Transformation of function, form, zoning, circulation and material of Rumoh Aceh “Study of Aceh traditional architecture in Montasik sub-district, Aceh Besar”

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Abstract. Along with the time running, traditional architecture starts to be limited by time. While traditional architecture is a self-identity of a region. The location of research is Province of Aceh, namely in Sub-district of Montasik, District of Aceh Besar. The objects of study are traditional house buildings called as Rumoh Aceh. Because, principally, all buildings have similarity; thus, samples were taken randomly from each village. The formulation of questions is to identify transformation of function, form, zoning, circulation and materials of Rumoh Aceh found in the Sub-district of Montasik. The objectives of this study are to understand transformation occurring in Rumoh Aceh in the Sub-district of Montasik over time in order to know causal factors; moreover, it is expected to be reference to the Rumoh Aceh itself. This study used descriptive-qualitative method to adopt phenomena directly (what, who, and where the research location is). This method can interpret and associate data, important situation, attitude, point of view, conflict, and others. Because this study is direct, the techniques of observation and survey (primary data) keep to be choice, such as, interview and documentation. Relevant references to data can be analyzed and developed (secondary data). The results of study indicate that Rumoh Aceh found in Sub-district of Montasik, in terms of functional transformation, is still ideal, but there are changes in function in lower parts of building, that previously functioned as animal breeding area, rice storage and rest area, now it changes into permanent space functioning as room, storage area, bathroom, and cloth drying area. Moreover, we seldom find terrace and gate areas in front of building. While form transformation in Rumoh Aceh tend to be unchanged. Rectangular and triangular form keep to be choice. Transformation of zoning and circulation only occur in lower parts of building because there are additional rooms and functional change of rooms so that automatically circulation system also changes according to needs. Along with time running, transformations of building materials are found in roofs. Before, Rumoh Aceh used local materials, such as, rumbiah leaf plait; now, iron sheets dominate the Rumoh Aceh. Moreover, use of brick materials is widely found in lower parts of building. Current materials, such as, plywood and acrylic, are found in nearly each Rumoh Aceh, especially in door and window blades.
1. Introduction

Traditional architecture is one of national cultures in Indonesia. Various greatest traditional architectures in each region of Indonesia become typical characteristics and identities of local people. As one of cultural forms, traditional architecture derives from one regulation or agreement that generations hold and keep [1]. The conception keeps applicable as far as it is found meeting needs of local people.

Current modernization flow has great effect on existence of traditional architecture in the nation. One of factors of unblocked technology advances is use of technology. Moreover, the number of current building materials seem easy to treat, efficient, effective and handy to work. Therefore, preservation and conservation are very necessary to improve to maintain national architecture masterpiece; in this case, we need to intervene with the government as policy maker.

When speaking of transformation or change in traditional architecture, it is very proper and natural along with time running [2]. The western end of Indonesia, Province of Aceh, District of Aceh Besar has ancestral architecture masterpiece. Variety, width and history are factors of research location selection. In this case, research is limited to determined research location, namely Sub-district of Montasik. Consideration of research location selection is tract record or Aceh-Traditional House Architecture Development the local people call Rumoh Aceh.

Sub-district of Montasik has area of 5,973 Ha where wet area is 1,843 Ha, non-wet area is 700 Ha, and non-farming area is 3,430 Ha. These areas are far from beaches and nearer to mountain area with 39 villages. The northern part is bordered to Sub-districts of Blang Bintang, Masjid Raya, and Ingin Jaya; the southern part is bordered to Sub-districts of Kuta Malaka and Indrapuri; the western part is bordered to Sub-district of Suka Makmur; the eastern part is bordered to Sub-district of Indrapuri. Total residents of Sub-district of Montasik is 20,181 people where 10,268 of them are males and 9,913 of them are females. The dominant livelihood of the people is farming [3].

2. Methodology

This study used descriptive-qualitative method. According Sapitri and Ariska Rati [4], the descriptive-qualitative method is suitable to adopt phenomena directly associated with who, what and where the research location. This method can interpret and associate data, important situation, attitude, point of view, conflict, etc. Because this study characteristic is direct, techniques of observation and survey (primary data) keep being choice, such as, interview and documentation. Relevant references are used in order data can be analyzed and developed (secondary data). If associated with studies by Kothari [5] and Somantri [6], methodology used in this study tends to be relevant and responsible.

If sampel have elements of similarity, in term of physic, location and function as residential house, than a random technique can be used for sampling with descriptive explanation [7]. Thus, samples in this study were taken randomly because their characteristics tend to be similar. Samples were taken from two unit in each village so that total samples are 78 units of Rumoh Aceh.

The research location is in Sub-district of Montasik. Object of observation and sample of study are Rumoh Aceh taken randomly in all villages found in the Sub-district of Montasik. Based on field observation, age of Rumoh Aceh in Sub-district of Montasik is 120 or more years old. Formulation of questions identifies changes in function, form, zoning, circulation and building materials from point of view of architecture as to find clear point that may be reference to increase vision on traditional architecture of Rumoh Aceh that currently starts to be difficult to find.

3. Traditional architectures of Aceh

The Traditional House of Aceh called Rumoh Aceh is a house established by poles so that Rumoh Aceh (staged house) can be seen from the lower, upper, and roof parts (Figure 1). The lower part is pit of house located under floor in open condition (without wall). Height of house floor ranges from 2 m to 3 m. Poles
found in Rumoh Aceh is round in ± 30 cm diameter with 16, 20, and 24 poles of Rumoh Aceh consisting of three main spaces, namely:

- **Front Space.** Front veranda called *Seuramoe Rinyeuen* (veranda with stairs) or called *Seuramoe Keue* (front veranda). This space functions as guest reception place, sitting place to eat when there are events such as *kenduri* and marriage, place where children learn, place for praying, and place to rest.

- **Middle Space and *Tungai***. This space functions as a place consisting of two rooms and one corridor. The room located in the west part is *Rumoh Inong*, while in the east part is *Rumoh Anjong*. *Rumoh Inong* functions as bedroom for the head of the family located in the west part and *Rumoh Anjong* is a bedroom for daughter located in the east part. If a daughter is married, her place is in *Rumoh Inong*, while the family head moves to *Rumoh Anjong*. The middle room has a higher elevation among the other rooms.

- **Back Space or Back Porch usually called as *Seuramoe Likot***. This space functions as kitchen and dining rooms [8]. In addition, Rumoh Aceh has additional rooms such as rice barn area, terrace or open veranda, and gate [9].

4. **Discussion and result**

4.1. **Functional transformation**

*Rumoh Aceh* has are three parts, namely, the lower and middle parts (main building) and the upper part (roof). The lower part functions as an area for animal breeding, rice granary (storage) areas, and areas for relaxing. The main part of *Rumoh Aceh* is the middle part that functions as a house in general. There are family rooms, bedrooms, kitchens and dining rooms. While the upper part is the roof of the building. Based on the data above, the function of the building and space of Rumoh Aceh in Montasik District did not change much (Figure 2). Maintenance of the main function of the elements of Rumoh Aceh itself such as, the number of building poles as supporting structures is still a standard, namely 16-20 poles, has a ladder as a vertical (linear) circulation system, still has *Seuramoe Rinyeuen* (veranda with stairs) or commonly called *Seuramoe Keue* (front veranda) whose main function is a reception area, party or festivity, religious activities, and family gathering (meeting) place. It still has *Tungai* or living room that functions as a room consisting of two rooms and one corridor. The room, which is located in the west part, is *Rumoh Inong*, while the east part is *Rumoh Anjong*. *Rumoh Inong* functions as bedroom for the head of the family located in the west part and *Rumoh Anjong* is a daughter bedroom located in the east part. If a
daughter is married, she moves to Rumoh Inong, while the family head moves to Rumoh Anjong. It still has Seuramoe Likot or back room that serves as a kitchen or dining area. The functions of space, patterns and circulation systems are very clear in the building. It is relevant when referring to the opinions of Sabila F, Antariksa, and Handajani [10] stating that each room in Rumoh Aceh has different functions, different activities, territoriality, self-identity, safety and comfortableness.

However, over time the function from the lower part of the building has changed. Previously, the function of the area under the building was to breed animals, rice barns, and rest areas. Currently this function has been changed as an additional area of room that can function as a bedroom, storage (warehouse), and bathroom or as a cloth drying (clothesline) area. In addition, it is rare to find a terrace and gate area in the front of the building. These results, if related to studies conducted by H. Aiyub, MN Loebis, and IF Pane [11] on Rumoh Aceh in Blang Baroh Village, Pidie District, Aceh Province is almost the similar, but Rumoh Aceh in Montasik Sub-district, Aceh Besar District tends to have more minimal changes and still retain the main function (Figure 3). The findings of the study by H Aiyub et al [11] are very large changes in function in every existing space such as spatial typology, spatial configuration, and spatial functions (Figure 4). That is due to cultural shifts and the financial condition of the local people.

4.2. Transformation of form
The transformation of form in architecture is primarily the result of a social cultural process. It includes the most useful changes to the physical environment (Figure 5). One of the changes occurred due to penetration. Transformation in culture can be summarized into a long process that is preceded by the occurrence of inculturation and acculturation, the process of cultural dialogue and synthesis, and followed by various shifts and the development of values to be a new cultural figure [12].

![Image](image-url)
The transformation of a building cannot only be seen in culture or in social terms as well. Changes in a building can also be seen in terms of architectural morphology. The shape morphology cannot be
separated from transformation. This can be seen in the rectangle. Transformation of the fields is to form a new pattern but still in interrelated types [13].

Layout, spatial patterns, and physical form in Rumoh Aceh from the past until now has not experienced many changes and still maintain the concept of the staged house. The combination of rectangles and triangles (geometry) remains the main shape. The form of floor plan shows side view of buildings and interior complementary elements such as doors and windows (rectangles). While the triangular plane is seen in the front view of the building and the ventilation in the front and back of the building which follows the pattern of the roof shape. In Rumoh Aceh, which is located in Montasik District, it still uses a base of pedestals and main poles with average 20 poles (grid). Rumoh Aceh, which was the object of research, is 120 years old or more.

4.3. Transformation of Zoning and Circulation

Red dash is primary circulation occurring in main part of house, in upper part. Blue dash is secondary circulation occurring in lower part of house (Figure 6). Based on the notes of figures, primary circulation tends to be unchanged over time. While circulation occurring in the lower part of house tends to change because of the functional transformation of lower part of building.

The main functions of the lower part of Rumoh Aceh are resting area, rice barns, and breeding areas. While in Rumoh Aceh in Montasik District, the lower part of the building is widely used for additions such as bedrooms, warehouses and so on. The change in function has caused a change in the circulation system in Rumoh Aceh found in Montasik District (Figure 7).

4.4. Transformation of Building Materials

In terms of changes in building materials, iron sheet (zinc) material on the roof of the building was very striking because Rumoh Aceh actually used roofing material from thatched leaves, which was woven into the roof. The age factor of the building and the current materials are determinants of material use. The lower part of the building, which already uses a lot of concrete (brick) material. The room at the lower part (bottom) of the building can function as an additional room, storage area or warehouse, or bathroom. The walls in some buildings do not use the original material made of wood or hard bark, and some even use plywood and tarpaulin to cover only the wind and heat. In addition, the use of materials such as plywood or acrylic has often been found in door or window.

![Figure 6. Zoning and circulation of original Rumoh Aceh](image-url)
Oliver Paul in Faisal. G and Wihardyanto. D [14] stated that vernacular buildings consist of rural settlement, types and processes, build form the ground, resources that grow, coping with climate, living space, values, symbols and meanings and Rapoport A theory via Duque Estela [15] suggesting that vernacular buildings grow from traditional people who take advantage of local potential. In addition, Fakriah Nurul [16] and Ulfahmi, Rohidi and Triyanto [17] stated that Rumoh Aceh, in the use of building materials, always uses environment-friendly materials in accordance with environmental conditions such as the use of woven leaves on the roof, the use of logs on the structure poles, the use of bark in some parts of the wall, the use of boards and bamboo as a complement to construction (local wisdom).

If the opinions and theories above are related to the current condition of Rumoh Aceh in Montasik District, it tends to be less relevant because currently the use of material tends to be combined with current material. The main factor of this transformation is the advances of the times and technology (cultural

Figure 7. Zoning and Circulation of Rumoh Aceh in Sub-district of Montasik
transformation). Technology was created to make it easier for humans in many ways. It has an impact on the use of material in Rumoh Aceh. Over time, the use of current materials are inevitable.

5. Conclusions
Rumoh Aceh in Sub-district of Montasik generally tends to be unchanged. It maintain its function as residential house in general. There are still main elements of Rumoh Aceh itself. For example, the number of poles of building as support of structure are still standardized, namely, from 16 to 20 poles, has stairs as vertical circulation system (linear), still has Seuramoe Rinyeuen (veranda with stairs) or usually called Seuramoe Keue (front veranda) where the main function is guest reception area, party event, and religious agenda, and place to meet family. It still has Tungai or middle room functioning as bedroom. It still has Seuramoe Likot or back room functioning as a kitchen or a dining room. However, along with time running, the function of lower parts of building (staged house) has transformed. Previously, the function of lower area of building was used for animal breeding, rice storage, and rest area. Now, the function has transformed, namely functioning as additional area of rooms that may function as bedroom, storage area (warehouse), bathroom or cloth drying area. Moreover, areas of terrace and gate are seldom found in the front part of building.

Generally, Rumoh Aceh found in Sub-district of Montasik does not experience changes in form. It maintains rectangular geometric form if seen from the top or side and triangular form if seen from front part of building. In addition rectangular form is seen in doors and windows. Ventilation uses roof shape pattern, namely, triangle found in the front and back parts of building. The interior does not experience changes in form, but there are additional electronic units and furniture.

Functional changes dominantly occurring in the lower part of Rumoh Aceh in Sub-district of Montasik result in changes of zoning and circulation sufficiently in this part. However, main parts of Rumoh Aceh found in Sub-district of Montasik keep maintaining part of main rooms so that generally circulation pattern does not experience significant changes.

This part seems to be more prominent. Factor of building age of some 120 years old and need of room are prominent things. It starts from the top of building, namely, roof. In fact, Rumoh Aceh used roof cover of rumbia (sago palm), now Rumoh Aceh in Sub-district of Montasik has used materials of iron sheets in general. The lower part of building has owned rooms made of concrete (brick). Moreover, compliment elements of interiors such as doors and windows have used materials of plywood or similar. Because the age of building is old, wood wall made of board or hard wood leather, now some parts of house use wood or common board or plywood, even layered by tarpaulin.

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References
[1] Nurhuzna A 2017 Transformasi fungsi dan bentuk arsitektur bugis makasar di pesisir pantai buti merauke Jurnal Ilmiyah Mustek Amin Ha vol 6 no 2 p 194.
[2] Stephany S 2009 Transformasi tatanan ruang dan bentuk pada interior tongkonan di tanah toraja sulawesi selatan Journal Dimensi Interior Petra Surabaya Christian University vol 7 no 1 pp 28-9.
[3] Statistic of Aceh Besar District 2017 Kecamatan Montasik Dalam Angka Aceh Development Planning Agency p 3-40.
[4] Sapitri and Ariska R 2016 Acehnese culture as represented on the sign found in Rumoh Aceh A Thesis Departement in English Faculty of Cultural Studies University of Sumatera Utara p 16.

[5] Kothari C R 2013 Research Methodology: Methods and Technique New Age International Publishers p 24.

[6] Somantri GR 2005 Memahami metode kualitatif Jurnal Makara Fisipol UI vol 9 no 2 pp 57-61.

[7] Sahriyadi A, Qurratul and Azzahra F 2019 Post occupancy evaluation after earthquake and tsunami in Meuraxa Sub-district: Case study in Banda Aceh IOP Conf Ser: Mater Sci Eng 469 no 2012087 p 2.

[8] Hadjat A, Mataloloa M J. and Abu R 1981 Arsitektur tradisional Daerah Istimewah Aceh Proyek Inventarisasi dan Dokumentasi Kebudayaan Daerah Departemen pendidikan dan Kebudayaan Republik Indonesia pp 21-30.

[9] Sahriyadi 2012 Identifikasi pola ruang, zonasi dan sirkulasi rumah tradisional Aceh di Desa Reudeup Kecamatan Montasik Aceh Besar Jurnal Arsitektur RUMOH Universitas Muhamadiyah Aceh. vol 2 no 4 pp 53-5.

[10] Sabilah F, Antariksa, and Handajani 2014 Tipologi tata ruang dalam rumoh Aceh di kawasan Mukim Aceh Lhee Sagoe Jurnal Arsitektur Universitas Brawijaya (e-journal) vol 7 no 1 p 16.

[11] Aiyub, Loebis H, MN and Pane I F 2019 Changes of Value and Form on Traditional Architecture Rumoh Aceh in Pidie IOP Conf. Series: Earth and Environment Science 126. 2018 012005 pp 1-3.

[12] Krier R 2010 Architectural Composition Edition Exel Menges p 46.

[13] Steadman JP, 1983 Architectural Morpholog London Pion Limited p 269-76.

[14] Faisal G and Wihardyanto D 2014 Studi tata ruang rumah tinggal suku talang manak Jurnal TESA Arsitektur vol 12 no p 98.

[15] Duque E 2002 House form and culture revisited A Subaltern Critique of Rapoport’s Reading of Vernacular pp 1-7. Cited at https://www.researchgate.net/publication/286880177

[16] Fakriah N 2015 Green Materials in Traditional Housing: A Local Wisdom Lesson. Elkawnie Journal of Islamic Science and Technology vol 1 no 1 pp 81-3.

[17] Ulfahmi CGM, Rohidi TR and Triyanto 2018 Local wisdom value of rumoh Aceh Journal of Art Education Catharsis 7 (3) pp 258-60.