A Typological Study of Historical Mosques in West Sumatra, Indonesia

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Abstract

West Sumatra is an important region in Indonesia in the context of traditional architectural heritage, especially mosques. There are 39 historical mosques registered as cultural heritage monuments in West Sumatra, 31 of which were surveyed for this study. Five had been completely renewed without leaving any trace of the original structure, while the location of one could not be identified. All mosques were mapped and a total of 25 were analyzed based on their architectural elements: (1) floor level, (2) main building material, (3) roof type, and (4) minaret. From the analysis, a typological tendency in the historical mosques of West Sumatra was identified. The discussion in this article focuses on the correlation between combinations of the four architectural elements in relation to their location. As a result, the architectural characteristics of the historical mosques in West Sumatra were identified.

Keywords: typology; historical mosque; tiered roof; bagonjong roof; traditional architecture

1. Introduction

The 7.6 Richter scale earthquake which occurred in Padang, the capital of West Sumatra, on September 30th 2009, destroyed many buildings. Some collapsed and some sunk to the ground. It was reported that more than 67,760 buildings were damaged or had collapsed, and more than 500 people died or were injured. Many historical mosques were damaged by the earthquake. Balai Pelestarian Peninggalan Purbakala Batusangkar, the government institution in charge of urban heritage and historical preservation in Batusangkar, had previously documented some historic properties, but no research or scientific publications had been completed on the heritage mosques of West Sumatra.

This research used primary data from a field survey taken during eight days in October 2009, two to three weeks after the earthquake. Data collected from the survey included pictures, building measurements of selected mosques, and interviews with the imams (mosque priests) and mosque administrators. The survey was undertaken based on the list of cultural heritage properties in the Province of West Sumatra, Riau and Kepulauan Riau that was published in 2007 by Balai Pelestarian Peninggalan Purbakala Batusangkar, Departemen Kebudayaan dan Pariwisata. Thirty-one historical mosques out of the 39 listed in the book were surveyed. The mosques were located in Kota Padang, Kota Bukittinggi, Kota Payakumbuh, Kota Padang Panjang, Kota Pariaman, Kabupaten Pariaman, Kabupaten Agam and Kabupaten Tanah Datar. These regions are mostly located in the coastal and hinterland areas of West Sumatra. From the 31 surveyed mosques, five were already replaced by a new construction that was totally different from the original one and the location of one, called Surau Gadang Bintungan Tinggi in Kabupaten Pariaman, could not be identified. Therefore, Surau Gadang Bintungan Tinggi is excluded from the analysis but still listed in the tables.

The objective of this study was to clarify the typology of the historical mosques in West Sumatra based on important architectural elements. The elements that were analyzed are: floor level, main building material, roof type and minaret.

Floor level and main building material are the two most important elements that differentiate the mosques from those on Java Island, although most of them have wood as the main building material. The main building material refers to the material used for the walls and columns. Apart from the walls, the roof is the most dominant element to express the architectural style and typology of mosques all over the Indonesian archipelago and also Southeast Asia. From the 15th until the 20th century, the typology of mosques in Southeast Asia is characterized by a tiered roof style. The minaret is also an important element contributing...
to the overall shape of the building. Even though they are important as well, the plan composition and structural system are excluded from the discussion in this article.

In the context of topographical conditions, West Sumatra displays a very different character between the coastal area and the hinterland. It is plausible that during the early Islamic period in Indonesia, people in the coastal area received the teaching of Islam more intensively compared to those in the hinterland because of easier access. The hinterland, known as Bukit Barisan, is mountainous. This topographical condition restricted access and communication between the coastal area and the hinterland. The area is located at the boundary of Pariaman-Agam and Tanah Datar-Padang Panjang, stretching lengthwise from the hinterland area to the coastal area. (Fig.2.)

Table 1. Historical Mosques in West Sumatra

| Kota/Kabupaten | Name | Year | Roof | Minaret | Floor | Material |
|----------------|------|------|------|---------|-------|----------|
| 1 Gita Padang | Masjid Raya Ganting | 1805 | B1 | b | Ground | Brick |
| 2 | Masjid Muhammadan | 1685-1700 | C | d | b | Ground | Brick |
| 3 Kota Bukittinggi | Masjid Surau Gadang | ? | ? | ? | ? | ? |
| 4 | Masjid Gadang Hilal Nat Ampek | 1840 | A1 | a | Stage | Wood |
| 5 Gita Padang | Masjid Asan Nagari | 1770 | A1 | a | Stage | Wood |
| 6 Gita Solok | Surau Labor | 1902 | C5 | a | Stage | Wood |
| 7 | Masjid Raya Padang | ? | ? | ? | ? | ? |
| 8 | Masjid Raya Padaun | Circa 1860 | C1 | b | Ground | Brick |
| 9 Gita Pariaman | Masjid Raya Karao | 1802 | B2 | b | Ground | Brick |
| 10 | Masjid Raya Pariaman (Surau Pasar) | ? | ? | ? | ? | ? |
| 11 Kab. Puncak | Surau Beo Sing | 1870 | A1 | c | Stage | Wood |
| 12 | Masjid Raya Bungkai | 1823 | A1 | c | Stage | Wood |
| 13 | Masjid Tua Kating Padang | ? | ? | ? | ? | ? |
| 14 | Masjid Raya Tua | 1807 | A1 | c | Ground | Brick |
| 15 | Masjid Tua Pencuan Gading | 19th C | A1 | b | Ground | Brick |
| 16 | Masjid Agung Kote Baru (Al-Bilahi) | 1807 | A1 | c | Stage | Wood |
| 17 | Masjid Siti Manggupah | 1807 | B3 | c | Ground | Brick |
| 18 | Masjid Tua Kote Baru | Circa 1700 | B5 | c | Ground | Brick |
| 19 | Masjid Gahub | ? | ? | ? | ? | ? |
| 20 | Masjid Syahk Ksan Amruellah | Early 20th C | ? | ? | ? | ? |
| 21 | Surau Buay Humka | MB 1700 | B6 | a | Ground | Brick |
| 22 | Surau Nagari Labak Bubu | 1806 | C1 | a | Stage | Wood |
| 23 | Masjid Raya Limu Kauri | 1710 | C4 | a | Stage | Wood |
| 24 | Masjid Syahk Pamansangan | Circa 1680 | A1 | a | Stage | Wood |
| 25 | Masjid Rao-Rau | 1913 | C2 | a | Ground | Brick |
| 26 | Masjid Se Sebe | 1917 | C2 | a | Ground | Brick |
| 27 | Surau Gading Hintaung | End of 19th C | A1 | a | Stage | Wood |
| 28 | Masjid Pakandangan | 1887 | A2 | a | Ground | Brick |
| 29 | Surau Atap Jujh Sincin | 1800 | A1 | a | Stage | Wood |
| 30 | Surau Gading Syahk Budjandil | Circa 1750 | C3 | a | Ground | Wood |
| 31 | Masjid Taqwa Kumpung | Dalam | B3 | b | Ground | Brick |
| 32 | Masjid Tua Batang | ? | A1 | a | Stage | Wood |
| 33 | Surau Ambacuan | A3 | a | Ground | Brick |
| 34 | Kab. Pesisir Selatan | | ? | ? | ? | ? |
| 35 | Masjid Al-Mimim Ketu | ? | ? | ? | ? | ? |
| 36 | Masjid Tua Kayu Jao | 1657 | A1 | a | Stage | Wood |
| 37 | Kab. Solok Selatan | Masjid 60 Kurang Asu | Circa 19th C | A2 | a | ? | Wood |
| 38 | Masjid Raya Kote Kavo | ? | ? | ? | ? | ? |
| 39 | Surau Teunggi Callu | ? | ? | ? | ? | ? |
| 40 | Kab. Dharmasraya | Masjid Tua Sipung | ? | ? | ? | ? | ? |

Legend:
- A = Tiered roof
- B = Tiered roof + octagonal roof + dome
- C = Tiered roof + hagonjong/crown shaped roof
- D = Without tiered roof or others
- a = Without minaret
- b = Twin minaret
- c = Single minaret
- d = Mixed Twin and Single minaret
- A1 = 1-tiered roof
- A2 = 2-tiered roof
- A3 = 2-tiered roof + dome
- B1 = 3-tiered + 3 octagon + dome
- B2 = 3-tiered + 3 octagon + dome
- B3 = 3-tiered + 2 octagon
- B4 = 3-tiered + 3 octagon + dome
- C1 = 2-tiered + 1 hagonjong (4 sides) + octagon (crown)
- C2 = 2-tiered + 1 hagonjong (sides) + crowns
- C3 = 2-tiered + 1 hagonjong (2 sides)
- C4 = 3-tiered + octagon (crown)
- C5 = 1-tiered + 1 hagonjong
- D = Without tiered roof or others
- b = Twin minaret at East side
- c = Single minaret at East side
- d = Mixed Twin and Single minaret at East side
- d = Mixed Twin and Single minaret at West side
- s = single minaret at West side
- t = twin at East side + single at West side
- t = twin at East side + single at East side

Fig.1. Position of West Sumatra in the Context of Indonesia and Southeast Asia. (Source: Syahra, 1995)

Fig.2. Bukit Barisan (mountain/hill range) Position and Administrative Boundary in West Sumatra
2. Traditional House in West Sumatra

In West Sumatra, the Minangkabau is a local ethnic group living in this area. According to Dawson and Gillow (1994), Minangkabau territory was once a large kingdom that spread over most of central Sumatra and encompassed Jambi, Bengkulu, and Palembang. However, with the coming of Islam in the fourteenth century, the Minangkabau were gradually pressed back and reduced to several kingdoms in the hinterland in West Sumatra.

The Minangkabau traditional house has multiple gables and rises at the tip of the roof or curves upward at the edges called *bagonjong*. This type of roof can also be seen on a rice barn, which is usually located in front of the house. The main building material of the house and its rice barn are wood. Raised floors are used in all of these buildings. The raised floor can be as tall as two to three metres. See Fig.4.

The Minangkabau traditional houses are rectangular in plan. This is different from a mosque, which has a square plan in general. The roof of the house is usually lower than the roof of a mosque, which rises at one point at its topmost part. See Fig.5.

3. Spatial Elements of Mosques

The spatial elements that exist in almost every mosque in Southeast Asia are: (1) the main prayer hall, (2) the *mihrab*, and (3) the roof with its structural system. These three elements also predominantly exist in mosques or *surau* in West Sumatra.

3.1 Main Prayer Hall

Because of its main function for ritual prayer, this space must be available in every mosque in the world. During the early Islamic period, the main prayer hall was seen as a space limited by boundaries with a particular enclosure. The roof was not an important element at the time; only a small part of the mosque was covered by a roof, called *suffah*.

Although most of the mosques had walls, their presence was not as important as the roof (shelter). The space in traditional mosques in Southeast Asia is based on a combination of floor (ground or raised floor) and roof. Walls have a function in strengthening the spatial definition of the main prayer hall.

3.2 Mihrab

The *mihrab* is known as the space for the *imam* to lead the congregation in prayer and to deliver his sermon or lecture, which also indicates the direction of *qibla*/Mecca. This space is available in every traditional mosque in Southeast Asia, including Java and West Sumatra, with variations in shape and size. For almost all mosques in the world, this part is also the most important and interesting element, different from mosques during the early Islamic period, when it was less elaborate.
The roof is one of the most important elements that affects the space of the main prayer hall. From an architectural viewpoint this element is even more important, as it determines the overall shape of the building. For most traditional mosques in Southeast Asia, the roof is the most dominant element that shows the expression of the building, from the outside as well as in the interior. Many Southeast Asian historical mosques, especially in Java and Sumatra, have a unique overlapping pyramidal tiered roof, with a changing slope that gets steeper towards the rooftop, in many variations.

The roof structure and construction system that form its shape have many variations in supporting column type, wood joint technique, etc. A square plan and four central main columns is a common composition for mosques in Java and Sumatra. This article focuses on the exterior appearance and shape of the roof of the historical mosques in West Sumatra.

4. Typological Analysis and Distribution of Historical Mosques

There were 39 mosques listed in the list of cultural heritage properties in the Province of West Sumatra, Riau and Kepulauan Riau published by Balai Pelestarian Peninggalan Purbakala Batusangkar, Departemen Kebudayaan dan Pariwisata in 2007. Thirty-one mosques were surveyed but only 25 were analyzed because five were totally renewed and the location of one could not be identified. Because of time limitations and distance constraints, eight mosques remained unsurveyed, located in Kota Solok (one mosque), Kabupaten Pasaman (one mosque), Kabupaten Pesisir Selatan (one mosque), Kabupaten Solok (one mosque), Kabupaten Solok Selatan (one mosque), Kabupaten Sawah Lunto (one mosque) and Kabupaten Dharmasraya (one mosque). However, all 39 mosques were listed for general comprehension. Even though data of the unsurveyed mosques can be retrieved from secondary data, this article will only focus on the 25 surveyed mosques. The location of every mosque listed in Table 1. can be seen in Fig.3.

4.1 Floor

The floor level/type of these historical mosques can be divided into two types: (1) ground floor type, and (2) raised floor type with the floor raised 60-90 cm from the ground. From the 25 analyzed mosques, 16 (64%) were categorized as the first type and nine (36%) as the second type (Table 1.). Based on their location (Fig.6.), we can see that the mosques located in the coastal area, especially Kota Padang, Kota Pariaman, Kabupaten Agam, were mostly categorized as the ground floor type, with the exception of Bingkudu Mosque in Kabupaten Agam. Meanwhile in the hinterland, most belonged to the raised floor type, with only two mosques, in Tanah Datar, identified as ground floor type, i.e. the Rao-Rao Mosque and the Sa’adah Mosque (Fig.8.). These two mosques also had some similarities in roof shape and inside space composition. They were also built in adjacent years, 1913 and 1917. Mosques in the hinterland, such as in Kota Payakumbuh, Kabupaten Solok, Kabupaten Tanah Datar, and...
Kabupaten Pariaman, were of the raised floor type with a variation in the stage (open/hollow and closed/covered).

4.2 Main Building Material

The main building material in this article refers to the material used for walls and columns. Based on their main building material, the historical mosques in West Sumatra can be divided into two categories: (1) brick and (2) wood. From 25 mosques analyzed in this article, 16 (64%) had brick and nine (36%) had wood as their main building material (Table 1., Fig.10.). The number of mosques with brick and wood as their main building material was equivalent to the number of mosques in the ground floor and raised floor type categories respectively. The brick mosques were the same ones as those categorized as ground floor type mosques and the wooden mosques were those categorized as raised floor type mosques. Because of this relationship between floor type and main building material, the location distribution for the main building material category is exactly the same as for the floor type category.

4.3 Roof

The roofs of the historical mosques in West Sumatra can be divided into four categories:

1. Tiered roof (A type)
2. Tiered roof + octagonal roof + dome (B type)
3. Tiered roof + bagonjong roof (C type)
4. Without tiered roof or other shape (D type)

Every roof type had several variations in shape, composition, and proportion. Type A is a tiered roof and has variations in the amount of layers, such as: two-tiered roof (A3), three-tiered roof (A1), up to four-tiered roof (A2) (Fig.12.). The tiered roofs of the historical mosques in West Sumatra display a very steep roof slope and a distinctly curved shape at the bottom part of the roof.

The most common roof shapes of the historical mosques in West Sumatra were three-tiered roofs. Four-tiered roofs were usually found on mosques that had a verandah and/or breezeway on the periphery that should be covered. The only two-tiered roof was found in the Surau Ambacang case. The tiered roof (A type) mosques were mostly found in the hinterland, such as Kota Payakumbuh, Kota Padang Panjang, Kabupaten Tanah Datar, and the hinterland part of Kabupaten Agam and Kabupaten Pariaman.

The B type has several variants, such as: two-tiered roof + three octagonal roof levels + dome (B1); three-tiered roof + three octagonal roof levels + dome (B2); three-tiered roof + two octagonal roof levels (B3); two-tiered roof + three octagonal roof levels (B4); three-tiered roof + two octagonal roof levels + dome (B5); one-tiered roof + one octagonal roof level (B6). Some examples are shown in Fig.13. The combination of all three roof elements (tiered, octagonal roof and dome) is only available in West Sumatra and is not found in any other region in Indonesia. The B type roofs were mostly found in the coastal area.

The C type roof consists of a tiered roof + bagonjong style roof. This type has several variants, such as two-tiered roof + one bagonjong (at four sides) + octagonal roof (crown) (C1); two-tiered roof + one bagonjong (four sides, crown) (C2); two-tiered roof + bagonjong...
The bagonjong roof style has several variations, such as curved only in two directions (commonly used in traditional houses) and curved in four directions. The bagonjong roof constitutes the top roof along with the crown expression. The C type roof is specific to West Sumatra and cannot be found elsewhere. This kind of roof is actually a combination of an overlapping sloped roof with Southeast Asian characteristics and a bagonjong roof. The C type roof mosques were mostly in the hinterland, especially in Kabupaten Tanah Datar.

The D type roof is a category for a mosque roof without any tiered (plain single layer) or any other type of roof other than the ones mentioned before. This type is found on the Muhammadan Mosque in Kota Padang, constructed by an Indian merchant at the beginning of the 19th century (Fig.16.). In this case, the roof is not an important element of the façade. It is understandable that this mosque has a very different expression compared to the mosques built by local people. Mosques mapped based on roof type can be seen in Fig.11.
Based on the number and character of minarets, the historical mosques in West Sumatra can be categorized as follows:

1. Without minaret (a-type)
2. Twin minarets (b-type)
3. Single minaret (c-type)
4. Mixed twin and single minaret (d-type)

The a-type, referring to historical mosques without minaret, is the most common type in West Sumatra. Eleven mosques out of 25 (44%) were without a minaret. Still a considerable number, eight mosques (32%), had a single minaret (c-type). Meanwhile, there were four mosques (16%) with twin minarets (b-type), and two mosques (8%) were of the mixed twin and single minaret (d-type). Mosques without minarets were mostly found in the hinterland area, such as Kota Payakumbuh, Kota Padang Panjang, Kabupaten Tanah Datar and Kabupaten Pariaman (Figs.12. and 15.).

Based on location, the b-type can be divided into two sub-categories: twin minarets located at the east side of the mosque (bt) and twin minarets located at the west side (bb). Three mosques were categorized as bt and one as bb. The mosques with twin minarets were mostly found in the coastal area (Figs.18. and 20.).

The single minaret mosque (c-type) also has several variants: minaret located at the east side (ct); minaret located at the west side (cb); and minarets located at the east and west side (ctb). Two mosques were categorized as cb, both located at Kabupaten Agam. Meanwhile, the ct variant was found in four mosques: two in Kabupaten Agam and the other two in Kabupaten Datar. The single minaret type mosques were mostly found in the hinterland area (Fig.19.).

The d-type has two variations: twin minarets at the east side + single minaret at the east side (dt code: mixed bt + ct), and twin minarets at the west side + single minaret at the west and east side (db code: mixed bb + ctb). Both variants of this type could be found in two mosques in Kota Pariaman in the coastal area.
5. Conclusion

Historical mosques in the coastal area of West Sumatra usually have the following characteristics: brick walls, a ground floor, piled roof with octagonal roof and dome, twin minarets or mixed/combination minaret style. Meanwhile, in the hinterland the historical mosques have wood as their main building material, a raised floor, tiered roof with or without bagonjong, and single minaret or without minaret. These characteristics very clearly differentiate the historical mosques in the coastal area from those in the hinterland area.

Every area developed its own style, not only limited to the coast or hinterland, but also more or less elaborated depending on the characteristics of the area. Tiered roofs with bagonjong were mostly found in the hinterland and are a specific characteristic of the historical mosques in West Sumatra that cannot be found in any other place in Southeast Asia.

Table 3. Correlation between Minaret Type and Location in West Sumatra

| Type | Description | Total | Location |
|------|-------------|-------|----------|
| a    | Without minaret | 11    | Hinterland |
| b    | Twin minarets | 4     | Coastal |
| c    | Single minaret | 8     | Hinterland |
| d    | Mixed twin and single minaret | 2 | Coastal |

Fig.21. Masjid Siti Manggopoh, with Minarets Located at the East and West Side of the Mosque (ctb variant)

Octagonal roof and dome, with twin or mixed minarets were developed only later in the coastal area.

Notes
1. *Kota* means city
2. *Kabupaten* means regency
3. *Surau* means small mosque
4. *Suffah* means shelter. This place is used for learning Al-Quran, like madrasah

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