Redesign Gajah Mungkur park in Semarang City as public space and green open space with using the concept “hidden layer of Semarang”

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Abstract. City parks, as open spaces in metropolitan environments, are well suited to serve as a gathering place for city inhabitants to engage in a variety of valuable activities, purposes, and interests. The presence of open space is a crucial factor in a city's ability to preserve its ecological sustainability. Gajah Mungkur Park is one of the quite shady parks in the Candi area of Jl. S. Parman, Semarang City. Gajah Mungkur Park is unique and has the potential to become a tourist destination, particularly in support of Semarang’s "Green City". Actually, Gajah Mungkur Park belongs to the City Government, there are several obstacles faced, the park area has not been arranged, there are no adequate facilities, irregular street vendors, difficult road access, irregular parking areas, limited parks and lack of attention from the government. This service method is carried out with primary and secondary literature studies, observations, data collection, and interviews to strengthen, empower, direct the community or stakeholders to optimize the management of park potential and the environment at Taman Gajah Mungkur. In redesigning Gajah Mungkur Park, the concept of "Hidden Layer of Semarang" is used, namely some details of the arrangement concept ideas that will be applied (1) Vegetation Boundary, the concept of vegetation as a hidden layer which also functions as a buffer for air pollution and vehicle noise, (2) Refurbishing – Revitalize, restore the function of the City Park and take advantage of the existing functions of towers, wells and culinary stalls, (3) Multi-Activity, offering various activities for visitors such as leisurely walks, jogging, family and neighbor gathering areas, (4) Pedestrian Engage, providing more access for pedestrians by providing parking space for vehicles with a proportional ratio, (5) Centralized Plaza, proposes a sunken plaza design concept in the form of an amphitheatre as a center of activity. From the concept of "Hidden Layer of Semarang" where the new garden design is expected to contribute to green open spaces in Semarang. Physical implementation of this concept, this park will be hidden and surrounded by vegetation so that the facilities can be enjoyed by the community when they are in the park. As a result, in order for these activities to be used maximally and sustainably, it is required to build appropriate garden landscape design and strengthen community groups through them.

1. Introduction
The city of Semarang's rapid development as a result of significant economic activity necessitates forethought and intelligence in the design of structures and the environment in urban areas [1]. The layout of buildings and the surroundings in a given region or corridor must be done in line with the existing spatial plan and rules. The expansion of Semarang's city limits tends to result in the construction...
of a larger and more integrated urban region. This situation can be observed in the larger region, which depicts the physical characteristics of urban areas in suburban areas that have merged with the core city, where the urbanization process on the outskirts of large cities is faster than in the core city [2]. The arrangement of buildings and the environment is a set of actions that are required as part of attempts to govern space use, particularly in urban and rural regions, and to realize the built environment, particularly the physical form of buildings and the environment [3, 4]. As a result of the process of modernization and industrialization of major (core) cities, this phenomenon has resulted in a process of spatial and socio-economic change of medium-sized cities and surrounding small cities, resulting in the development of these cities appearing to be unified [5].

Because ideally, a city park should be able to emphasize the environment, society, and health through an ecological approach to the community's health, comfort, and welfare based on the natural surroundings [6], the presence of a park as a public open space can have an indirect impact on the character and culture of the community in an urban area [7].

City Parks as one of the green open spaces also have functions, landscaping, environmental preservation, and aesthetics. The functions of city parks are [11, 2]:

a. 1. Health-related function: a garden is comparable to a person's lungs in terms of environmental protection. During the day, the pad ataman plants engage in a symbiotic mutualism with humans. The absorption process in plants requires human respiration, and vice versa.

b. 2. Function for beauty: A well-designed and laid-out garden can offer the sense of being lovely, tranquil, pleasant, and calming. Humans require this as a form of compensation from the rigors of daily job, in order to reawaken new enthusiasm for the community's activities.

c. 3. Garden as an attraction: a garden that is attractively designed in the context of a building will be an attraction and a feature of the building.

d. 4. Gardens as directions: The placement of certain plants on the ataman in such a way that they act as a signpost and direct the movement of activities in an environment, such as a row of palm trees to the left and right of the building entrance, can act as a signpost and direct the movement of activities in an environment.

e. 5. Use a garden as a dust filter: Tall trees in a park can help to reduce pollutants in the environment.

f. 6. The garden as a sound absorber: the garden can also be used as a sound absorber, both in the outside environment and vice versa.

The unintegrated green open space management institution in Semarang is the problem with green open space management in the city of Semarang. Management is still done in pieces and in sectors, and it isn't yet efficient or effective in terms of producing quality and quantity of green open space. It also doesn't incorporate all stakeholders, including scientists. There are numerous facts based on field data showing the management of green open space in the Semarang City region does not function well [13, 14].

2. Method

The data collection method is based on field observations, with photo documentation, interviews with related agencies, community leaders and random responses from the surrounding community as well as data support using primary and secondary literature studies and related literature [15]. The data were analyzed descriptively and spatially, with design illustrations using AutoCAD, SketchUp, and Lumion software.

3. Result and Discussion

Many district/city governments in Semarang, as a city with a green idea, are actively creating plans and designs linked to the addition of existing city parks at this time. This is, of course, in addition to pursuing the city's broad demand for green open space (RTH), as well as providing services to the public for the
need for public space for socializing, recreation, sports, or meeting aesthetic and environmental identity needs. As a result, it is vital to design a city park that considers the community's ambitions.

3.1. Situation Analysis
Gajah Mungkur Park is one of the quite shady parks in the Temple area of Semarang City, which is on the edge of S Parman road. Around him there are quite a number of food stalls selling their dishes, from dumplings, fried rice and grilled chicken. To the north of the Gajah Mungkur Park there is the Gajah Mungkur District Office, to the south there is a Dutch tomb commonly called Ereveld Candi. Down a little to the southwest there is a road Tumpang which contains the Belle View Hotel and Oasis Resto. This park has two parts, namely the top and the bottom. At the top there is a large banyan tree that makes the garden atmosphere cool and in the play area for children.

![Figure 1. Priority Area to the Environment](image)

Gajah Mungkur Park is a green open space located on Jalan S Parman, Candi Sari District, Semarang City. Gajah Mungkur Park with its current condition is a city park as well as a culinary area around it. There is a discourse to restore this park according to its function as a city park and green open space. The design of the Gajah Mungkur Park that is offered seeks to answer the problems and issues that occur around the park, as well as to accommodate various functions and activities in the park in general.

3.2. Site Potentials
Economic & Resource Potential: Rainwater waste can be recycled again for the site irrigation system while leaf waste can be processed into compost

- Sosial Potential: The existence of space for street vendors, apart from bringing order, social relations can also be established between traders and buyers
- Repositioning: Rework the position of the trees in the site to create an area that can be exposed to sunlight. This is to optimize plant photosynthesis, activity and airflow
- Minimum Waste Management: Leaf waste is processed into compost, to fertilize trees and plants in the park. And in the garden area, ready-to-drink water is provided from treated rainwater.

The general concept offered is the Hidden Layer of Semarang, which means that even on a small scale, this new garden design is expected to contribute to green open spaces in Semarang, set a precedent,
open new discourses, and become a catalyst for the development of parks and green open spaces [1]. Which is more representative.

Physical implementation of the concept, this park will be hidden and surrounded by vegetation (hidden layer) so that the facilities will be enjoyed while in the park

3.3. Design Concept
   a. Vegetation Boundari: One of the hidden layer concepts is that it appears in a collection of vegetation of various sizes that surrounds the park, so that the true function of the garden can only be seen and enjoyed when visitors enter the park. The vegetation here can serve as a buffer for air pollution and vehicle noise. In addition to vegetation, grass mounds are also made to strengthen the impression of the space experience before and after entering the park.
   b. Refurbish Revitalize: Initial potential available at Gajah Mungkur Park is the existing view and culinary stalls. Before being revitalized, this park area was already known for its culinary tourism magnets because its potential was reactivated as a counterweight in the context of the area between buildings and green areas. The solution offered is to enlarge the green area and provide a culinary area and parking area.
   c. Multi Activity: The Gajah Mungkur Park is expected to accommodate various activities for visitors in general. One of the solutions offered is a jogging track circulation in the park's internal plus a central plaza as an activity center. General activities and activities that occur ataman such as leisure walks, family gathering areas and other community activities are accommodated as much as possible in this park scale.
   d. Pedestrian Engage: Parks in general are facilities and facilities that are specifically for pedestrians, therefore the proposed arrangement of this park is also focused on facilitating pedestrians. The decreasing access for pedestrians and the lack of open space (RTP Semarang City which is only 7.5%) it is hoped that this park can contribute to these problems, while still providing space for vehicle parking with proportional considerations.

3.4. Structuring Concept
   a. Plants, is a mandatory element in a garden. The Elephant Mungkur Park is no exception. The plants here are quite a lot and are well organized. There is a banyan tree that adds to the shade of the garden and three palm trees that soar.
   b. The road serves as a means of access for visitors to the park so that they do not harm or step on the well-kept soil and grass. Because there are so few visitors to this park these days, this road isn't in good working order.
   c. Drainage, at Gajah Mungkur Park there is already a drainage located on the outside of the site but it is not functioning properly, because it contains garbage.
   d. Trash cans, there are seven trash bins at Taman Gajah Mungkur, but they don't work properly because some are damaged and their placement is also not well organized.
   e. Parking Area. Currently, there is no special parking space at Taman Gajah Mungkur. Visitors usually park their vehicles in nearby places and on the outskirts of the park.
   f. Accessibility, the location of this park is in the middle of the highway, so it is quite difficult to access it, plus the traffic on S Parman street is very busy. There are 3 entrances to this Mungkur Elephant Park, namely at the east, south and north of the park. for the sidewalk at the edge of this park, the width is less than 1m so it is rarely used.
   g. Convenience, in this park there are many plants that can certainly add to the coolness in the garden, especially some banyan trees that serve as shade in this park. There is also a seating group, so visitors can rest while enjoying the garden.
   h. Gajah Mungkur Park does not yet have a Landmark if you add a Landmark design it will be more attractive to visitors who come to this Gajah Mungkur Park.

The Hidden Layer of Semarang Concept Development Program, namely:
a. Green Planning & Green Design, which is implemented in the creation of City Park designs. The proposed design is based on the notion of an 80 percent foraging city park with little maintenance expressed in the use of materials that are easy to maintain for, locate, are not readily destroyed, and use renewable energy.

b. Green Community, namely the active role of the community or community is needed to create a green city. The manifestation of the application of this concept is that the community and community use the park as a gathering place.

c. Green Open Space, which is a green open area that must meet standards and regulations.

d. Green Building, namely efforts to develop energy-efficient and environmentally friendly buildings. This effort will be carried out through the application of green building principles.

e. Green Energy, namely the application of the site in the form of utilizing renewable energy available on the site such as sunlight. Applications can be in the form of street lighting provided with solar panels.

f. Green Transportation, which refers to a transportation system that is located in an environmentally pleasant setting. This refers to the concept of achieving sustainable transportation while minimizing negative environmental impacts. Application that allows you to choose what kind of car you want to bring into the site. Motorized vehicles will only enter the entrance to the site. Meanwhile, to enter the site, environmentally friendly vehicles are provided in the form of bicycles that can access the entire site and also walk.

g. Green Water, specifically by enhancing water absorption, limiting water runoff, and making effective use of water, efficiency in the use of water resources for survival can be achieved. The application takes the form of obtaining biopores to expand water catchment areas and selecting water-absorbent vegetation.

h. Green Waste, which is the utilization of recycled waste into new objects and various cultural objects, provided trash cans based on the type of plastic, paper, cans, and bottles. Apply the 3R concept of reduce (reduce), use (add value to the waste from the recycling process), and recycle.

Multilayer Grid: The hexagon shape is repeated fractally so that the shape is repeated at different scales using a multi-layer grid system so that it looks like a landscape unit that is integrated with the site. A subsubsection. The paragraph text follows on from the subsubsection heading but should not be in italic (figure 2). Environment Integration: The neighborhood around the site is surrounded by trees, housing complexes, cemeteries and offices. This affects the design process in the placement of functions that have an influence in redesigning the park with the concept of Hidden Layer of Semarang (figure 3).

Space Zoning: Zoning is divided based on the levels of vehicle crowds and existing on the site. Space functions that have the potential to be placed in areas with the most levels and crowds so that these points can be used for low activities (figure 4). Space Hierarchy: There are 2 main hierarchies that have different functions and are placed at vital points on the site, the amphitheater is located off center from the center point of the site, while the sports area or jogging track is placed at a point that is rarely passed by people, it is hoped that the placement of the hierarchy at this point can restore the function of the park as a center of activity (figure 5). Daily Activity Room: These spaces are designed with a dominant function that will be used by visitors who come as a place for activities in the park (figure 6). Tentative Activity Room: The space is designed as a "multi-purpose" which at certain times can be a different function (figure 7).
Figure 8 illustrates the Circulation and Achievement to The Site: The main achievement of the park is on the main route, the goal is to give the impression of being inviting, but still providing accessibility on both sides of the secondary path so that it still has integration with the surrounding environment.

Water Absorption Region is given in figure 9. As a park, the water catchment area must remain the dominant area, where the utility systems applied to the site utilize rainwater and dirty water to be recycled into clean water that can be reused by street vendors and visitors.

Site Plan Gajah Mungkur Park is shown in Figure 10. The components are: (1) site entrance; (2) sitting grup; (3) amphiteather and open space; (4) sports area; (5) parking area; (6) public area; (7) lavatory; (8) ramp; (9) play groud; (10) shelter BRT. Completely, the design plan of Gajah Mungkur Park is given in Figure 11.
4. Conclusion
The purpose of Gajah Mungkur Park in Semarang must be aligned with the notion of the Hidden Layer of Semarang. This city park is part of the city's green open space that requires special attention, beginning with planning and moving on to institutional, management, coordination, funding, and human resources. The main elements in the planning aspect are the balance of ecosystems and the sustainability of open spaces in Semarang.

Figure 11. Design plan at Gajah Mungkur Park Semarang
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