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A Design Case: Identification, Analysis, and Redesign Simulation for Scientia Square Park's Environmental Graphic Design

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ABSTRACTS

This article provides a design case on a redesign project simulation for Scientia Square Park's environmental graphic design. Scientia Square Park is an outdoor family recreation place with various activities for children and adults. The site's existing environmental graphic design had several issues that implicate the possibility of a redesign to enhance the effectiveness of the design. For the project, the authors had to identify and analyze the existing structure to obtain insights and areas of improvement for the redesign. The redesign simulation includes identification, directional, orientation, and regulatory signages, which had been prototyped in a 3D mockup. Overall, the design simulation provides a reference on how comprehensive understanding is necessary for an environmental graphic design project.

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1. INTRODUCTION

Lorem Environmental graphic design is often associated with wayfinding and signages, as the purpose of environmental graphic design is to help people orient and navigate a space. Wayfinding is also an essential human skill (Jeffrey, 2017). With wayfinding, people may get lost and be able to go where they need to go. As wayfinding is an essential part of daily life; however, it is often overlooked and needs to be thought about carefully (Khan & Kolay, 2017); this makes designing signages and wayfinding seem in vain.

When designing wayfinding, there are several things that the designers need to be cautious of. The designers must understand factors such as the environment, the users, and the instructions (Giannopoulos et al., 2014). Many things can be developed for environmental graphic design, not just signage. Landmarks are also examples that an environmental graphic designer can design. Landmarks or placemaking can help users orient themselves (Soh &

Smith-Jackson, 2003). Therefore, it is also an essential part of wayfinding as well.

Various types of research have been done on wayfinding; however, further investigations are still necessary (Iftikhar et al., 2021). Understanding design is more than just research on the designs. A design case is as essential as different types of research in design scholarship. A design case describes an intentionally conducted design experience (Boling, 2010). A design case can be considered credible research as it has similar characteristics to action research (Boling, 2010).

Scientia Square Park is a green space in Gading Serpong, Tangerang, Indonesia. The 7.500 m² area offers various activities for children and adults, such as wall climbing, petting animals, fishing, etc. (Figure 1). Scientia Square Park branded itself as a family recreational space, with various spaces offering children an educational experience. This article elaborates on the identification, analysis, and redesign simulation process for Sareasa Square Park's environmental graphic design.



Fig. 1. Scientia Square Park

If we see each signage design is Scientia Square Park, the designs aren't necessarily bad. However, after further exploring and seeing the designs in unison, their designs have several

problems, such as visual inconsistency, visual unity, and material selections (Figure 2). As Scientia Square Park is mostly outdoors, material selection is important as the materials are needed to

withstand the weather. Weather condition is a unique challenge for outdoor wayfinding, as indoor

wayfinding does not have to deal with weather conditions directly (Kray et al., 2013).



Fig. 2. Example of Scientia Square Park's Environmental Graphic Design

Scientia Square Park is a unique site in Tangerang; it also has several aspects that can be improved. By identifying and analyzing these aspects, the author believes Scientia Square Park can be a unique design case for environmental graphic design.

2. LITERATURE REVIEW

Environmental graphic design can be understood as all the visual aspects for wayfinding, communicating information, and shaping experiences for people towards a place (What Is Environmental Graphic Design (EGD)?, n.d.). Environmental graphic design has three aspects: wayfinding, placemaking, and interpretation (Calori & Vanden-Eynden, 2015). Wayfinding is how a graphic can help people or users in the space to find a specific location and navigate themselves to that place. Placemaking is how the graphic of a place can help create or enhance the identity of the space. Placemaking is turning a space into a place. Interpretation is how a graphic on the site can communicate extended information about the place or things that are related to the place.

Speaking of wayfinding, signages are often part of it. We can describe signages with the pyramid method, a three-system concept connected and related to one another. The pyramid method can be used as a framework for designing signages. The systems are "information system," which focuses on what pieces of information are necessary for each signage; "graphic system," which focuses on the graphic design considerations for the overall signages; and "hardware system," which focuses on the materials, installation mechanism, and external settings of the signages (Calori & Vanden-Eynden, 2015). Every aspect or element of the design should be considered appropriate to communicate and represent the site's brand (Hananto et al., 2019).

Based on function, signages can be categorized into four types: identification, directional, orientation, and regulatory (Gibson, 2009). Identification signs are signs used to identify a particular place or spot on the site. Directional signs are signs that help people by showing directions. Orientation signs are signs that help

people by orienting themselves. Regulatory signs inform people about the rules in a particular place to regulate people in the place.

3. METHOD

For the design method, the author uses a simplified environmental graphic design method formulated for a

simulation design project in an academic context (Hananto, 2017). The design method integrates the environmental graphic design methodology (Calori & Vanden-Eynden, 2015) and the five graphic design processes (Landa, 2011). The design method has three phases: pre-design, design, and post-design (Figure 3).



Fig. 3. The Design Method

In pre-design, there are two steps that the designers must do: research and also reference. Research is done to collect data regarding the specific site. Designers can use direct observation of the site, where the designers observe the site empirically (Martin & Hanington, 2012). Designers can also conduct interviews with users on the site to understand more about the site and how people behave on the site. Some secondary research, such as document study and literature review, can also be done to gain insight into the site (Hananto & Soenarjo, 2017). Literature review studies published research that may help the designers to understand the project (Martin & Hanington, 2012), while document study is used to observe and collect information from various documents (scientific or unscientific) for further analysis (Bowen, 2009). The goal of the different research methods is for designers to have a clear and objective idea regarding the project. For redesign projects, the current design's problem can also be studied so as not to repeat the existing situation. Reference is a specific step in which the designers learn other design projects to understand design

solutions made in different contexts that may be referred to and implemented in the current design project (Hananto, 2017). The purpose of referencing isn't to blindly copy a design but to explore the possible solutions to be implemented and further developed.

The design phase is where designers start creating designs based on the data collected from research and reference. Calori and Vanden-Eynden further distinguish several milestones for the design phase (Calori & Vanden-Eynden, 2015). Schematic design is the first part of the design, where the designers explore and create comprehensive design idea alternatives. The second milestone is design development, where the designer develops the selected schematic design. The last milestone is documentation, in which the designer creates specific designs in accordance with the site's needs. For design simulation projects, the author does not create all the designs needed for the site. Instead, the author designs the required designs for several user journeys previously defined in the pre-design phase.

The last phase is the post-design, in which after all the design has been made, the designers then implement the design. This phase includes producing the designs and installing the signs on the site. For the simulation project, the authors did not have and implement the designs on the site, but the author created 3d and 2d mockups based on the final design.

4. RESULTS AND DISCUSSION



This result & discussion will be categorized into three parts: identification, analysis, and redesign. Identification is the elaboration of existing environmental graphic designs on Scientia Square Park. Identification is used to understand the overall site and

determine important aspects for analysis. The analysis discusses the positive and negative aspects of environmental graphic design that have been identified. Analysis helps the designers to understand the necessary things that are needed for the redesign. The Redesign explains the design process that the designers conduct.

4.1. Identification

This section will elaborate on several examples of identification directional, orientation, and regulatory signs. The elaboration can be seen in Table 1. This section will also identify some placemaking and interpretation found in Scientia Square Park, which can be seen in Table 2.

Table 1. Examples of Identification, Directional, Orientation, and Regulation Signs in Scientia Square Park.

Category	Image	Explanation
Identification		This identification sign signifies the “Paddy Field” area. This type of identification sign can be seen all over Scientia Square Park.
		This identification sign is inserted above a regulatory sign. This sign signifies the “Petopia” area. Some areas have a different identification sign, such as this one.








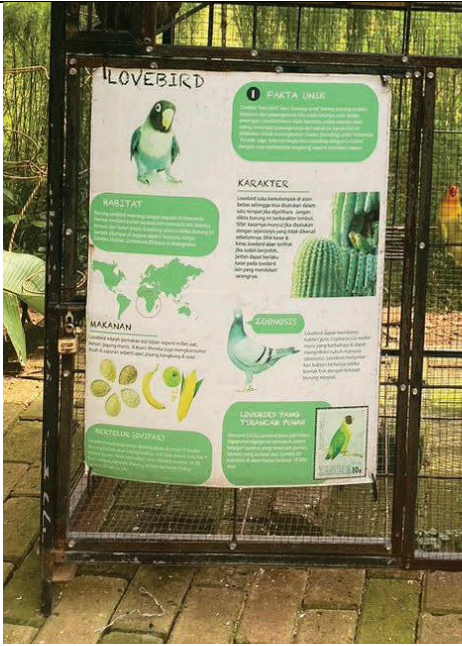
Category	Image	Explanation
Directional		The directional sign has three levels of hierarchy. The first level is text-only information, used for places in Scientia Square Park. The second level uses pictogram (except “EXIT”), which is used for public spaces such as restaurants, mosques, mom & child rooms, and sinks for washing hands. The third level is “JALUR EVAKUASI,” which means evacuation route.
Orientation		The directory map of Scientia Square Park. Directory maps are usually used as an orientation sign. However, no signifier on this directory map helps the users be oriented to the space.
Regulation		The regulation sign informs the users to close the door or gate in the area to prevent animals from getting outside.
		The regulation sign informs activities that can be done in a particular specific area in Scientia Square Park.

Table 2. Placemaking and Interpretation in Scientia Square Park.

Category	Image	Explanation
Placemaking		The simplest form of placemaking is through an identification sign. This identification sign is found throughout Scientia Square Park. However, this sign isn't practical as an identifier or placemaking due to its size and placement.
		This huge sign is located on the wall for the entrance of the "Teepee Barn" area. Though the sign is huge, it lacks extensive graphics or design to make it memorable as a placemaking.
Interpretation		The interpretive sign in the Teepee Barn is used to inform visitors of various information about the animals in the area.

Category	Image	Explanation
		The interpretive sign in The Aviary informs the visitors of information about the animals in the area. However, the design is different from the ones in Teepee Barn.

4.2. Analysis

After observing and identifying the existing environmental graphic design in Scientia Square Park, the authors analyzed it to conclude the identification findings. The analysis is conducted in three segments, the graphic system, the information system, and the hardware system.

Visually the signage uses a theme that nicely blends in with the whole environment of Scientia Square Park. The overall design uses various green and brown color palettes with a mix of black and white that goes well with the natural

setting of Scientia Square Park. However, despite the great thematic of the design, the implementation of the design could be more consistent. Some signs have various design systems that need to be more consistent. The inconsistency is also visible in the use of typeface and pictograms such as in Figure 4. Figure 4 shows different pictograms depicting men's and women's restrooms. All three images were taken in a different part of Scientia Square Park. While diverse imagery may be interesting, visual consistency is also important, especially for essential facilities such as the restroom.



Fig. 4. Different Pictograms for the Male and Female Restrooms in Scientia Square Park

The information provided on the signages in Scientia Square Park could be more comprehensive. Some signages need the necessary information, which can confuse the site's visitors. Some signages also need consistent use of language, with some using English and others using Bahasa Indonesia.

Since Scientia Square Park is an outdoor site, the signage materials should be able to sustain weather conditions.

Some signage needs to be fixed, or some parts of the signage fade. These conditions made the effectiveness of the signage low and needed to be frequently refreshed or updated. Some signages also had low visibility at night, as the lighting installation required considering the placement of the signages. Figure 5 shows how inefficient lighting makes the "TICKETS" sign unreadable as it only shows "KETS."



Fig. 5. Example of Ineffective Lighting for Signages in Scientia Square Park

Based on the analysis, it can be inferred that the signage at Scientia Square Park has been designed as part of the site as it matched the theme and ambiance of the site. However, the environmental graphic design must have been properly and thoroughly designed. The ineffectiveness of design and material selection and inconsistent designs throughout Scientia Square Park show that environmental graphic design needed to be designed as a cohesive system.

4.2.1. Redesign

Figure Scientia Square Park is an outdoor place that offers various activities for its visitors. The name "Scientia" itself means "knowledge" in Latin, while the word "Square" refers to an open area surrounded by buildings.

The name expresses the idea that Scientia Square Park is an open place in the middle of the busy city life in Gading Serpong, where people can enjoy the open air and earn new knowledge through various activities. Therefore, the idea that we select for the concept of environmental graphic design is dubbed "Beyond The Fold," where many things can be experienced beyond the pages of a book.

Scientia Square Park offers entertainment and knowledge that can be experienced through its natural setting and various activities. It needs a cohesive system that compliments the natural setting and enhances the concept of the place. The visual style selected for the design came from the notion that many geometrical shapes, especially polygons, were found in the setting of Scientia

Square Park. One of Scientia Square Park's physical activity attractions is the Wall Climbing. The Wall Climbing in

Scientia Square Park uses a polygonal shape as its main form (Figure 6).



Fig. 6. Polygonal Shapes in Scientia Square Park's Wall Climbing

Another main attraction that is also popular in Scientia Square Park is the Farm. The Farm has two identical buildings that were often used as the landmark of the area, and people often

take pictures of the building and upload them on social media. The two buildings had a modern-geometrical style, which can also be abstracted into polygon shapes (Figure 7).

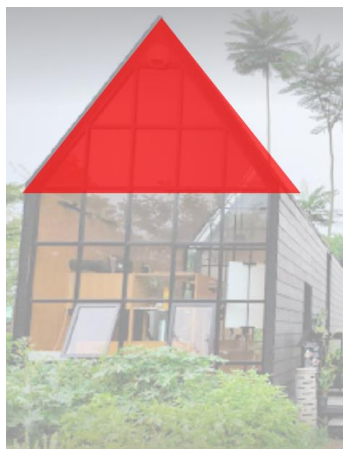


Fig. 7. The Geometrical Shapes of the Farm's Building

Another architectural form that is also popular in Scientia Square Park is the Teepee Barn's animal barn. Figure 8 shows the cow's animal barn, which had

a geometrical window frame that can be abstracted as a visual style for the design project.



Fig. 8. The Teepee Barn's Animal Barn and it's Geometrical Window Frame

The polygon shapes are then implemented for the pictogram designs (Figure 9). The pictograms are designed with an edgy polygonal look, with a

negative space for detail and accented-color sections for several parts of the design to indicate the zoning.

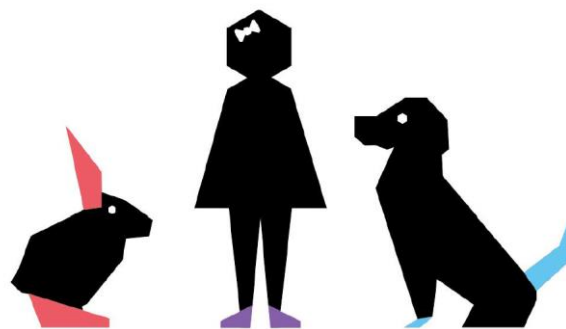


Fig. 9. Redesigned Pictograms

The pictograms are also used as part of the signage, such as identification signage (Figure 10). The pictogram is presented in one color to blend with the overall signage on that signage. The identification signage is made with two different primary materials. The frame and foundation of the signage use a steel plate, while the text area uses darkened

glass. The darkened glass is used so visitors can see "beyond" the signage while still having good visibility and contrast to ensure the text is readable. The steel plate and glass were selected as both had good durability. The design is also constructed with different parts, so it may be easily replaced compared to a single-form design.



Fig. 10. Redesigned Pictograms

The directional sign also uses a metal plate and glass for the signage (Figure 11). The metal plate is used as the main construction of the signage. The glass lighting on the top of the sign helps the

signage's visibility in the dark. The directional plates are colored to allow visitors to identify and orient themselves on what zone they are in right now.

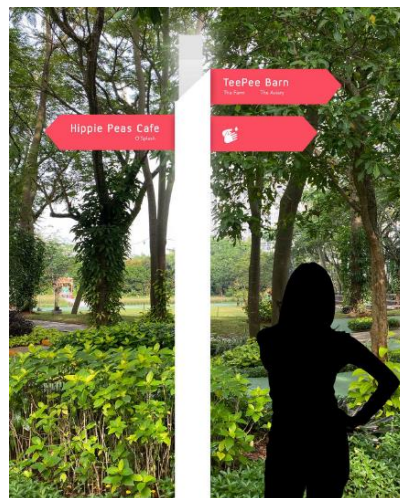


Fig. 11. Redesigned Directional Signage

The directory map is designed similarly to the identification signage. It uses a big white metal plate as the foundation and also darkened glass for the map (Figure 12). The whole site is divided into three different zones based on the facilities of Scientia Square Park. The red zone, "Physics Zone," is for

facilities with more physical activities, such as wall climbing and a skateboard park. The purple zone, "Biology Zone," has facilities that have many plantations, such as a paddy field and garden. The last zone, "Chemistry Zone," has many interactive facilities, such as the farm,

which is used for interactions with animals, etc.

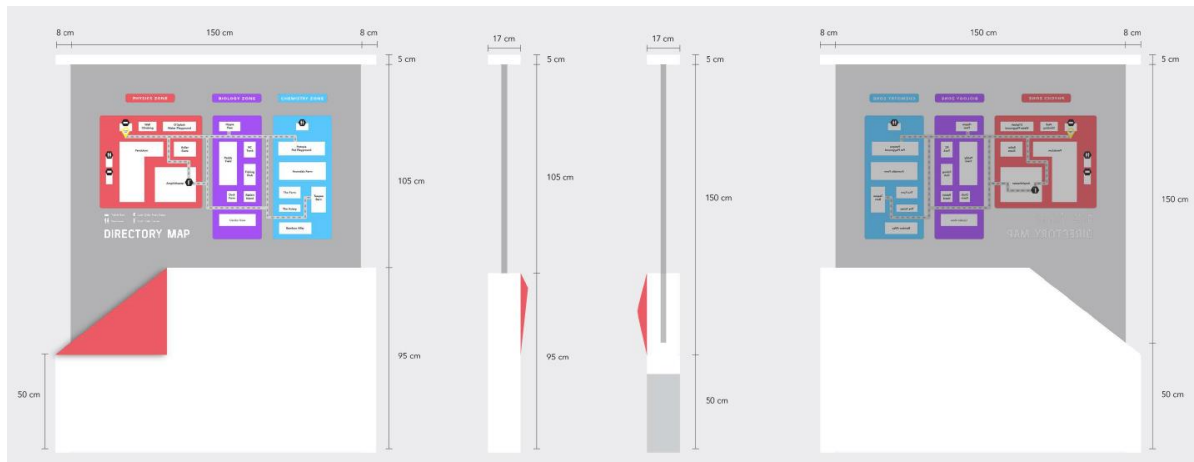


Fig. 12. Redesigned Orientation Signage

Other signages, such as regulatory signage (Figure 13) and Interpretative signs interpretation (Figure 14), are also designed with the same system as the previous signages. This is intended so

that the overall design has a consistent look and feel and people can easily be understood if there is necessary and accessible information within site.



Fig. 13. Redesigned Regulatory Signage



Fig. 14. Redesigned Interpretation

The placemaking for Scientia Square Park aims to help people quickly identify the place with larger graphics or designs than the identification sign. The solution is a giant 3d text denoting the name of the place (Figure 15). The typography was huge as it is also intended as a visitor

seating place. Therefore, visitors may also interact with the design while the design retains its functionality as a placemaking due to its large size.



Fig. 15. Redesigned Placemaking

Overall the designs for Scientia Square Park try to provide a clean and clear look for the site. By moving away from the natural look, the design attempts to contrast the design and its surroundings. Because of its transparent property, glass materials are intended to provide a modern look that supplements the surroundings. The glass material is

reinforced with steel plates, enhancing the contemporary look.

The result of the project was a comprehensive 3D-rendered mockup that showcases all the designs (Figure 16). Detailed calculations and also material considerations were also documented as part of the design result.



Fig. 16. 3D Mockup of the Designs

5. CONCLUSION

The redesign simulation for Scientia Square Park's environmental graphic design was done by considering several vital aspects. The overall site, visitors, and environment drive the design direction. The polygonal shapes on the site inspire the authors to use polygonal shapes as the primary visual idea. The activities of the visitors inspire the shapes and also design traits. The outdoor setting and environment drive the authors to use steel and glass as the primary material for the design.

Redesign projects are always challenging, as the most straightforward

goal is always to enhance the previous design. To do so, we must properly understand what needs to be added in the last design that can be fixed and implemented in the new design proposal. While this design case is just a simulation, the design proposal is viable and could be implemented if the site management is interested.

Environmental graphic design, just like any other design, would need more design cases so that other designers can comprehensively design projects. While researching design can give a critical, analytical, and objective view of a design; a design case provides an in-depth view of the design in question.

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