Semarang Badan Penerbit Universitas Diponegoro.
- Parking and Sanitation Office of Semarang City. [www.dkp.semarangkota.go.id](http://www.dkp.semarangkota.go.id).
- Frick, Heinz dan Tri Hesti Mulyani. (2006). *Arsitektur Ekologis*. Yogyakarta: Kanisius.
- Hakim, Rustam dan Hardi Utomo. (2003). *Komponen Perancangan Arsitektur Lanskap (Prinsip-Unsur dan Aplikasi Desain)*. Jakarta: Bumi Aksara Publisher
- Jessel, B. (2006). Elements, Characteristics, and Character Information Functions of Landscapes in Terms of Indicators. *Ecological Indicators* 6: 153-167.
- Restyanto, Yoga. (2011). *Arsitektur Landscape Kawasan Wisata Outbound Bukit Tangkiling*. *Jurnal Perspektif Arsitektur*. Volume 6 Nomor 2 Desember 2011.
- Rob, Krier. (1979). *Urban Space*. London: Academy Editions.
- Susiloarifin, Hadi dan Nurhayati. (1994). *Pemeliharaan Taman*. Jakarta: Penebar Swadaya.
- Law of the Republic of Indonesia Number 26 Year 2007 about Spatial Planning.