

# PROCEEDINGS

## INTERNATIONAL CONFERENCE 2015

# Architecture, Technology & Urban Infrastructure

FACULTY OF ENGINEERING  
UNIVERSITY OF PEMBANGUNAN PANCA BUDI

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I. Architecture, Technology & Urban Infrastructure      II. Sylviana Mirahayu Ifani

Dicetak di Medan, Indonesia

## **PREFACE**

Assalāmu'alaykum waraḥmatulLāh wabarakātuh,

I am pleased to present you the 3<sup>rd</sup> International Conference on Architecture, Technology & Urban Infrastructure (i-CATUre) 2015 organized by Engineering Faculty of University of Pembangunan Panca Budi (Unpab). The previous conferences were held in October 2012 and March 2013. The 3<sup>rd</sup> i-CATUre 2015 is the result of collaborative work between Engineering Faculty of Unpab and a number of institutions and experts. It aims to see the role of architecture and technology in the development of urban infrastructure with regard to the regional development and spatial planning in Medan.

Based on the Presidential Regulation of the Republic of Indonesia Number 62 Year 2011 regarding Urban Spatial Plan of Medan, Binjai, Deli Serdang, and Karo, Medan serves as the centre of metropolitan region which includes Medan, Binjai, Deli Serdang, and Karo (Mebidangro). The complexity of regional development issues makes it important to see and assess all the problems that arise through discussion that is more oriented towards academic study within the higher education environment. Due to the significant social impact of urban infrastructure development along with the use of infrastructure technology, Engineering Faculty of Unpab represented by the Center for Architecture and Urban Study are eager to contribute our thoughts for the achievement of urban infrastructure development that is more oriented to the needs of the community.

I would like to take this opportunity to thank Dr. Muhammad Isa Indrawan for his moral and financial supports and the secretariat for their endless enthusiasm for working days and nights to make the conference a success. I personally thank Kaspan Eka Putra, Sri Shindi Indira, Melly Andriana, Kiki Lestari, Sylviana Mirahayu Ifani, Solly Aryza Lubis, Amani Darma Tarigan, Helmi Ramadhani, Fitri Rahmadhani, Ramayana, Zhilli Izzadati Khairuni and Novalinda for their hard work.

Alhamdulillah, this conference would bring us the opportunity to meet old friends and make new acquaintances, build academic network, and spread new ideas and spirit for the development of our countries. The papers presented at this conference and included in these proceedings cover architectural and technological aspects of urban development including infrastructure development related to the effective and efficient procurement of mass rapid transportation system. Hopefully the result of academic studies presented in these proceedings can contribute thoughts in urban development and spatial planning in the future as well as be helpful for our future work.

Respectfully Yours,

**Ir. Bhakti Alamsyah, MT, Ph.D**  
Dean of Engineering Faculty  
University of Pembangunan Panca Budi  
December 2015

## SCHEDULE OF EVENTS

**International Conference on Architecture, Technology & Urban Infrastructure 2015**  
**3<sup>rd</sup> – 5<sup>th</sup> December 2015**  
**Medan, Sumatera Utara**

<b>WEDNESDAY, DECEMBER 3<sup>rd</sup> 2015</b>			
<b>Location: Seminar Room M313, Mahtab Building, Unpab Campus, Medan</b>			
<b>08.30 – 09.00</b>	Participant Registration		
<b>09.00 – 09.45</b>	Welcome Speech		
	Opening Ceremony		
<b>09.45 – 12.00</b>	<b>Keynote Speeches</b>		
	<b>09.45 – 10.15</b>	Ir. Budi Faisal, MAUD., MLA., PhD (Bandung Institute of Technology)	
	<b>10.15 – 10.45</b>	Prof. Julaihi Wahid, B.Arch., M.Arch., Ph.D (Universiti Sains Malaysia)	
	<b>10.45 – 11.15</b>	Assoc. Prof. Dr. Muhammad Zaly Shah (Universiti Teknologi Malaysia)	
<b>11.15 – 11.45</b>	Prof. Dr. R. Hamdani Harahap, M.Si (Universitas of Pembangunan Panca Budi)		
<b>12.00 – 13.00</b>	Lunch Break		
<b>13.00 – 15.30</b>	<b>Parallel Session</b>		
	<b>13.00 – 14.00</b>	<b>Architecture and Building Technology</b> Convener: Prof. Julaihi Wahid, B.Arch., M.Arch., Ph.D	<b>Urban Infrastructure</b> Convener: Ir. Budi Faisal, MAUD., MLA., PhD
		<b>Urban Development and Social Impact</b> Convener: Prof. Dr. R. Hamdani Harahap, M.Si	<b>Technology</b> Convener: Rahmat Widya Sembiring, SE, MCS, PhD
	<b>14.00 – 15.30</b>	Discussion of Pararel session	
<b>THURSDAY, DECEMBER 4<sup>th</sup> 2015</b>			
<b>Location: Seminar Room M313, Mahtab Building, Unpab Campus, Medan</b>			
<b>09.30 – 12.00</b>	<b>Parallel Session</b>		
	<b>09.30 – 10.45</b>	<b>Architecture and Building Technology</b> Convener: Prof. Julaihi Wahid, B.Arch., M.Arch., Ph.D	<b>Urban Infrastructure</b> Convener: Ir. Budi Faisal, MAUD., MLA., PhD
		<b>Urban Development and Social Impact</b> Convener: Prof. Dr. R. Hamdani Harahap, M.Si	<b>Technology</b> Convener: Rahmat Widya Sembiring, SE, MCS, PhD
<b>10.45 – 12.00</b>	Discussion of Pararel session		
<b>12.00 – 13.00</b>	Lunch Break		
<b>13.00 – 15.00</b>	<b>Plenary Session: Resume of Parallel Session</b>		
	<b>Architecture and Building Technology</b> Prof. Julaihi Wahid, B.Arch., M.Arch., Ph.D	<b>Urban Infrastructure</b> Ir. Budi Faisal, MAUD., MLA., PhD	
	<b>Urban Development and Social Impact</b> Prof. Dr. R. Hamdani Harahap, M.Si	<b>Technology</b> Rahmat Widya Sembiring, SE, MCS, PhD	
<b>FRIDAY, DECEMBER 5<sup>th</sup> 2015</b>			
<b>Location: Seminar Room M313, Mahtab Building, Unpab Campus, Medan</b>			
<b>08.00 – 08.30</b>	Workshop Registration		
<b>08.30 – 09.30</b>	Workshop Opening Ceremony		
<b>09.30 – 12.00</b>	<b>Keynote Speeches</b>		
	Prof. Dr. R. Hamdani Harahap, M.Si (University of Pembangunan Panca Budi)		
	Prof. Julaihi Wahid, B.Arch., M.Arch., Ph.D (Universiti Sains Malaysia)		

	Dr. H. M. Isa Indrawan, SE., MM (Rector of University of Pembangunan Panca Budi)	
	Ir. Iman A.S., MSc (Executive Director of PT. PELINDO I Planning and Development)	
	Assoc. Prof. Dr. Muhammad Zaly Shah (Universiti Teknologi Malaysia)	
<b>12.00 – 13.00</b>	Lunch Break	
	<b>Parallel Session</b>	
<b>13.00 – 15.30</b>	<b>Mebidangro Urban Infrastructure</b> Panelist: Assoc. Prof. Dr. Muhammad Zaly Shah Ir. Budi Faisal, MAUD., MLA., PhD	<b>Sosial Impact of Mebidangro Infrastructure Development</b> Panelist: Prof. Julaihi Wahid, B.Arch., M.Arch., Ph.D Prof. Dr. R. Hamdani Harahap, M.Si Ir. Budi
	<b>Plenary Session: Resume of Parallel Session</b>	
<b>15.30 – 16.00</b>	Ir. Budi Faisal, MAUD., MLA., PhD	Prof. Dr. R. Hamdani Harahap, M.Si Ir. Budi
<b>16.00 – 16.15</b>	<b>Closing Ceremony</b>	

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**S e s s i o n**

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**ARCHITECTURE**

# The Aesthetic of Minahasa Traditional House

## A Review of Aesthetic Resistance using Ralf Weber Theory of Architectural Aesthetic

Wasilah

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**Abstract**—Traditional Minahasa houses are residential buildings created by the Minahasa tribes. The fact that the Traditional Minahasa House (RTM) is still used as typical idea of Minahasa people in making their living quarters proving that Minahasa people are proud of their tradition. The continued appreciation indicates there are resistance value in Minahasa Traditional House. This paper study the condition between Minahasa community with RTM through the study of RTM aesthetics. Aesthetics exists both in architecture and human being. Besides, according to Walker (2000) in his theory of 'desire', aesthetics is one of the fundamental elements of human beings that able to make changes by time passed. By using the architectural aesthetics approach of Ralf Weber (1995), it appears that RTM has aesthetic value resistance.

**Key words:** Traditional houses, RTM, Minahasa, aesthetic value, resistance, Ralf Weber

### I. INTRODUCTION

Traditional Minahasa houses are residential buildings created by the Minahasa tribes. Minahasa is a district located in North Sulawesi province. The existence of Traditional Minahasa House as part of the archipelago cultural heritage is one of cultural richness the Indonesian nation proud of. In fact, the traditional Minahasa house is still used as an idea type of Minahasa people in making their residence as it is proving a particular advantage. This reality proves the existence of appreciation from the public on Minahasa Traditional House. The continued appreciation to the RTM, indicates the value of the resistance.

Various terms/ value are adjusted in vernacular architecture so that it can remain manifest in the era of complexity. In addition, the consumer attitude towards the local culture is explained by John Walker (1989) as the embodiment of 'desire' and explained in his theory " The making of Lifestyle".<sup>1</sup> According to Walker, 'desire' is an

essential element that is inherent in human mind to seek a 'pleasure'.

Architecture is often used as a medium to express 'desire'. And house as primitively functional architecture is used as a means of achieving certain pleasure. The dynamic architectural element can alter the expression of traditional houses through the changes that occur based on the 'desire'. In the house context, the Walker theory of 'desire' are consist of following points:

- Desire in respect in architecture
- Desire for use values in architecture
- Desire for architectural simulation
- Desire for architectural aesthetic.

RTM that exists today has the strength to survive and adapt to the modern development. Indeed, RTM sustainability can not be separated from the users' desires. In addition, the continued appreciation of the RTM, indicating the resistance of architectural value, which also resulting the survival of 'desire'. This study, with the help of the architectural aesthetic theory, try to explain the aesthetics of RTM which thought to be one of its resistance value. The aesthetic topic was also chosen because it seems that in the development of modern aesthetic study there is a fundamental aspect that closely associated with humans. The fundamental nature of aesthetics in human requires the internalization in architecture.

### II. THE ARCHITECTURAL AESTHETIC OF RALF WEBER

Through his study of aesthetics, Weber introduced the core and simple perspective in which he consider architecture manifest itself through 'shape'. What human perceived as architecture is a 'shape'.<sup>2</sup> In the first phase Weber took 'organizational' attitude developed by JJ Gibson (1979) to underly the concept of 'organizational-presentational' which works on the stage of 'perception appropriateness'. The second phase is 'cognition' attitude in which the results of perception becomes 'meaningful'. The study also supported by the theory of 'biological structures' approach by Piaget. The result of cognition process is

<sup>1</sup> Literature about John Walker (1989) taken from Rizal Muslimin, ST, "Architectural Intertextuality Vernacular Settlement", Proceedings Second International Seminar on Vernacular Settlement Dept. Of Architecture, Faculty of Engineering University of Indonesia, 2002.

<sup>2</sup> This idea same as the idea of William J. Michell (1990) in his book entitled "*The Logic Of Architecture*".

'operational knowledge' which has gone through two phases; 'classification' and 'generalization'.

### III. THE EXISTANCE OF RTM (WALE)

#### A. The Appearance Diversity

As with much of the architecture in archipelago that has the 'ideal shape', from literature and field studies there have not been found any 'ideal shape' of RTM, what was encountered is the diversity of its current appearance which believed to be the closer appearance of RTM early type. This study is not focusing on finding the 'ideal shape' but examining the diversity of RTM appearances.

#### B. The Development of House, Plans, Construction, Materials and Ornamentation Details

Historically, RTM are built with tall and big posts. After the mid of 19th century, RTM or Wale was built with posts height of only 1,5 - 2 meters, even with smaller posts (Graafland, 199; Syamsidar, 1991: 194), especially the new houses built after the great earthquake on 1832. Most likely, the more secure environment conditions also affect this change. It is this kind of houses that will be discussed in this study..

### IV. THE AESTHETIC OF RTM (WALE)

#### A. Description of Studied Objects

In this aesthetic study, object is not limited to early type RTM, but also other RTM which are built at the present time. This is intended to show the value of resistance along the changing process. Therefore, the studied objects are chosen based on the following classifications:

- Objects representing characteristics that fits the literature description
- Objects representing different time periods.

With this classification, the cluster of RTM with almost same characteristics are as follows:

- a) RTM raised platform type. Considered as RTM early type and many people still built this type until now
- b) RTM raised platform type, but on the bottom front of the stairs has been covered with plane. Many people built it in the late 19th and early 20th century.
- c) RTM (wale) leveled type, section under the house has been added planes as an extension for more activity rooms. Many people built it in present time.

#### B. RTM Aesthetic Based on Weber's Theory

- 1) Phase I: Availability/ Perceived Shape (Perceptual Appropriateness)

##### a) Center

Although made in different sizes, RTM has a symmetry shape characteristic (Fig.1). In addition, there is also found 'central point' guidance as prerequisite for comfortness. The 'center point' can be seen in the meeting space between left and right ladder (Fig.2). The meeting space of these two ladders have a strong accent because its area extended more to the front

of the house. Moreover, it is positioned in the axis area. This symmetrical characteristics also indicates the simplicity of shape, because people will see the house will directly get the 'balance' perception in a short time by the presence of axis and center point.

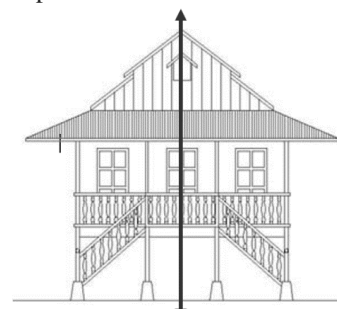


Fig. 1. RTM Illustration of symmetrical shape

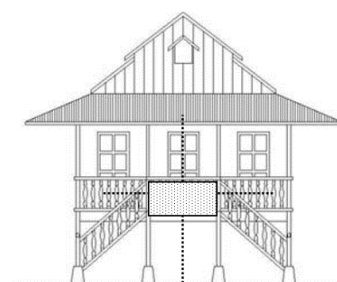


Fig. 2. Illustration of 'centre point' in RTM

##### b) Mass Distribution

3 object groups together with a graphic illustration is used to study this aspect on RTM (Fig.3). RTM A (Fig.4) with raised platform type resulting empty space between 'mass' and 'surface'. According to Weber, this phenomenon causing instability where the mass visual weight distribution is above the center point of observation.

RTM B (Fig.5) shows stability, because the front stairs with concrete material is arranged to cover 'empty space'. There is no distance between 'mass' and 'surface'. Besides, the difference materials also strengthen the accent of visual weight position. Also, the visual weight is placed below the center point of observation. By manipulating the arrangement of stairs that lead to stability, the fact that the main mass distribution is situated above the center point is unrecognized, so the front 'empty space' is visually covered by the stairs arrangement.

RTM C (Fig.6) shows a change in the shape of raised platform type into leveled type. Stability occurred in this type of RTM because there is no distance between 'mass' and 'surface'. However, visual weight looked as if it is above the center point. This is because the mass

distribution which is located under the 'central point' of the first floor is positioned inward, so the 'mass' above it looks more dominant. The stability rate of this typical RTM is probably between RTM A and RTM B.

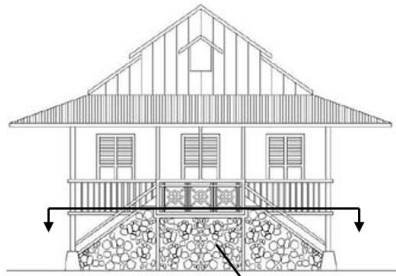


Fig. 3. 'Visual weight' illustration in RTM



Fig.4 Raised platform type of RTM



Fig. 5 Raised platform type of RTM with additional plane covering 'empty space' under the front stairs



Fig. 6 Leveled type of RTM

c) Dynamic Property

Dynamic property in this study is the vertical-horizontal accent related to the availability of objects that attracts attention. It also involves eye movement patterns in term of which RTM features is captured faster by eyes. According to Buswell (1935), the fastest pattern to be captured by eye movement is a shape that has vertical rather than horizontal axis. Weber also use Takala (1951) theory stating that a shape with dominant vertical axis shows higher level of stability and dynamism than the horizontal one. In. Fig.7 Weber illustrated the dynamism level from the highest to the lowest, which are: first object (high level), the last 3 objects (low level). Based on Weber's illustration in Fig.7, RTM tends to correspond to the characteristics of the last object in the illustration. These accents are created through a pyramid-shaped roof, which looks as triangular shape from front side so as to form a vertical axis accent. The dynamic level of this type of RTM is lower compared to the first object in the illustration. This is because both vertical and horizontal axes is not dominating.

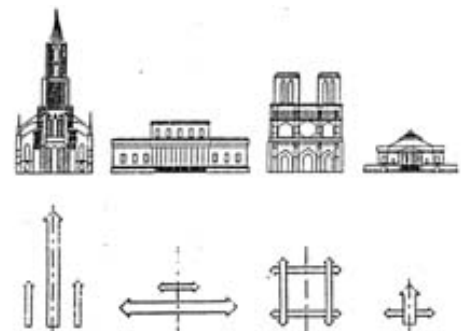


Fig.7 Illustration of Weber's dynamic level comparison



2) Phase II: Structural hierarchy as aesthetic supporting elements

a) Dynamic Foci

This aspect is the sub-division of the whole building composition (inferior levels). It is explained that, there should be 'strong focus' on sub-hierarchy. This can be accomplished with textures and the variation of shape size. Shape must be displayed in an ordered composition, having rhythm, not monotonous nor exaggerate. Weber's term for exaggerating composition is 'non-hierarchical', which means the given shape is not within the framework of the overall-shape. RTM A, B and C (Fig. 4, 5 and 6) had a 'strong focus' on the stairs because it is located in the front area and has a prominent position than the rest of the building. Moreover, there ornamentation of structures from four pillars that support the front roof. These pillars are arranged in the same distance division and is located in sub-division area (the interior area of the overall shape). The so-called 'single heterogeneity' in Weber's theory that produced different shapes, because the pillars are different in size, the two pillars on the edge is longer than ones in the middle. Regularity occurs because distance repetition.

The spatial part in the meetings of two front stairs at RTM A and B strengthening the visual focus. Other shapes that strengthen the visual focus is also present in ornamentation detail on the stairs and terrace, in the form of balustrade. These geometrical details consists of the repetition of same spacing and shape. The ornamentation is organized orderly and moderate.

Although there are details that strengthen the object visual focus, to defend the visual impression the dynamical order is still required. On RTM A, B and C, the ornament details of balustrade become dynamic because it is placed on the stairs. So there is a flat details (balustrade on the terrace) and there are oblique details (balustrade on the stairs). The monotonous impression due to the repetition of geometrical shape on the balustrade is lost when sight goes to stairs balustrade. Besides, this ornament also become one of the 'strong visual' because it forms a visual focus along the balustrade in the meeting joint between two stairs.

The order of windows and doors shapes is also a 'strong visual'. Its characteristic of square shape is a dominant character differentiation of RTM, which is placed within the framework of the overall look with regular distances (within the same division) and have the distance to the line of the outer wall. The order of doors and windows arrangement become dynamic (not

monotonous) as well as become 'strong focus' because the location of the door is at the center while having different sizes compare to the windows (door has a bigger size). Doors and windows arrangement is also considered to be a 'local stability' which resulting 'perceptual balance' (Fig.8).

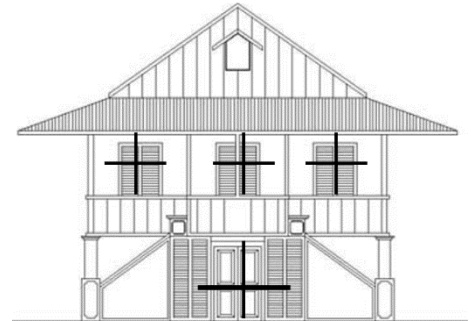


Fig.8 Illustration of 'local stability' in RTM doors and windows

b) Subordinate Organization

The aspects of 'subordinate organization' requires the variation of group within the framework of a whole shape with the right size comparison/matching with the overall shape (as perceptual units). In addition, it requires the structural elements, textures and colors.

RTM A, B and C in principle have the same overall character, but the disclosure of details indicate the articulation of individuality. The elements presented good details of ornamentation or decoration.

Placement of stairs, although slightly protruding forward, it is still reveal compositional unity of the whole building. The four pillars located in front side of the house looks as a unity even when it is from different materials. The presence of roof vents that are part of roof sub-ordinate in RTM is presented in a good composition with the roof itself. Location of the only roof vent is in the middle, strengthening the vertical accent that become crucial in 'perceptual appropriateness'.

Texture and colors greatly affect aesthetic value. All RTM is built with wood material, generating natural texture that incorporated with the shape of the house. However, RTM B and C are partly made of glass material in its doors and windows. Glass materials is also have its own texture.

RTM was built quite varied in color. Some are using natural color from wood material, while some other cover the natural colors with other colors. Simplicity achieved also because the color choices is not excessive. Dynamic colors achieved because there are strong color distinction in each pillars.

## V. CONCLUSION

Having conducted the study using architectural aesthetics theory of Weber, it can be concluded that RTM has aesthetic values. Although the RTM studied object are different on visual appearance and time it was built, but there are similarities in its aesthetic value and meaning. This indicates that the aesthetics found in RTM has the resistance values which make RTM able to survive until today. In the presence of the RTM there exist something that is more than just functional fulfillment, there is local culture which manifested itself in the creation of aesthetic and meaning.

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