

The Language of Space as Approach to Storying Historical Memories (Case Study: Narrative Museum Kota Air in Surabaya)

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Abstract— *Historical memories are often immortalized in a memorial space like a museum become the identity of the historical value so that it is not forgotten. In memorial museum, a meaning that is communicated to visitors so that it gives a perception. However, there is a question as a starting point regarding whether the museum can narrate the meaning of memory for visitors or just display artifacts as objects. From these issues, in the design of the museum how the language of space can communicate with visitors through the experience of space and architectural elements as a medium becomes very important in conveying a meaning. Surabaya has a historical memory of the City of Water called Kota Air in the Kali Mas area which was forgotten due to the change of intermodal water to land, so that activities downstream of the river inactive. A force based framework is used as a design process through a narrative method that focuses on water material as a media for communication in conveying the meaning of the memory of the City of Water. This method is used to identify the primary force based on the historical storyline of Kota Air and to analyze how meaning can be communicated through the sensory experience of the visitor's space. So that the result of the design is a narrative museum based on the historical memory City of Water that uses water material as a medium of space language through spatial sensory experiences related to sequences and axes to narrate meaning and create visitor perceptions.*

Keywords— *Experience of Space, Historical Memories, Kali Mas River, Narrative Museum, Space of Language.*

I. INTRODUCTION

Surabaya has a historical memory of City of Water called Kota Air, where the coastal area around Kali Mas was a vital area related to trade and transportation activities. According to research conducted by Samidi, in the 19th century the intermoda moved to the land causing the river becoming slums, activities around the river are inactive and some heritage building become abandoned [1]. This causes the identity of the City of Water to be forgotten.

From the background issues, history-based memory requires a memorial space to preserve and remember so that the value of historical identity is not forgotten, namely by narrating the memory through spatial experience. One of the memorial spaces to convey a meaning is the narrative museum which is considered the most appropriate because it can present memories by narrating according to the storyline of the raised memory, so that visitors can directly communicate with the space and create perceptions of the space. Starting point as a belief related to the definition of a narrative museum

according to Kali Tzortzi is a public space in which it has a narrative script from a memory of events to convey a meaning through space experience [2]. According to research conducted by Tzortzi, narrative architecture can have an effect on space through experience not only in physical form but also psychologically [2]. From the theory and research, there is a problem gap related to museums in narrating a historical memory through spatial experience through space communication media, namely materials to form immaterials related to the meaning of the memory storyline, or is the museum only limited to displaying artifacts as objects.

The current phenomenon of museums, especially in Surabaya, does not have a memory narrative and tends to only display artifacts so that meaning is not conveyed properly. So from the gap of problems related to phenomena and theoretically it can be formulated related to how architecture can narrate the historical memory of the City of Water and revive activities around Kali Mas. The purpose of this architectural design research is the identity of the City of Water is not forgotten which is narrated through the experience of space with the communication media of material elements as the language of space. So that the Museum acts as a narrator who focuses on water materials related to the historical memory of the City of Water, because in the current era, historical phenomenology is widely used to convey a meaning as an element of the aesthetic novelty of a building.

II. DESIGN APPROACH AND THEORETICAL FRAMEWORK

Architecture as a language can give a meaning to humans as objects that are shaded. The theory of "The Language of Space" proposed by Bryan Lawson explains that, space as language is a form of communication between space and humans to convey a meaning through the media of architectural elements to form an identity [3]. In conveying a meaning, the language of space is used as an approach and becomes guidelines in the research process because it has the basis of communication media, namely the element of space that is conveyed through media experience of space to give perception [3]. The principle of the language of space is communication between spaces with visitors, behaviour related to space activities formed by the setting of space elements and spatial sensory experiences to give perception meanings. Meaning in space can be formed through basic communication media, namely material elements conveyed

through the sensory experience of space in forming a spatial identity. The sensory experience of space in perceiving the meaning conveyed is captured by the human senses, namely visually, skin, sound and smell [4]. The identity of a region or space can be formed through a memory. One of the memories can be sourced from history so that identity is not forgotten. According to Korydon Smith, spatial identity can be formed because of the presence of material elements as a communication medium that can provide immaterial related meaning from a memory through spatial experience to give effect to one's perception psychologically and the two things cannot be separated [5].

In this study, the perception in question is related to the meaning of the historical memory of the City of Water which focuses on aspects of the material element of water. Water material acts as a communication medium to convey the meaning of the storyline of the City of Water as an immaterial which is used as the primary force to generate the narrative museum design process. So that research priorities with the context of narrative museum design are related to psychological value, historical value and narrating a meaning.

Aspects that need to be considered for narrative museums are memory, sequence axis related to circulation, media related to material and immaterial and spatial related to spatial experience. So the idea of design as a design innovation is to use water as a space communication medium to present a perception of the historical meaning of the City of Water. Water material has characteristics that can provide a dramatization effect on space so that visitors when exploring space have sensory experiences and the meaning of the storyline narrative can be conveyed. With the memory context based on history and the location of the site where the event occurred, apart from focusing on water material, the sequence axis is also the main focus in narrating historical meanings so that the design can be integrated with the surrounding environment and become the identity of the surrounding area.

A. Literature Studies

The precedent study aims to compare and evaluate as innovation and creativity in the design of narrative museum designs. Table I describes the synthesis of narrative museum precedent studies related to storylines from historical memory with communication media elements of space to be translated into architectural syntax through spatial experience.

TABLE I. Comparison of Precedent Works for Design Innovation.

Aspect	Narrative Museum Based on Memory		
	Jewish Museum Berlin, Germany	Museum Tsunami, Aceh	Bowtie House Museum, Wisconsin
focus	Axis Siquence	Media water material	Force-based site
Memory	Holocaust	Tsunami	Geological Periods
Siquence	3 Main Axis	Axis-Center	3 Main Axis
Effect Mateials	Material as a symbol of holocaust	Water mateial	Material Based-site
Sensory	Visual, sound	Multisensory	Visual,skin

Figure 1 shows about the Jewish museum berlin in Germany by Daniel Libeskind which discusses the 3 main axis

sequences of the historical memory of the Holocaust [6]. The storyline of the 3 main axes that are narrated, namely continuity, exile and death, are applied to the Jewish Museum room as a symbol to present perceptions of the meaning of the memory of the holocaust.



Fig. 1. Axis of Jewish Museum Berlin [6].

Figure 2 shows the Aceh Tsunami museum by Ridwan Kamil regarding the memory of the Tsunami disaster which is narrated using water as the media material [7]. In this narrative museum, it uses multisensory experience in space where the material is water as the main element to narrate the memory of the Tsunami.



Fig. 2. Water Materials to interprate Tsunami [7].

Figure 3 shows about Bowtie House Museum in Wisconsin by LOOM Studio, which is studied is about a force-based site that narrates the memory of geological periods that occurred at the site [8]. The spatial sensory experience is presented with a narrative of the geological cycle and identified the forces used as axes, namely outwash formed, tree growth and fire strips land.

From the comparison of precedents as design innovations, it can be synthesized from the design of the Kota Air narrative museum that the memory can come from the history of the City of Water by considering the force based site where the event occurred. Integrate the 3 main axes of the site environment as a sequence. Focusing on water material as a medium of spatial language communication in conveying the meaning of memory through spatial sensory experience.

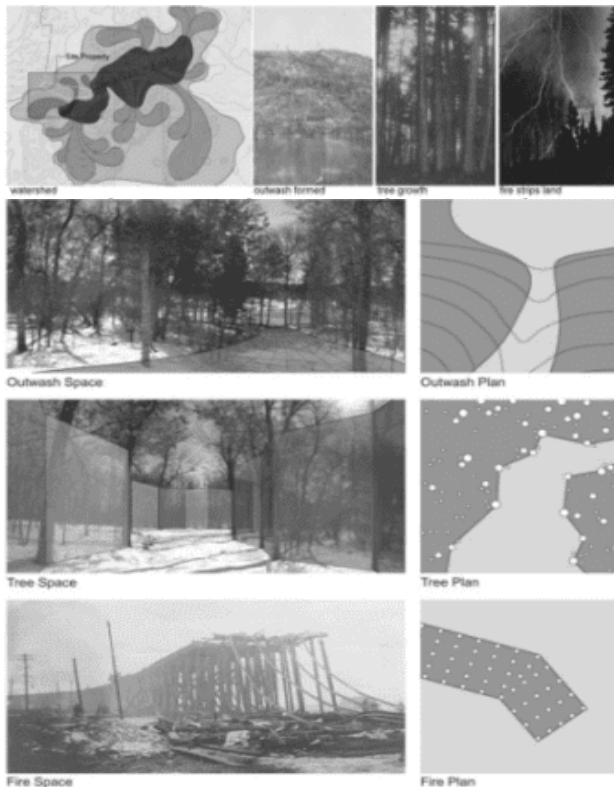


Fig. 3. Geographical cycle based site for axis of Bowtie House Museum [8].

III. DESIGN METHOD

Issues related to spatial identity as the meaning of historical memory which is narrated through spatial sensory experience to present psychological perceptions are responded to by the design of a narrative museum design that focuses on the material element of water as a medium of space language communication with an inductive thought process. In the research process related to the context of the design of narrative museum designs using the Force-based framework design process from Plowright which in stages there are exploratory and evaluative thinking [8]. The stages of the framework are 5 phases, namely Context Culture Needs, Identify force, Propose form, Refine and Assemble System and proposal. The diagram of the force-based framework design process in the context of designing the Kota Air museum is as follows:



Fig. 4. Diagram of the Force-Based Framework [8].

Figure 4 describes the phases of the design process used in designing the City of Water narrative museum. The method used at each design stage is in accordance with the background issue by prioritizing historical value, spatial experience and the meaning of the City of Water presented. In

the Context Culture-Needs phase, namely exploring issues and problems related to the identity of the historical memory of the City of Water which was forgotten due to the shifting of intermodal water to land and the need for a memorial museum space to narrate related historical memory determines the spatial language approach as well as the principles and aspects that are considered using literature searching [9]. The principle of the language of space is spatial communication, which is the meaning that is communicated with the media of material elements so that there is interaction between space and visitors through the experience of space. This phase also explores the need for observations related to community needs related to the memorial space to revive activities around the downstream of Kali Mas [10]. The next phase is identify force with evaluative thinking to determine the main force used to generate the syntax architecture at a later stage. Using the Literature searching method related to precedent analysis and brainstorming to identify the main forces based on site analysis. The main force used in the design context is the storyline of Kota Air based on site force where the incident occurred in the downstream area of Kali Mas JMP. As in figure 5, it explains the timeline for the storyline of the City of Water, namely transportation, trade and shifting the movement of waterways to land.

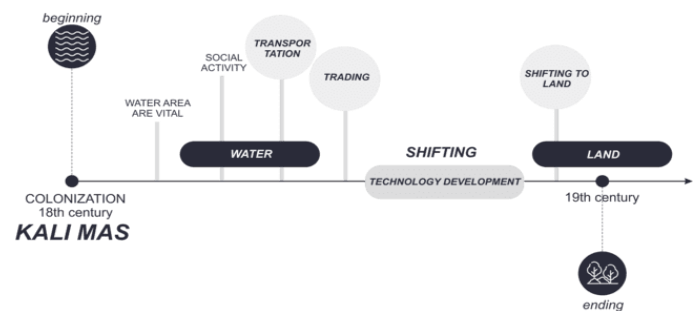


Fig. 5. Timeline of Historical Memory City of Water as Source Domain

In the next stage, the judgment criteria used as indicators in design exploration use matrices and value systems to focus criteria that will be used to design a history-based narrative museum [12]. The next step propose form, namely in exploring the idea of the form using the brainstorming method and the response to the site that is adjusted to the site analysis related to assets and constraints at the site location as well as space requirements according to the storyline the memory of the City of Water narrated in the museum room [13]. In exploring and narrating the meaning of the memory of the City of Water, we also use the analogy method of the material characteristics of water as a representation of the dramatization of meaning through the experience of space in accordance with the narrative sequence plot [12]. Translating the main force of the narrative storyline City of Water with memory based on site using domain transfer with timeline story into architectural syntax [8]. The source domain is taken from the storyline of Kota Air (please kindly see figure 5) which is transferred to the target domain in the form of building mass, orientation, circulation, faade, material and color. The prioritized aspect of the Kota Air narrative museum focuses on the water material and the sequence axis using

narrative [14]. After that, there is the Refine and Assembly system phase to evaluate and detail the suitability of the design criteria focused on the characteristics of the water to convey meaning through the experience of space. The last stage is the proposal as a comprehensive evaluation of the design process, namely the application of the design of the Kota Air museum as an interpretation of analysis and research related to theoretical principles and aspects related to spatial language that focuses on water material, sequence axis and the application of the meaning of historical memory to respond to issues related to the identity of the space to shape the perception of visitors through the experience of space.

IV. RESULT AND DISCUSSION

This paper discusses the analysis in exploring the narrative context of the City of Water memory storyline which focuses on the characteristics of the water material as a communication medium for the City of Water narrative. The exploration is then integrated with a site analysis based on the identified force, namely the storyline from the memory of the City of Water which will later be applied to the architectural syntax of the Narrative Museum of the City of Water.

A. Analysis the Meaning of the Storyline Based on Historical Memory City of Water on Site Integration

The storyline content narrated comes from the historical memory of the City of Water located in Kali Mas, which is

studied according to the meaning and atmosphere presented in the museum space. Based on the Timeline, the Storyline that has been determined as the axis is studied based on the characteristics of the water material and the meaning of the perception presented as well as the way of narrative communication in space. Focusing on the material aspect of water and the sequence of the site in presenting meaning to the narrative museum space, the way the elements of space communicate with visitors is analyzed based on the meaning of the memory of the City of Water so that the building can present a clear narrative flow and atmosphere. The following is the content matrix for the historical narrative of the City of Water:

Research related to force based-site identification of the occurrence of events so that the basis for site selection is based on site characteristics related to the historical memory of the City of Water at Kali Mas, which is located on Jl. Red Bridge which is a heritage area to support the concept of the museum as a narrator in conveying meaning and reviving activities around the dead Kali Mas. The storyline as the macro axis is taken from city artifacts, namely JMP, Kya-Kya, Memorial Park Museum which is integrated with Kali Mas, so that macro artifacts are integrated with the City of Water museum so that the macro and micro sequences in the building have a clear flow which will be studied further.

TABLE II. Water City Storyline Content Matrix and Effects of Water Material Characteristics on Space.

Content Historical Memory	Story line	Characteristic of Water Material	Meaning	Communication in Space
Water Transportation	-Streams of river water -Movement of water	- Line - Streams	- Reflector (Serenity) - Prestise & Spectacle (Continuity,Wander)	- Emphasis on elements, Spatial perception -Dynamic, Affect users, Orientation, Contact with water
Trading	- Shift distribution - -Float of water	- Pool - Edge	-Activator (Connection) -Entertainment (Floaty)	-Adding life -Attractive for users, Concentration, Contact with water flow
Water Shifting to Land	-Shiftin -Change	-Line -Point	-Window (Silent) -Texture (Freeze, Void) -Condolence (Darkness & Gone)	-Concentration, exhibition, attraction - Recognizibility, bring water element on space - Memorability, Expressiveness, recalling history

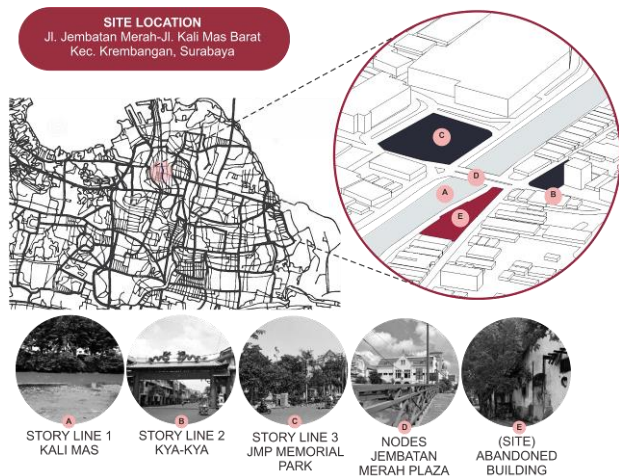
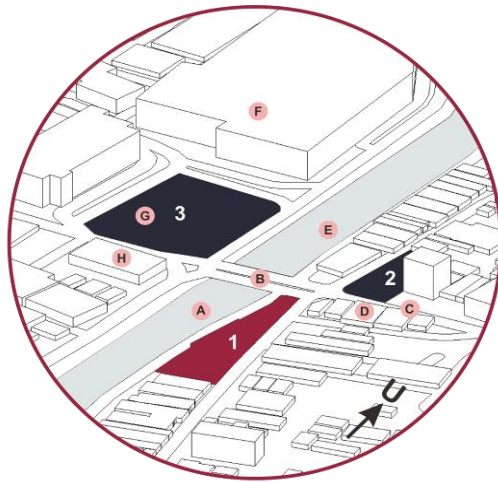


Fig. 6. Integration Site Location with Axis Macro.

Figure 6 shows the integration of the macro axis with the Water City narrative museum site. The macro axis acts as an

artifact so that the Water City museum is connected to the surrounding environmental destinations. Nodes as connected that connect the 3 main axes on a macro basis, namely the Red Bridge. The neighborhood analysis is very important because the sequence to the site and the 3-axis storyline is the main narrative. The assets and potential of the neighborhood are used to generate designs according to the previously studied storyline. This is also related to the analysis of the view in and out of the building period and the circulation of the site. As in Figure 7. shows the environmental conditions around the site as well as 3 axes as a narrated storyline. The narrative sequence has 3 main axes integrated with the museum so that the concept of the museum as a narrator to narrate the memory of the City of Water can be clearly seen by visitors who will enter the museum building. Analysis related to the neighborhood and the view of the site, it also serves to determine the circulation path at the site as well as for the orientation of the building to face the best view, namely facing

Kali Mas and towards the Red Bridge as well as the axis artifacts of Kya Kya and JMP Memorial Park (Figure 8).



(SITE 1) BANGUNAN TERBENGKALAI (MAKRO LINE 2) LAHAN KOSONG (MAKRO LINE 3) TAMAN MEMORIAL JMP
BARAT **UTARA**
 (STORYLINE 4) TAMAN MEMORIAL JMP HERITAGE BUILDING (STORYLINE 3) SUNGAI KALI MAS PUSAT GROSIR JMP
 (STORYLINE 1) SUNGAI KALI MAS JEMBATAN MERAH (STORYLINE 2) GERBANG KYA-KYA HERITAGE BUILDING
SELATAN **TIMUR**

Fig. 7. Storyline Sequence Narrative Macro and Neighborhood Analysis.

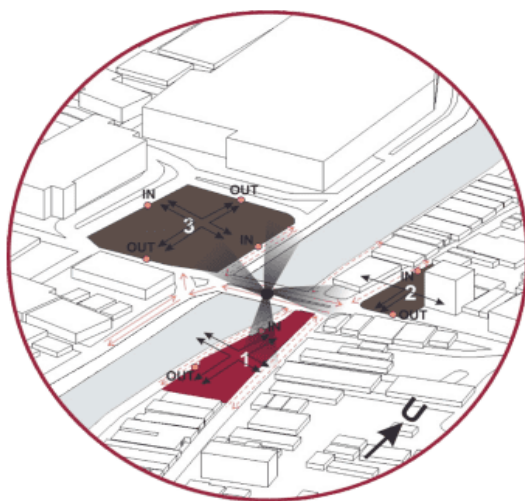


Fig. 8. View and Site Circulation for Building Orientation.

By considering the narrative storyline that has been determined to be 3 main axes and communicating the characteristics of the water material, it can be analyzed and synthesized related to the configuration and relationships between spaces both macro and micro in the narrative museum building of the City of Water. Figure 9. Shows configuration and macro site integration, namely the integration between the site as the main axis with other axes, namely Kya-Kya and JMP Memorial Park as well as micro integration related to the relationship between the mass of the museum building and the outside and its integration with the Kali Mas river.

After reviewing the configuration and spatial relations of both macro and micro axis in the museum, from the macro storyline axis, it is analyzed regarding the type of sequence as the most appropriate narrative flow to be applied to the site.

MIKRO

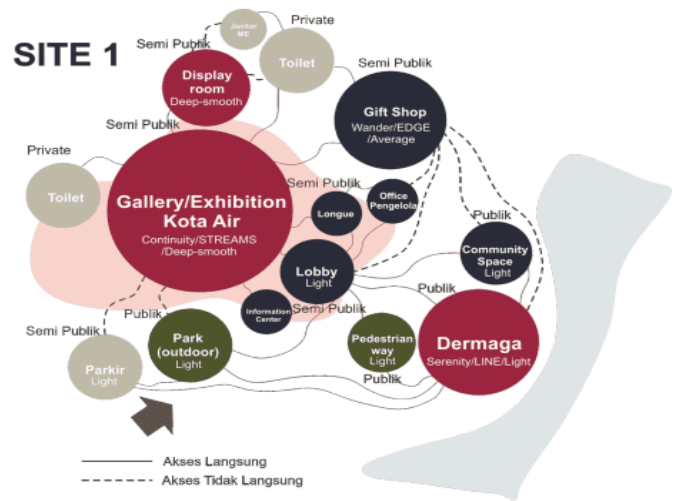


Fig. 9. Configuration and Relation of Space in Macro and Micro Based on Zoning, Storyline and Perception Meaning on Space.

Figure 10 shows sequence type analysis based on the integration of the site on the 3 main macro and micro axes related to the integrated storyline of the City of Water, namely the building period, outdoor space and the Kali Mas river. From the analysis related to the type of sequence, it can be synthesized the application to the site, namely integrating 3 main axes with one-way connected. This is by considering the narrative flow to represent the memory of the City of Water and the characteristics of the water, so that by integrating the 3 main axes in a one way-connected way, the sequence and circulation flow can be seen clearly by visitors so that space as a language in narrating the meaning of the memory of the City of Water can direct visitors through space experience.

B. Building Form

Based on a site analysis related to the cultural aspects of the neighborhood site and the sequence around the Kali Mas site as well as an analysis for site orientation to the integration of the surrounding environment, the indicators criteria were determined for the process stage of exploring the idea of the City of Water museum in responding to the issues and problem gaps that have been described previously.

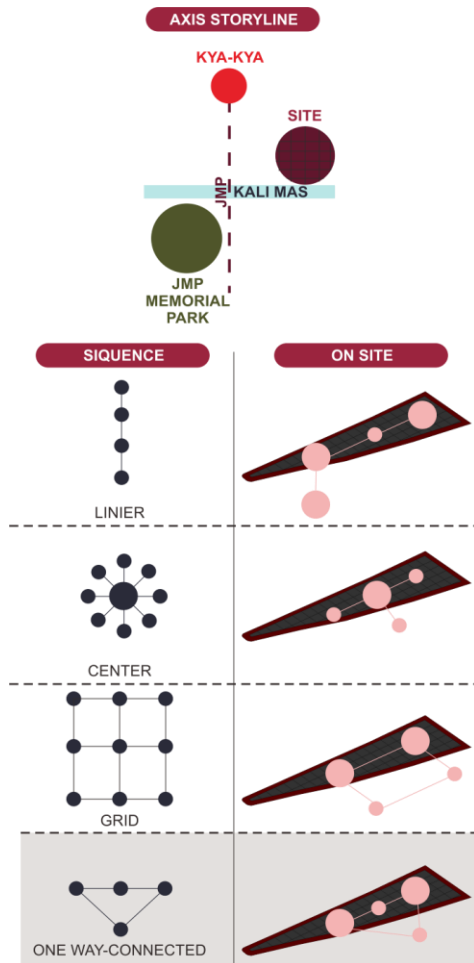


Fig. 10. Axis and Sequence Analysis Based on the Storyline of Kota Air.

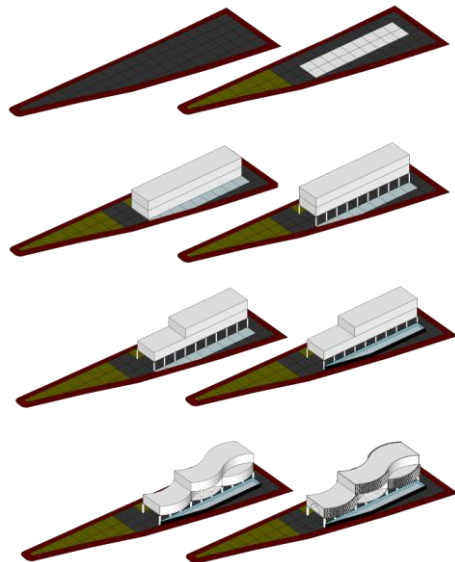
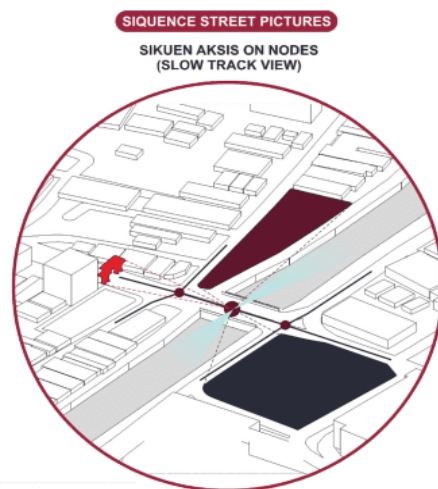


Fig. 11. Exploration of Form Idea based on Storyline and Site Analysis.

Figure 11 Shows exploration of shape ideas based on criteria indicators obtained by identifying the main force, namely Storyline Narration based-site force which is integrated with 3 macro Axis and Kali Mas River. Exploration of the idea of shape based on the criteria that the building period is oriented towards Kali Mas with zoning division, namely the building

period, outdoor space and site circulation. The basic form of the building follows a site analysis and the building must be able to narrate the storyline of the City of Water memory by considering the characteristics of the water material that has been studied, one of which is the floaty concept so that the building is lifted upwards with the ground level being used as a circulation area so that the delivery of meaning in the building is integrated with the axis artifacts. It can be achieved with a clearer view from levels 2 and 3 of the surroundings. The form of wave and zig-zag building mass as an interpretation of the characteristics of flowing water and respond to the storyline continuously so that the sequence in the narrative museum is integrated with each other and has a clear starting point and ending in the narrative that is presented.



Konsep Narasi Makro

Artefak JMP
Artefak Kya-Kya
Artefak Kali Mas

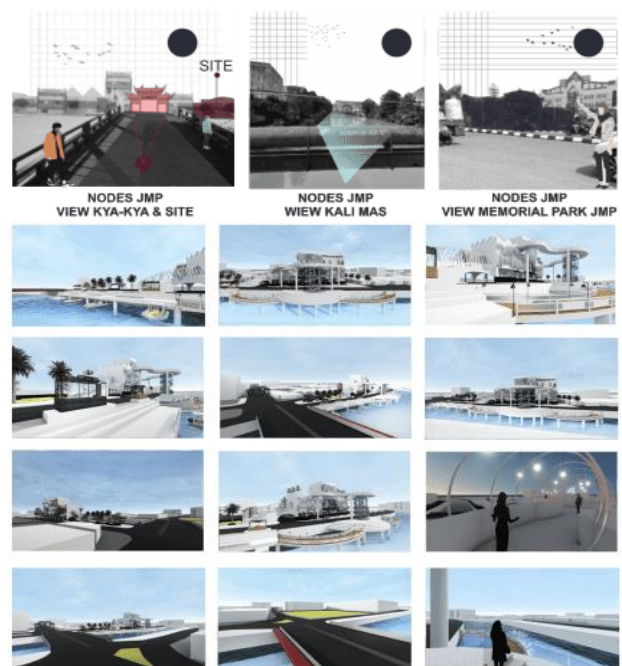


Fig. 12. Sequence Street Pictures.

The exploration of the shape idea is then linked to the street picture sequence by centered on the nodes for a slow track view of the Red Bridge. Figure 12. Shows street picture sequences of view in and view out of the museum building according to the storyline of Kota Air. The Red Bridge node is a point that connects the Kota Air narrative museum with 3 other axes, namely the Kya-Kya gate, JMP memorial and Kali Mas. From this lowtrack circulation, visitors can experience space before heading to the city's buildings and artifacts to become destinations connected to museums. The narrative sequence to the building is very important in shaping the perception of visitors before entering the building. The sequence to the building is the first narration experienced by visitors when they go to the Kota Air museum building so that the narrative is formed when visitors want to enter the site location.

In addition to the axis sequence at a macro level, there is a view out of the Kota Air museum, which is a visual sensory experience of how people perceive and explore the outer space inside the site when they enter the building on a micro basis. The starting point starts from the entrance to the front area close to the Red Bridge, entering the memorial garden area in the museum landscape to the pier in the downstream area of Kali Mas. Then the visual sensory experience is also strengthened by the presence of a viewing tower that is directly connected to the jetty downstream of Kali Mas, so that visitors can see macro axis artifacts from the viewing tower and are directly connected to Kali Mas.

Figure 13 shows the integration of the concept of the Kota Air narrative museum as a narrator with 3 main axes with nodes as connectors, namely on Jembatan Merah and the museum is directly connected to Kali Mas. The proportion and scale of the building is also aligned with the height of the surrounding buildings so that the view out can be seen and integrated with the buildings around the site. The color of the building tends to use plain concrete material and tends to be white so that when light enters the building it can give a dark and bright effect and it is easy to give a reflector effect and can focus visitors on artifacts and objects in the display room.

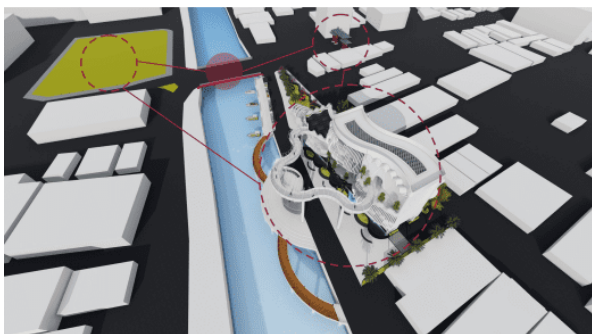


Fig. 13. Integration of Museum Kota Air with 3 Main Axis Macro.

C. Application Material Effects of Water on Spatial Experience for Create Perception

In the space zoning that has been studied previously so that space zoning is formed in accordance with the narrative flow of the City of Water which is applied to the concept of a narrative museum on a micro basis during the building and

site period. In Figure 14, the following is a space program according to the space function needs that have been configured with the Kota Air storyline:

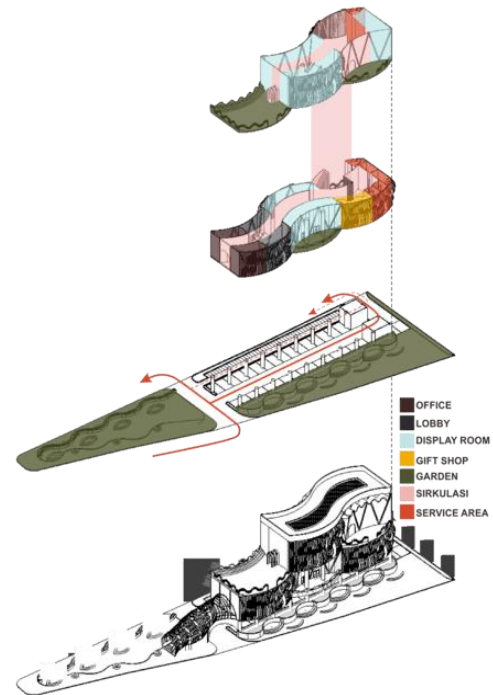


Fig. 14. Zoning Concepts Related to Narrative Sequence.

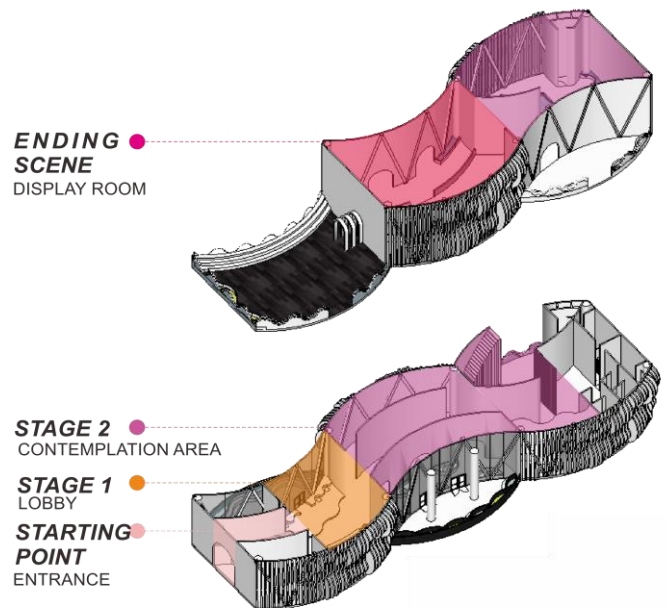


Fig. 15. Effects of Water Characteristics on Museum Space Sequences.

Figure 15 shows the application of the effect of the material characteristics of water as a medium of space language in communicating the meaning of the memory of the City of Water in the museum. In figure 16. Shows the museum entrance as a starting point by presenting the element of water on the wall to present the meaning of streams when people enter the museum and shifting from the outdoor area into the museum so that it seems as if visitors are entering the time of the City of Water.



Fig. 16. Water edge-threshold for Meaning of Streams and Shifting on Building Entrance.

Figure 17 shows the application of the characteristics of the water material in the lobby and lounge room which is applied to the drop ceiling as a wayfinding in the circulation of space that applies the meaning of continuity according to the characteristics of the water. The pattern and floor material also uses marble which has a cold nature and reflects light but does not cause glare so that it gives a cold impression and gives a sense of well-being effects such as puddles of water when exposed to reflected light. While the floor pattern has a flow representation of the flow of water because the main function of the lobby is as an information area, so wayfinding must be clear by giving the meaning of wandering. The shape of the walls in the building also represents the dynamic characteristics of water.



Fig. 17. Water Flow Characteristics Provide Continuity Meaning for Wayfinding Spatial Circulation Karakteristik.

Figure 18 shows the concept of applying the characteristics of waterfall water on the walls and voids of the building as if to present the effect of rain on the space. By applying technological innovations from Artificial LED and dramatization of artificial sound to strengthen the atmosphere in the space, namely serenity, so that the meaning of the storyline, namely contemplation, can be communicated to visitors. This area requires a high level of focus so it is placed in a room away from noise.

Figure 19 shows the application of water point and floaty characteristics and represents the puddle in the displayroom area. The display room is the ending of the City of Water narrative in the narrative museum. The application of bubble air is used to give meaning to the scene frame with an arcade form on the access room. So it seems as if time freezes and focuses on bubble water which has properties reflector that provides a scene related to exterior artifacts when viewed from the displayroom.



Fig. 18. Material Characteristics of Air Water Fall with Artificial LED for Dramatization Contemplation Area.



Fig. 19. Application of Material Characteristics of Water Reflector and Floaty Meaning in the Display Room.

The color of the material tends to be white from plain concrete so that visitors focus on artifacts and the effects of incoming light as the inner surface can provide shadows and dark light for the meaning of flow and floaty. While the display room on the 2nd floor is the ending scene with a floor pattern using zinc material as a reflector which gives meaning like a puddle

of water reflected on the ceiling of the room. There is a mound on the floor which means that there is a shifting of the waterway to the land so that river deposits appear and gives the meaning that the water has receded so that it has reached the ending scene for the land route where the sequence path is continued on the outer space, namely on the floaty pathway which is connected to the viewing tower on the pier. Kali Mas.

V. CONCLUSION

From the discussions that have been carried out, it can be concluded that the purpose of the design research is to narrate the historical memory of the City of Water so that its identity is not forgotten and to activate activities around the Kali Mas river so that it is integrated with its environment. The spatial language approach as a medium of communication between visitors and elements of space is focused on the material aspect of water as a design innovation to narrate meaning. The Kota Air Museum acts as a narrator by paying attention to the force of the Kota Air storyline and the potential of the site which is integrated with artifacts as the axis of the narrative sequence, so that the museum is in harmony with the surrounding environment. Material as a medium for conveying the meaning of the City of Water to form an atmosphere through space experience pays attention to the force of the characteristics of the water material to generate the concept of exploration of shape ideas, namely applying the concept of continue, serenity, floaty and has a wayfinding concept that is clearly adapted to the storyline and the tropical climate of

Surabaya. These characteristics also pay attention to the need for light associated with the presence of water material in the space for the concept of shadow, dark-light and reflector in conveying the storyline of the City of Water so that its identity is not forgotten.

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