

## Conference Paper

# Conservation and Rehabilitation of Historic Urban Landscapes as Cultural Heritage Area (KCB): Case in Padang, West Sumatra

Akiko Tashiro<sup>1</sup>, Yasushi Takeuchi<sup>2</sup>, Yoshihisa Wakita<sup>3</sup>, and Jonny Wongso<sup>4</sup><sup>1</sup>Research Faculty of Media and Communication, Hokkaido University, Kita 17, Nishi 8, Sapporo City, 060-0817 Japan<sup>2</sup>Department of Architecture, Tohoku Institute of Technology, 35-1 Kasumi-cho, Yagiyama, Taihaku-ku, Sendai City, 982-8577 Japan<sup>3</sup>Faculty of Architecture, Kinadi University, Kowakae, 3-4-1 Higashi-Osaka City, 577-0818 Japan<sup>4</sup>Study Program on Architecture, Bung Hatta University, Padang, West Sumatra, Indonesia

## Abstract

Padang is the provincial capital of West Sumatra, Indonesia, and was affected by the earthquake that occurred in September 2009. UNESCO and the Indonesian government conducted an emergency survey of the damage. While the municipality of Padang is trying to promote and conserve the area as *Kawasan Cagar Budaya*, there are various difficulties, especially after the natural disaster. Architectural monitoring of damaged houses and landscapes and semi-structural interviews with residents of thirty-five buildings in the area have been conducted since 2010. The research shows how residents changed a way of living in their houses after an earthquake, and show, and religious ties and land ownership are more important than geographical ties at the street level.

**Keywords:** cultural heritage, urban landscape, ethnicity, Padang

Corresponding Author:

Akiko Tashiro

Received: 24 May 2019

Accepted: 25 July 2019

Published: 4 August 2019

Publishing services provided by  
Knowledge E

© Akiko Tashiro et al. This article is distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use and redistribution provided that the original author and source are credited.

Selection and Peer-review under the responsibility of the ISTECS 2019 Conference Committee.

## 1. Introduction

The earthquake that occurred on September 30, 2009, off the coast of Padang is thought to have occurred deep inside a subducting plate. It did not cause a tsunami. The epicenter was roughly 45 km northwest of the city of Padang, at a depth of 81 km. The earthquake had a magnitude of 7.6, and the damage was centered on the cities of Padang, the regencies of Padang Pariaman and Agam, and their surrounding areas. UNESCO and the Indonesian government conducted damage assessment on cultural heritage including manuscripts, historical buildings, and museums in collaboration with international experts [1]. Since then, several surveys have been conducted in collaboration with the Indonesian government and Bung Hatta University [2-5]. In 2010, a year after the earthquake, the National Protection Law for Cultural Heritage in Indonesia was

## OPEN ACCESS

revised and encouraged the conservation of historic townscapes as “Kawasan Cagar Budaya.” This study aims to reveal the characteristics of the historical area of Padang and how the utilization of space by residents has changed and attempts to clarify the transition of the townscape after the earthquake in 2009. It also focuses on the impact of the revised law on the conservation of townscapes and residents through the case in Padang.

## 2. Overview of Padang

### 2.1. Historical background of Padang

Padang was a fishing village or a small sea port in Minangkabau, located at the mouth of the Batang Arau River. It developed rapidly after the construction of a fort on a site 1.2 km from the river mouth and on the right side of the river in 1666 by the Dutch East India Company (VOC) which control the trading on the west coast of the Sumatra. It is said that around the time the fort was built (around 1673), the Chinese immigrated to Padang [6]. It could be said that Padang was urbanized in the 19<sup>th</sup> century, during which its population of about 8,500 in the early 19<sup>th</sup> century grew rapidly almost three-fold to about 25,000 by the end of the century [7]. According to H. G. Nahuijs, a Dutch soldier who visited Padang in the beginning of the 19<sup>th</sup> century (1824), the city was full of merchants, but there were no solid houses, graves were scattered in and outside the city, and the streets were narrow and overgrown with nipa palms [8]. One of the oldest maps illustrating the city of Padang was drawn in the period under the British Empire. In “Padang – The chief settlement of the Dutch Company on the west coast of Sumatra” (1782, National Library of France), we can confirm the original appearance of the town.

From the end of the 18<sup>th</sup> century to the beginning of the 19<sup>th</sup> century, the British ruled Padang twice (from 1781 to 1784 and from 1795 to 1819), and before the Dutch colonial government was reinstated in Padang in 1819, the British destroyed the VOC fortress [6]. After the reinstatement, the Dutch began to develop Padang not only as a trading port but as a military base to dominate the west side of Sumatra, and extended the city limits to the north. In 1824 the Dutch sold part of the land from a block of the fortress to the Chinese community so that it could buy land in the north to build governmental facilities, a city hall, a market, military bases, and so on. It is said that this was the first official land transfer in Padang [8]. During the same period, the Dutch imposed two local rules (1. The alignment of houses along the street, 2. The prohibition of grass roofs) on designated areas. It is said that the townscape of the row of brick shophouses in Padang

was derived from these rules [7]. Furthermore, Minangkabau's peculiar mechanism of maternal land inheritance (land is inherited along the maternal line, and co-owned land is also inherited maternally) minimized the subdivision of land and left more large sites intact in Padang than in other Indonesian towns. A book by H. J. J. L. Ridder De Steurs [9] contains an old map of Padang that was drawn in 1828. In this map we can confirm the detailed spatial formation of Padang, the destroyed fortress area that had changed into a small natural inlet, the town limits that extended to the east, the houses along the street with a narrow frontage to the street and deep backyard, and the scattering of detached houses surrounded by open spaces outside the populated area. We can see that there were already two types of houses—shophouses and detached houses—by this time, and from this formation of Padang we can read the influence of the local rules mentioned above.

In the 20<sup>th</sup> century, the first zoning plan of Padang was drafted by Thomas Karsten in 1936, and it is said that a part of the plan was given shape. The former city hall is also his work. From the Japanese military invasion in 1942 to the 1960s, no city planning was undertaken in Padang.

## 2.2. Residents of Padang

The Minangkabau are a major ethnic group in West Sumatra. Padang is the provincial capital of West Sumatra and many public buildings are designed with a buffalo horn, the symbol of Minangkabau. As the provincial capital, a variety of ethnic groups live in Padang: the Minangkabau, Batak, Nias, Java, Tamir, Chinese, and others. Khaerunnisa conducted a research of 87 buildings in Padang and revealed changes to buildings and their uses before and after the disaster [10]. Semi-structural interviews were also held with the residents of 35 buildings in September 2012 and 2013, November 2014 and August 2017. These interviews revealed three important features of community in Padang: logistics hub, land ownership, and social ties among residents.

First, Padang is a logistics hub in the province. In the past, products from the upland region were collected in Padang and loaded on ship. Nowadays, goods which arrive from big cities like Jakarta and Medan are unloaded in Padang, and local products such as coffee, cinnamon, nutmeg, cardamom, cacao and other spices are loaded and shipped to other cities. Therefore, there are many buildings used as warehouses mainly in Jl. Pasar Hillir and Jl. Pasar Batipuh. Some of buildings were used as offices and as hostels for drivers. Most of the offices and warehouses were transformed from a *Ruko*, or shophouse. This is why *Ruko* were conserved well on these streets. On the other hand,

the daytime population on these streets is larger compared to the nighttime population. The floating population of drivers, day employees, and officers are the majority in the area, and makes it difficult to build a network of “residents” in the area.

The second feature is related to land and house ownership in Padang. As Colombijn mentions in his study [8], land ownership in Padang is not as complicated as other cities in Indonesia. In the historic area of Padang, there are more renters in Jl. Pasar Hillir and Jl. Pasar Mudik than in Jl. Niaga, Jl. Klenteng, and Jl. Pasar Batipuh. Owners often live outside the historic area, in cities like Jakarta or abroad. Rental periods range from short periods to long periods of more than 20 years.

The third feature is the Himpunan Bersat Teguh or Heng Beng Tong, hereafter HBT, and Hok Tek Tong, hereafter HTT, the two old and largest Chinese organizations in the historic area of Padang. There are also family organizations such as the Lim, Lee (Kwee/Lie), Tan (Tang), Huang (W-I/Oei), Tjoa (Kwa/Chua), Gho (Go), Ong, and Kho family organizations, among others. These networks and support systems are based on the ethnic ties of residents, and not on geographical ties at the street level. Religious networks of Muslims and Christians are also observed based on masjids and churches.

### 3. Damage and Changes to the Townscape of Padang after the Earthquake in 2009

#### 3.1. City formation of Padang and the damage situation

In this survey, we classified building types into residential use and non-residential use to clarify their functional distribution in Padang. The latter category was further classified into private buildings, public buildings and religious buildings. Among the residential use buildings, and especially shophouses and townhouses, we classified the form of their roof into slant-roof houses and flat-roof houses to identify roughly when they were built (**Table 1**). We classified “building styles” to identify the approximate date when they were built. We classified “building structures” broadly into wood, brick (including the hybrid of brick and wood) and reinforced concrete (RC). “Damage” was surveyed by appearance checks and classified into 6 stages (no damage, slightly damaged, damaged, heavily damaged, collapsed, demolished).

In the building-type distribution map (**Figure 1**), it can be seen that large private buildings and non-residential buildings such as storages, offices and factories are gathered along the Jl. Batang Arau. Within 2.0 km from the river mouth, there are 17 large colonial buildings that are registered as historic buildings by the city of Padang

and that tell of Padang’s original history as a trading port. Among them, 5 buildings have been renovated, 5 buildings have been removed, and 7 buildings remain abandoned as of 2017. In the survey area, 85% of the buildings are for residential use and exhibit various styles, including barracks, detached houses, shophouses (combined residence and shop) and townhouses (residence use only). The block of the former VOC fort and along Jl. Klenteng, the T-shaped street running on the north and east ends of the block, suffered heavy damage. Gathered here are large numbers of Chinese facilities, including a Chinese temple, funeral facilities, assembly halls for each family organization, two-storey shophouses, and three- and four-storey warehouses and birdhouses. Birdhouses called “rumah brung” are used to cultivate swallows’ nests for Chinese cuisine. We sometimes see this kind of building as being peculiar to the Southeast Asian coastal town, as they are built only in consideration of securing a large space for the swallows, without any conscious awareness of the townscape. They are mainly found along Jl. Pasar Batipuh, Jl. Pasar Hillir, and Jl. Mudik, which stretch to the east from the block of the former VOC fort. Along Jl. Niaga, which stretches to the north, there is a continuous row of two-storey shophouses that forms a commercial area. Of all buildings in the survey area, the shophouses were damaged the most, with only about 37.5% still standing, followed by two-storey townhouses and detached houses on streets other than the commercial streets or inside the block.

TABLE 1: Composition and damage percentage of each building-type (2009).

building-type		composing ratio of building-type	damage percentage incl. slightly dm.~demolished
residence	barrack, shack	10.1%	11.6%
	detached house	10.0%	17.6%
	shophouse	21.7%	65.9%
	flat-roofed shophouse	15.8%	38.5%
	townhouse	15.5%	18.9%
	flat-roofed townhouse	11.7%	22.0%
non-residence	private office bldg., etc.	8.9%	57.7%
	public bldg.	3.6%	38.7%
	religious bldg.	0.8%	71.4%

Through the damage survey of the buildings by external appearance, we classified the damage into 6 levels as mentioned above and plotted the damage situation in **Figure 2**. About 38% of the buildings were damaged, including the lowest level of damage. It is noticeable that a lot of heavy damage was seen along the Batang Arau River and the block of the former fortress. Damage percentages by building type are shown in **Table 1**

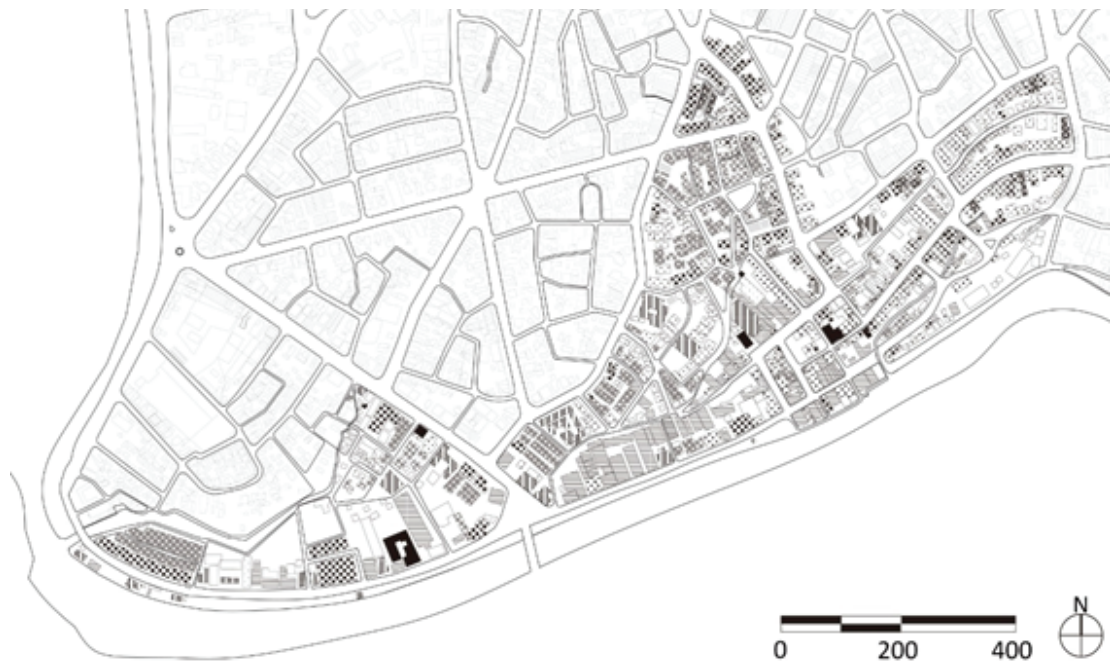


Figure 1: Building-type distribution map (2009).

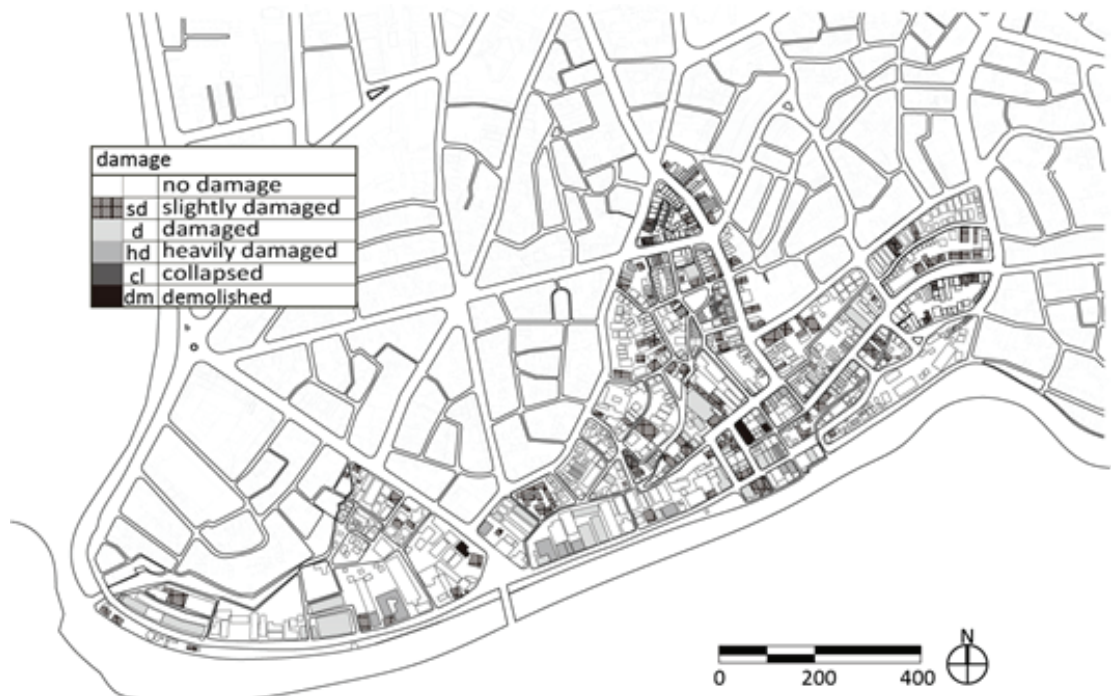


Figure 2: Distribution map of damaged buildings (2009).

Among the residential buildings, the shophouses were the most damaged. Among the non-residential buildings, each was significantly damaged. The other residential buildings, including barracks, detached houses, and townhouses, were not so damaged, because the barracks are not heavy, the detached houses have structures that could withstand the earthquake, and the townhouses are mostly of low stories and RC

buildings. On the other hand, the shophouses were most damaged because they were vulnerable against the earthquake. They faced and opened wide to the streets and lacked sufficient structural walls, and the hybrid structures of brick and wood were not strong enough for the earthquake. Among the religious buildings, the Chinese temple on Jl. Klenteng and the Islamic mosque on Jl. Pasar Batipuh, each of them a historic building of the 19<sup>th</sup> century built of bricks, were heavily damaged because of their structural weakness. However, even the modern Catholic cathedral of RC was heavily damaged.

In the survey area, one- and two-storey buildings made up about 84% of all buildings. Three-storey or higher buildings made up about 15%, including the extended constructions on the rooftop of two-storey buildings.

Brick buildings made up about 54%, and about 49% of them were deemed damaged in the external appearance survey. These buildings were relatively distributed along Jl. Niaga, Jl. Pasar Batipuh and the eastern streets. RC buildings were dispersed throughout the city. In terms of structural classification, the composing ratio of the buildings and their damage situation were such that wooden buildings accounted for 10.3% of all buildings and were damaged at a ratio of 12.5%; brick buildings (including the hybrid structure of brick and wood) accounted for 53.8% and were damaged at a ratio of 48.5%; and RC buildings accounted for 34.6% and were damaged at a ratio of 29.5%.

### 3.2. Changes to the townscape of the historic area in Padang

After the first survey, we continued our survey and classified the changes into 4 levels of damage to the buildings. More specifically, we classified them into the level that requires small-scale repair such as painting of the exterior walls, the level that requires large-scale repair to remove construction materials or exterior walls, the level that requires rebuilding, and the level that requires demolishing. By tracking each level of damage, we found some characteristic changes in the historic area. We focused particularly on the three levels of large-scale repair, rebuilding and demolishing, that would impact the townscape, and entered the distribution of damaged buildings and the records of each over time in **Figure 3**.

Soon after the disaster, on Jl. Niaga, the commercial street with the row of shophouses situated to the north of the block of the former fort, large-scale repair took place to revive commercial activities as promptly as possible, and the repair was completed in two years. When the city limits were extended to the north in the late 19<sup>th</sup> century, commercial activities became active between the north and south, so Jl. Niaga had an

important commercial role and needed to be restored urgently. Along Jl. Pasar Batipuh, Jl. Pasar Hillir and Jl. Mudik, the other succession of streets on the east side of the block of the former fort, not so much repair work took place, and what repair work was applied was not begun at the same time. The large, heavily damaged buildings that included the historic colonial buildings along Jl. Batang Arau were practically demolished in two years, without any plan for after demolishing them. Two years after the disaster, the townscape of the area around the block of the former fort underwent a drastic change. Many buildings were demolished and reconstructed, and a new Chinese temple and funeral facilities were rebuilt in place of the damaged historic temple. For the Chinese community in Padang, the temple and funeral facilities are essential facilities. In Padang, in addition to the family organization there are two funeral associations, HTT and HBT, centered on the temple, and Chinese men choose one association to belong to when they turn seventeen years of age. HTT was established in 1864. As the year of establishment of the funeral associations overlaps with the period of urban development of Padang, these associations play an important role in the Chinese community and in Padang's development, and the funeral facilities are a symbolic space for the Chinese community. Historically, there have been political pressures placed on the Chinese by the Indonesian government, such as by banning their religious belief in 1967 and 1980, and there were also commercial frictions with the local merchants of Minangkabau. Strong intention can thus be seen on the part of the Chinese community to show their unity and revitalization by urgently constructing their religious and funeral facilities in the block of the former fort, the birthplace of Padang. The block was integrally purchased from the Dutch government in the early 19<sup>th</sup> century, so the reconstruction of these facilities would be achieved in a different manner from the traditional practice of landownership of Minangkabau. In relation to this, there is a paper that points out that before the earthquake in 2009, there were conflicts between ethnic or ethnic groups, and it made them to put symbols on public spaces in Padang [11].

The period three to four years after the disaster was a stagnation period during which no remarkable changes were seen other than around the block of the former fort. Five years after the disaster, even these changes decreased, but along the streets on the east of the block there was an increase in the demolition of buildings. This situation occurred because the damaged buildings had kept being used or kept without proper repair in the early stages after the disaster. In addition to these changes, many buildings were left abandoned without any maintenance. It is necessary to examine these abandoned buildings to see the changes that have been made to the townscape of Padang.



The urgent and necessary demolition, rebuilding and repair of buildings were carried out intensively over the two years after the disaster, and general reconstruction was finished in four years. Along Jl. Batang Arau, attempts were seen to renovate the historic buildings into practical commercial buildings for use as a café or bar, for example. However, there emerged cases where historic buildings were demolished or abandoned because it was hard to make proper use of the large sites or to reconstruct registered historic buildings. The difficulty in making good use of the historic buildings was particularly evident around the block of the former fort where abandoned buildings are concentrated.



**Figure 3:** Changes in the townscape of the historic area in Padang (from 2009 to 2014).

No abandoned buildings are seen along Jl. Niaga, because urgent repairs were made after the earthquake and lively commercial activities take place, but along the streets on the east, there are many buildings being abandoned or demolished despite the excellent townscape of the historic shophouses. These eastern streets were also created in the early history of Padang, but many of the historic shophouses along them are left without proper repair or preservation due to the absence of their owners. Moreover, there is the local code of the city of Padang to preserve the façade of historic buildings, but it only requires the façade to be physically preserved without considering building volume or building use. This is so-called “scab preservation”. This code is

leading building owners to a direction opposite of development. One is toward acquiring the large volume of buildings and making less contribution to town activities such as by using the buildings as a warehouse only to literally preserve their building façade, and another is toward declining to develop the buildings because of troublesome façade preservation. A similar case of façade preservation can be observed in the historic townscape of Bengkulu, the capital city of Bengkulu province bordering West Sumatra state. As each direction adversely affects the historic townscape, the code should be revised so that owners can realize the significance of the attractive historic townscape for mutual advance.

## 4. Transition of the Living Environment after the Disaster

### 4.1. Actual state of transition

Through interviews with residents of thirty-five buildings, two cases indicate the aspect of transition in detail. The first case is of a shophouse used as a residence, and the second case is of a warehouse.

#### 4.1.1. House number 17, Jl. Pasar Hilir 94

This shophouse, which was purchased in 1983 by the current owner, had been built during the Dutch period and is now for residential use only. It consists of a two-storey front building, a courtyard and a single-storey rear building. A maternal family line owns this house. Nine members of two families lived in this house at the time of the 2009 earthquake. Before the earthquake, the owner's uncle and his wife, nieces and grandfather had bedrooms on the second floor of the front building. The parents and brothers had bedrooms in the rear building. The roof and walls were destroyed in the earthquake. The west side wall was repaired perfectly, but the east side wall was only provisionally repaired. The roof was repaired using galvanized iron. After the earthquake, the uncle's family moved to the first floor by utilizing the storeroom as their room, and the grandfather moved to the rear building. Thereafter, the uncle's family moved to another place, and the parents came to use the room along the courtyard of the front building from 2014. In 2015, five members lived in this house. These transitions are shown in **Figure 4**.

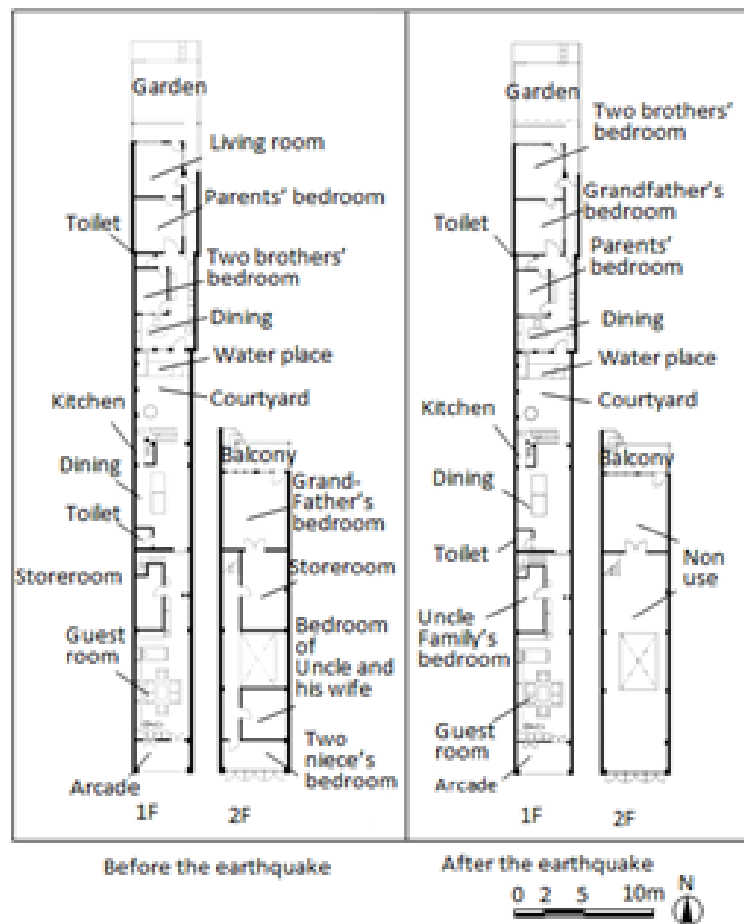


Figure 4: Change of Space Utilization.

#### 4.1.2. House number 20, Jl. Pasar Hilir 28

This building was constructed during the Dutch period, in 1918. It was originally used as hotel, but it has been used as warehouse from 1998. The roof and brick walls on the second floor were collapsed. The roof was repaired using galvanized iron, but rubble was scattered on the floor. The walls were only provisionally repaired. Being heavily damaged, the floor could not be used. At the time of the earthquake, this building was used as a warehouse for a tire transportation company, and the second floor was its office. After the earthquake, the company moved to another place, and the building is now used as a warehouse for spice, such as cinnamon and betel nuts. The office was newly set toward the back of the first floor.

#### 4.2. Types of space transition

Thirty-five cases were the objects of the research. There was a movement of residents or a transition of space utilization in twenty-two of those cases. In the other thirteen

cases, no changes were observed, because the entire space of the building was large compared to the necessary space, and no movement or change was needed.

#### 4.2.1. Movement

After a disaster, changes in space utilization generally occur in response to the incurred damage. For example, a resident may move the bedroom from a dangerous space to a safer one. Changes in the function of a room also occur by the movement. Three kinds of movement may be seen: “indoor movement”, “move in” and “move out”. In many cases, utilization of the second floor is avoided after a disaster. A bedroom on the second floor may be moved to the first floor. This is a case of “indoor movement”. “Move in” and “move out” are movements that occur in relation to another building, but “indoor movement” is movement within the same building. Residents of a building might move to another building after a disaster. Functions which were in the building may also be moved to another building. This is “move out”.

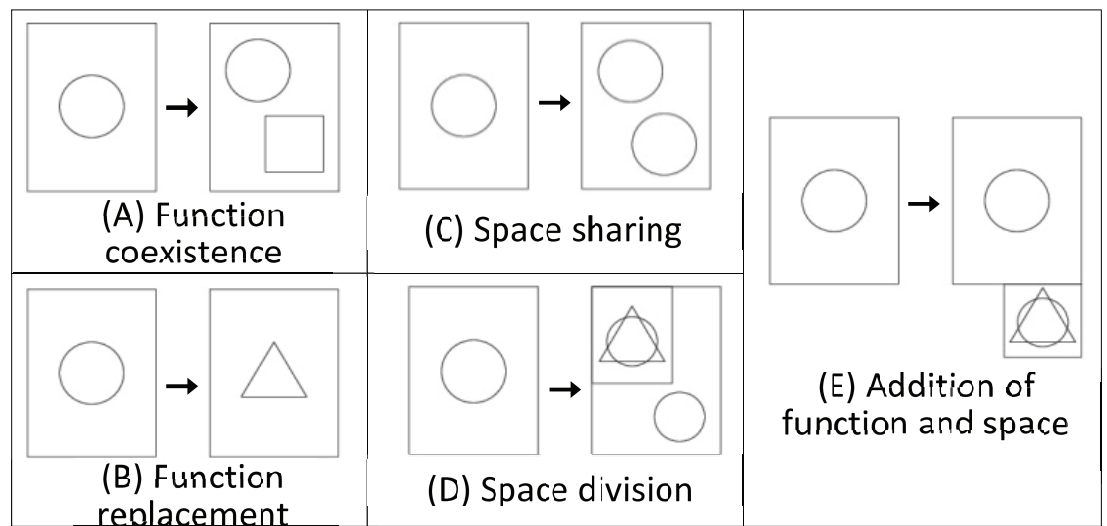
In our field survey, movement was seen in twenty-three of the thirty-five cases. There were nine “move out” cases and five “move in” cases. The buildings along the street mainly function as a warehouse or shophouse, and the number of warehouses tended to decrease. However, vacant buildings were observed neither among the warehouses nor the shophouses. The many cases of movement indicate that movement contributed to decreasing the damage from the earthquake and also contributed to minimizing vacant buildings in the area.

#### 4.2.2. Transition of space utilization

By analyzing the transition of space utilization, five features were identified: function coexistence, function replacement, space sharing, space division and addition. These features are shown in **Figure 5**.

(A) Function coexistence: Function coexistence indicates a situation where more than two functions exist in one space. For example, a space which had previously been used as a storeroom on the first floor may be used as an office and storeroom without setting a partition wall. Before the earthquake, an office had been on the second floor, but it may have been moved to the first floor because the second floor had suffered damage.

(B) Function replacement: Function replacement means a change in the function of a room. For example, a storeroom on the first floor may have been turned into a bedroom



**Figure 5:** Types of transition of space utilization.

after the earthquake because the person who slept on the second floor felt anxious about safety of the second floor.

**(C) Space sharing:** Space sharing is a situation in which the function of a room is the same as before but the number of persons who utilize the room increases by sharing the room. For example, a private bedroom that was previously used by one person only may come to be used by more than one person as a bedroom.

**(D) Space division:** From the viewpoint of sharing, space division has a similar aspect to function coexistence and space sharing. In all three cases, new utilization takes place in the same room, but in the case of space division, two individual rooms are created by dividing the original room with a partition wall.

**(E) Addition of function and space:** The fifth type of space utilization is addition. It applies to both function and space. A new function or space is added to the previous building by constructing another building.

In the case of 94 Jl. Pasar Hillir, the roof and walls of the second floor collapsed and these were only provisionally repaired, so the bedroom on the second floor was moved to the first floor. At that time, “function replacement” occurred by converting the storeroom to a bedroom in the front building, and also by replacing the living room with a bedroom.

In the case of 28 Jl. Pasar Hillir, the previous residents moved out after the earthquake and new residents moved in. The storeroom and office were on the second floor at the time of the earthquake. After the earthquake, the function of storeroom on the second floor was moved to the first floor. The office on the second floor was moved to the first

floor and a new room for an office was made using part of the storeroom. This is a case of “space division”.

There were twenty-two shophouses and warehouses where transition of space utilization was observed. There were five cases of function coexistence, nine cases of function replacement, two cases of space sharing, eight cases of space division and two cases of addition. Although the spaces that could be used for living or working decreased due to damage from the earthquake in most cases, addition was observed in only two cases (6%). This means that people in this area responded to the damage by converting their previous space. Many cases of function replacement and space division were seen. Through these cases, we can confirm the resilience of the residents of Padang who live in the historic buildings according to circumstance.

## 5. Conclusion

This survey shows that the historic urban landscape of Padang could be divided into four areas: Jl. Batan Alau along the river where warehouse and offices are located; Jl. Klenteng around the Buddhist temple and its related facilities; Jl. Niaga, a commercial street that developed after the end of the 19<sup>th</sup> century; and Jl. Batipuh, another commercial street that existed since the Dutch colonial period. After the earthquake in 2009, the restoration of large-scale warehouses and historic buildings were completed within two years. Otherwise, there are no new buildings in the four areas, probably because of the difficulty in using such large pieces of land. On the other hand, the demolition of buildings and construction of new buildings proceeded rapidly within two years in the area around Klenteng. Small-scale historic buildings and land were abandoned at least five years after the disaster and are now in the process of demolition or restoration. Seventy percent of affected small buildings were restored urgently using temporary repair methods. This means that the restoration was not effective and did not correspond to the condition of each building. The utilization of space changed after the earthquake, at least two-thirds in surveyed buildings. There are five types of changes: function coexistence, function replacement, space sharing, space division, and addition of space. Function replacement and space division were seen most frequently in the historic area of Padang, and showed how people continue to use historic buildings corresponding to their changes in circumstance. Finally, this research revealed that both residents and officials recognize the area as a “historic area of Old Padang”, although it is not legally designated as an “area” for conservation. Conservation is still limited to buildings today, but it is necessary to also designate “areas” for future conservation.

## References

- [1] UNESCO. (2010). *Assessment Report and Recommendations for Action Plan for the Rehabilitation of Earthquake-affected Cultural Heritage in West Sumatra, Indonesia*, Jakarta: UNESCO Jakarta Office.
- [2] National Research Institute for Cultural Properties, Tokyo. (2011). Report on Workshop for Conservation of Cultural Heritage in Padang. Tokyo: National Research Institute for Cultural Properties, Tokyo.
- [3] National Research Institute for Cultural Properties, Tokyo. (2012). *Report on Conservation of Cultural Heritage in Padang*. Tokyo: National Research Institute for Cultural Properties, Tokyo.
- [4] National Research Institute for Cultural Properties, Tokyo. (2013). *Report on Conservation and Rehabilitation for Historic Area of Padang*. Tokyo: National Research Institute for Cultural Properties, Tokyo.
- [5] National Research Institute for Cultural Properties, Tokyo. (2016). *Report on "Workshop on Rehabilitation of Cultural Heritage in Padang"*. Tokyo: National Research Institute for Cultural Properties, Tokyo.
- [6] Colombijn, Freek. edited by P. J. M. Nas (2002). "The ecology of Sumatra towns in the nineteenth century", *The Indonesian Town Revisited*, Lit Verlag.
- [7] Colombijn, Freek. (1996). "Padang", Elsevier Science, Great Britain.
- [8] Colombijn, Freek. (1994). *Patches of Padang, The History of and Indonesian Town in the Twentieth Century and the Use of Urban Space*. Leiden: Research School CNWS.
- [9] De Steurs, H. J. J. L. Ridder. (1849). *De Vestiging en Uitbreiding der Nederlanders ter Westkust van Sumatra*, Leiden: Leiden University
- [10] Khaerunnisa. (2013). "Kajian Mengenai Kerentanana Rumah dan Ruko Cagar Budaya oleh Pemilik Rumah pada di Kota Lama Padang Terhadap Pembangunan Kembali Pasca Gempa 2009". *Report on Conservation and Rehabilitation for Historic Area of Padang*. Tokyo: National Research Institute for Cultural Properties, Tokyo. 39-50pp.
- [11] Colombijn, Freek. edited by P. J. M. Nas. (1993) "The power of symbols in the urban arena: The case of Padang (West Sumatra)", *Urban Symbolism*, E. J. Brill.