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Study on Privacy Control in Shop Houses in Yogyakarta

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Doctoral Dissertation

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ABSTRACT

In Yogyakarta, shop house was initially introduced by Chinese community which has increased its popularity among Javanese community. The uniqueness of shop house lies in the mix-use of residential & business activities as this study focuses on. Consequently, it may cause conflict between space & time, and the residents are vulnerable to the excessive interaction with outsiders particularly when the shop is open. They are dealing with privacy issue which is by definition controlling unwanted interaction, an interpersonal boundary-control process, which paces and regulates interaction with others. This study investigates the privacy control through activity analysis focusing on the residents' daily activities related to many factors such as physical features (fixed and semi-fixed), interpersonal relationship, the socio-cultural norm or value (Chinese immigrant or native Javanese), and acoustic, visual, and physical accessibility.

The first survey was conducted in June-July 2011 by distributing questionnaire to 100 residents in Kauman (Javanese community) and Ketandan (Chinese community) in Yogyakarta. This first survey has received 44 responses from Chinese group and 43 from Javanese residents. In the questionnaire, we enlisted the type of activities for them to choose which of the 5-scale level of privacy related to acoustic, interpersonal, and visual/physical is more desirable. The result of the questionnaire was not satisfying for the following reasons: the residents seem to be confused with the questions by choosing the same scale for all activities, and leaving many activities blank. We devise a new method to gather the responses about their privacy requirement from extensive observation and in-depth interview for the second survey.

The second survey was conducted in December 2011-January 2012. This second survey delimits the number of residents into 30 from both Chinese and Javanese communities by the criteria of those who are living and working in their shop house, at least the second generation has been living in the community, and their availability to be observed and recorded their house floor plan with furniture and fixtures. We asked the residents' daily activities and their responses of whether or not they are annoyed when different category of people is interfering acoustically, visually, and physically. There are five different categories of people; stranger, customer, servant/worker, friend, and family member, in addition to oneself that represent different level of privacy.

First, we analyze the selected 16 common activities of their common tendency based on the accumulative responses to compare between Chinese and Javanese. The result shows that Chinese has relatively low responses for acoustic which may mean less sensitivity or concern compared to Javanese. However, for visual and physical accessibility, Chinese and Javanese tend to be similar resulting in the grouping of activities into low, moderate, and high privacy.

For the majority of activity, the residents consider physical accessibility is as important as or more important than visual accessibility. Further result shows that the category of friend is removed from the ordering scale of privacy due to very low responses from both Chinese and Javanese.

This study relates the privacy requirement of each activity with the depth value of space measured from the entrance using the spatial depth method modified from Hillier & Hanson's Space Syntax. The modification is to differentiate the connection between spaces by assigning value at the doorway as the separating element with the next space. Doorway with the door panel has value of 1, and doorway without door panel has value between 1 and 0, that is 0.5.

Examination of the relationship between privacy level and spatial depth value reveals that Chinese group has relatively stronger sense of privacy than Javanese, and physical features provide significant control to meet the requirement of privacy shown through the consistency of the relation between privacy level and the spatial depth. However, we found that elements other than door panel may be used to separate the spaces such as furniture, stairs/corridor, blind/curtain, and steps. We assign different value by measuring the feeling of intruding into the next space ranging from 1 to nearly 0 for each element.

The results show that there is a strong tendency to be related between spatial depth and privacy level. In every house, spatial element is used to achieve the requirement of privacy even though different element is used for different community. However, some activities have weak relationship between privacy level and spatial depth which may imply other control to meet the privacy requirement, such as time and cultural norm/value. Javanese are more flexible in time allotment such as opening/closing the shop. They use extensively furniture, blind/curtain, and steps to separate the spaces where activities take place. Their average range of spatial depth is lower than Chinese which use more of corridor and stairs to separate spaces. Chinese are more fixed in time allotment In conclusions, this study proves that spatial control is the primary tool of privacy control in addition to time and cultural norm/value.

LIST OF PUBLICATIONS

Conferences:

1. Anggraini, L. D. (2011, June) Spatial Arrangement in Chinese and Javanese Shop House in Yogyakarta City. *ASEAN Conference on Environment-Behaviour Studies (AcE-Bs)*. Bandung, Indonesia.
2. Anggraini, L. D. & Ohno, R. (2011, October) A Strategy of Two Different Cultures for Dealing with Housing Issues of Shop Houses in Yogyakarta City. *IAPS International Network Symposium*. Daegu, South Korea.

Journals:

1. Anggraini, L.D. (2012, October). Spatial Connectivity of Indonesian Shop Houses. *Asian Journal of Environment-Behaviour Studies*, Vol 3, No. 10. pp. 45-55.
2. Anggraini, L.D. & Ohno, R. (2013, March). The Degree of Privacy Requirement for Residents' Activities in the Shophouse. *Journal of Habitat Engineering and Design*, Vol. 5 No.1. pp. 113-125.

Study on Privacy Control in Shop Houses in Yogyakarta

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CHAPTER 1 Introduction

1.1. Background

1. Importance/Uniqueness of Shop house

Mixed-use dwelling has been the current housing trend in Yogyakarta, Indonesia. Mixed-use dwelling here means that one unit of dwelling is used for other secondary purpose such as renting or sparing room (space) for commercial use. Mixed-use or multi-use dwelling therefore means housing with secondary purpose(s); which is commercial purpose. Urbanization and immigration have been ongoing part of humankind mobilization for various purposes, marriage, work, study, etc. The appropriateness of indoor-living space in multi-use housing and behavior of its residents is referring to the "use" of space, which is the available space inside the house. As a media, a tool, space is utilized according to the perception behavior of the residents. Behavior of residents is influenced by their habits and cultural backgrounds. Behavior of residents can manifest in many forms but this study is focusing on the controlled behavior inside the designated space which is defined into primary, secondary, tertiary, etc activity.

Shop houses which serve dual purpose of business and dwelling are preferable to support the household economy and have multiplied in number during the economics recess in the last decade. The urban dwellers that come to the cities and towns from various different areas in Indonesia have different characteristics and potential problems in adjusting and adapting to the urban situation. The impact of urbanization is also greatly affecting the native dwellers in order to adjust to the change and compete with the increasing demand in economics situation. This has affected the important quality that housing should contain; the optimum way of accommodating the life.

As the economic gain was going more difficult for agricultural business, younger generation has lost its appeal to live in villages and moved to city or urban area. The crowded house and the demand to support household economics have forced urban citizen to open business at home. The possibility of loosen rules in taxation and other benefits may boost the increasing number of shop house type of building. New constructed shop house has become popular in urban areas, not to mention the common house which opens for home business.

The issue of privacy in shop house as a private property. Shop house is a type of private house that holds business. In general, private houses can be divided into two groups, common houses and shop houses. In many places where shop house existed, there have been shop houses which were only used for business, but also there were ones which were used for business and dwelling place. Among the later, there were family shop house, those that were dwelled by a family, and non-family shop house, which was dwelled by workers or non-family members.

The uniqueness of shop house is also at the mixture of the activities which occurred daily in the house because of the combining purpose of living and working. The way residents who lived in the shop house had to manage their activity because of the opening shop was highlighted and related to their custom/habitual action. According to the preliminary study, there are activities which are related to domestic activities and there are activities which are related to business activities. The observed shop houses in this study should contain both types of activities in order to fulfill the purpose of this study, the original purpose of shop house, despite of the thwarted meaning of shop house. Shop house was defined more to the image of a building which is opened to home/small business regardless of whether the resident/owner lives in the house. Because of the business and domestic activities, shop house carries important meaning which differentiates it from a common house.

Furthermore, as a private property, shop house is fully subjected to its owner who sets the rules of how the shop will be run through the management of time or the utilization of spaces for the sake of the business. How exactly the owner manage the time, the space, and the activity in the shop house is undoubtedly related to the notion of privacy in the house as a private property. A shop house is a totally private area which restricts the trespassing of outsider (customer or stranger). Especially during opening hours, the residents of shop house were most susceptible to pressure from constant interaction with customers or strangers. Therefore, some kind of privacy is needed more than in a common house.

In conclusions, the way residents managed the utilization of spaces for the mixed purposes of business and domestic activities on daily basis points to the need of privacy more than common house. When the residents open their house for business, they allow interaction with customers, friends, guests, and even stranger into their territory generally during certain open hours. Because of this, the residents were more prone to unwanted interaction with the outsiders. During these open hours, residents have to control the people whom are allowed to enter the house. In other words, there is a need to maintain privacy at certain point to provide security and protection for the business while at the same time to provide a comfortable living space.

2. Brief History of Shop house

Existed along Malioboro, the famous shopping street in Yogyakarta, they are almost forgotten though they were the earliest settlements/communities that continue to exist until today, shop houses. Concerning its style, there are outstanding Chinese & Dutch shop houses or the mixture, but Javanese shop house have developed their houses as well into shop house or multi-function house. In other areas/cities, Cilacap or Malang, there is Arab community which settles in separate urban area, who live in shop house. This segregation is the consequence of *wijkenstelsel*, the zoning rules the Dutch made during its period of colonialism in the 18th century in order to control people. In this chapter, this study concerns on the emergence & development of shop house in Yogyakarta.

Chinese shop house has become popular in Java by the Chinese immigrants who flooded in Indonesia during the colonialism period in the 16th century, while the Javanese traditional architecture does not have a type of shop house (Pratiwo, 2010: 243). In Yogyakarta, the Chinese first introduced the shop house building to the local architecture that has become typical shop house in particularly Southeast Asian. Many years later Javanese developed a type of shop house apart from an ordinary or traditional house by simply adding the function to the existing space.

Figure 1.1. Chinese Shop Houses in Yogyakarta in 1953

Shop house in Yogyakarta was introduced by Chinese immigrant (see Figure 1.1) who lived in Southern China and migrated particularly during the era of colonialism in South-east Asia. During that era, the modern shop house has become popular and occupied extensively many urban areas until the era of independent of Indonesia up to now. This immensely has changed the economic and political direction in general from agricultural country to trading and home business. However this influence was pin pointing to the gap between native economic growth based on agriculture and immigrant economic source based on trading. This resulted in the enclave of Chinese who settled in row of shop house forming urban area, while Javanese lived in scattered houses surrounded by field in villages.

Therefore as traditional Javanese house based on agriculture was different from shop house, the later kind of shop house owned by Javanese was also supposedly different. It emerged as the alteration of agricultural house into sub urban house. Pratiwo (2010: 243) has mentioned clearly that traditional Javanese do not have a type of shop house. Interestingly, a study stated that shop house that was originated from China was also a kind of transformation from an agricultural house (Evawani, 1999). In conclusion, either shop house built by Chinese or Javanese in Yogyakarta has become separate design, each with its own characteristics.

Chinese immigrants in Java, Indonesia, is part of local potential despite of the political issue during the periodical government since the colonialism period in Indonesia (17^{th}-20^{th} century) to the New Order era (1966-1998) that oppressed the existence and uniqueness of Chinese culture. This fact gave way to the forceful blend with the locals, native Javanese in some ways.

In the context of politics, one hour drive from Surakarta, and four-hour drive from Semarang, Yogyakarta is a refugee area, the melting pot area, by its strategic position to flee from surrounding places during the chaotic situations[1]. Close connection of early shop house settlement was presumably brought by Chinese who settled in Yogyakarta through the construction of the first railways in Middle Java connection Semarang, Surakarta, and Yogyakarta (Zahnd, 2008:36). A study by Pratiwo mentioned that the Chinese house in Lasem, near Semarang, and probably throughout Java is more likely to be the result of acculturation which is unique and apart from the original Chinese architecture and traditional Javanese. That was mainly talking about the condition pre-colonialism, while Mutiari (2010) emphasized that the political factor is the main actor in the changes of Chinese houses in Surakarta, so we may infer that political influence played big portion in cultural changes. Another fact that supports this idea is the limitation in acquiring land to work for Chinese who came to Java during colonial era compelled them to engage in trade and business and live close to market place.

Based on this, we may conclude that presumably the early shop house in Yogyakarta was the product of the fluctuate condition of politics. Second, we may conclude that the Javanese whose main occupation were farming had only recently built shop house may be influenced by Chinese shop house. This may be the second phase of development of settlement in Yogyakarta as a result of economic conditions rather than political conditions. Chinese in Java was always considered as minority yet their influence was extensively embedded in everyday life that it is impossible to recognize them as certain period of time (Zahnd, 2008: 29-30).

Yogyakarta city was established in 1756, and it is the latest Kingdom in Java which was based on the traditional Javanese culture in ruling government[2]. It bore the traditional way of living for most Javanese as farmers which later developed their own urban settlement in order to get more economical benefit. In old days Chinese cultural group had their own economic benefit despite of their limitation in occupation. They were able to develop their settlement through their limitation and become flourished as the economic center. This had triggered social jealousy (Pratiwo, 2010: 11-12). In fact, the repression underwent by Chinese prompted acculturation to take place by force. However, little study observed how Chinese may respond through their physical environment in accordance with the activity which may be contrasted with Javanese.

1 There had been ethnic riots that caused many Chinese to flee to Yogyakarta sometime during the colonialism period (17^{th}-20^{th} century).

2 Yogyakarta is ruled by a king as the governor until today and has been given special rights by the government of the Republic of Indonesia since 1945.

The type of family houses, traditional Javanese architecture doesn't have shop house type but house with yard at front or back (Pratiwo, 2010: 243). Javanese has been living mainly as farmers and owns the land. Their housings were considered as a group of houses formed a village surrounded by land where they work on. Their typical houses were opened and having access from the open space/yard surrounding their house, where the visitor may come at any time from any direction. This is a Javanese house as described by Geertz (as cited in Westin, 1970 in Altman, 1975: 15) "The houses face the street a cleared front yard in front of them. There are no walls or fences around them, the house walls are thinly and loosely woven, and there are commonly not even doors[3]. Within the house people wander freely just about any place any time, and even outsiders wander in fairly freely almost any time during the day and early evening. In brief, privacy in our terms is about as close to nonexistent as it can get. You may walk freely into a room where a man or a woman is stretched out and sleeping. You may enter from the rear of the house as well as from the front with hardly more warning than a greeting announcing your presence…" The encircling fence, if it exists, was transparent from bamboo or plants which allow the passersby to observe through the yard to the house (depicted in Habraken, 1998: 166).

This indicated the contrast from the earlier type of family house in China, which was closed from the street and surrounded by massive walls. The open spaces in the form of small courtyards was in the middle of the house (Schinz, 1989: 58) which may indicated the center of attention, light and air circulation, while in Javanese houses, the center of attention was inside the houses where the rooms were divided almost flexible and changing according to the function and number of family. The most observable presence or absence of fence was the indicator of different expression of privacy (Pratiwo, 2010: 244).

The origin of shop houses, where "shipping and trade were therefore the predominant development factors for the main cities in the south." Again "The conditions of trade and business along with the climate gave rise to a distinct type of commercial building which lend the cities and larger towns of the south their special urban character. Merchant houses each had a narrow, valuable frontage to the street, generally less than four meters wider (standard length of wooden beams for the construction of roofs). The house wall had a set-back of about one to two meters from the street-curb, leaving a small space under the roof for protection and a right of way in the mostly rather narrow streets. This space developed later into a colonnade. Today most of the southern cities have their main streets lined on both sides with colonnades-- a unique feature of the south." (Schinz, 1989:63).

[3] In Java, there is a habit to sitting down and laying down on a bench at the front or outside the house, especially in the village, to greet any one of neighbours or passers-by.

The spatial arrangement could be derived from the following description: "…at the front would be the business section, behind this the reception hall and the ancestral altar room, followed by a small courtyard; then came the main family's living quarters, another courtyard, a kitchen and dining room, other family members' living quarters, another courtyard, a kitchen and dining room, other family members' quarters, servants' rooms and so on. Finally, there would be a storehouse on the back-lane for the storage of goods for trade. In this way, a house complex may have had a depth of up to a hundred meters. Many of the buildings were multi-storied and a very intricate system of light and ventilation had to be invented." (Schinz, 1989: 63). Later on as the consequence of the treaty of Nanjing (1842), many foreigners who were living in the suburbs or outside the city walls developed a new complex of building style mixing western and Chinese elements through which the street colonnade appeared as an integrated part of the merchant buildings. This architectural style was spread to all the places overseas in the Southern Seas and Southeast Asia where the southern Chinese migrants settled" (Schinz, 1989: 64).

Now we refer to the characteristic of shop house as a type of housing where residents were living and working. We may infer there must be simply turning some space to allow the business to take place and it must be at the front part of the house. This working activity at home more or less interrupt the spatial arrangement to allow the flow of goods to/from the storage, the flow of customer in/out the shop, and so on, including safety or privacy of the residents in allowing their interior to be exposed and their working activity to be included in dwelling space. This paper limits only to expose the group of shop house buildings in their neighborhood to analyze the interconnection between houses with the street. The common physical characteristics of the settlement as a whole group may give different impression than the individual.

Presumably it is the imposed tax system during the colonial government which influenced the narrow-abutted shape of Chinese shop house plan. Tax system was introduced through trading during the colonialism era that replaced the indigenous traditional market wisdom with new economic system of money and tax from the trading business. Tax was mainly collected from the market or *pasar*[4] and shops or *toko* or *warung* (Surjomihardjo, 2008: 27). Second presumption is that this narrow-abutted shape is originated from Southern part of mainland China through its trace of ownership's background (Ellisa, 1999: 316) which also solved the problem with taxation and density in urban area (Schinz, 1989: 63).

[4] *Pasar* is a native language which refers to the place of selling and buying in one big area, while *warung* means individual stall which also refers to a place of selling and buying. *Toko* means shop as more fixed and bigger scale than *warung. Toko* has originated and introduced by Dutch.

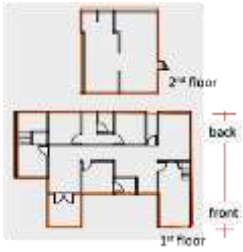
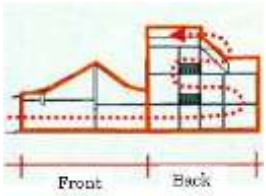
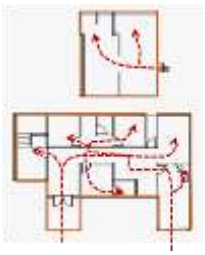
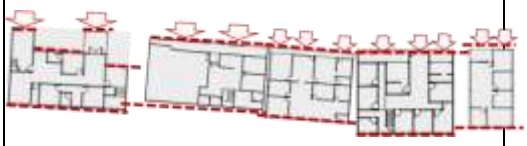
<table>
<tr><th colspan="2">Chinese</th><th colspan="2">Javanese</th></tr>
<tr><td>Structurally separated front part from back part with separate access. Linear composition and repetition of room unit.</td><td> 
</td><td>No apparent structural separation, nor separate access, clustered composition of room unit,</td><td> 
</td></tr>
<tr><td>Building’s circulation is vertical. Interior movement is vertical, focusing on both horizontal and vertical (3 dimensional).</td><td> 
</td><td>Building’s circulation tended to be horizontal, focusing on the plan (2 dimensional). Interior movement is horizontal (not seen in section part).</td><td>  </td></tr>
<tr><td>Relation of building to the street is rather in uniform scale of building width and terrace depth, having entrance straight within short distance, continuous façade forming street edge.</td><td> 
</td><td colspan="2">Relation of building to the street is rather irregular; having indirect entrance with front yard/ deep terrace/transparent fence, sometimes surrounded with open spaces, façade of building is not always solid but void and varied with the distance from the street.
  </td></tr>
<tr><td>Property boundary is clearly demarcated, never overlapping with public space that is street. Only one entrance from street at the front part which means strong orientation to the street.</td><td>  </td><td>Property boundary is not clearly demarcated, sometimes overlapping with street, small street, or passageway. Not too strong orientation to the street</td><td>  </td></tr>
</table>

Figure 1.2. Some Differences of Chinese & Javanese Shop Houses in Yogyakarta

In Yogyakarta, we can conclude there are two big groups of community who have strong characteristics which live side by side in separated areas, Malioboro, and Kauman. Despite of many functions of spaces they can employ in their houses, these two communities have noted for their differences of their houses and neighborhood (see Figure 1.2). Javanese houses seem to always open and have many entrances; the orientation is not directly to the street at the front of various shapes, and considered natural in its formation of the settlement. Front and back area are not easily noticed from the shape or the entrance. Javanese houses have right and left sides sometimes open to the street or the yard surrounding them. Chinese houses seem to be more closed and have one entrance (Figure 1.3). They are directly connected to the street at the front in a generally long, narrow shape. Most of these Chinese houses are shop houses, and sometimes they are in similar façade design but it is not always function as shop house. As studied in Semarang by Widodo (1988) that Chinese houses and shop houses are resemblance in their shapes and facades.

Two types of community are examined in this study. The first area consists of shop house type that are familiarly used to describe the Southeast Asian type of low rise building to accommodate business on the ground floor which was popularized by Chinese (Figure 1.4). The second area consists of ordinary houses that are accommodating shop by giving up some front spaces within the house which were mostly built by Javanese (Figure 1.5). This study regards the two targets as shop house community to stress on the difference of the sociocultural background of the residents. The important factor is the residents may have a vulnerability of excessive interaction when open the shop and how they manage their activities for business and residential with stranger such as street vendors (see Figure 1.6).

Figure 1.3. Early Type of Chinese Shop Houses in Ketandan (survey 2005)

Figure 1.4. Recently Built Chinese Shop Houses (survey 2005)

Figure 1.5. Recently Built Javanese Shop Houses (survey 2008)

Figure 1.6. Street Vendors in front of Shop Houses (survey 2005 & 2012)

3. Notion of Privacy and Privacy Control

Privacy is unique in every individual and has different manifestation according to the related background that makes it interesting and helpful to understand the social situation and the potential personal conflict. In achieving a desired degree of privacy, an individual's interaction degree is one of the mechanisms. However, privacy may not be an individual case but linked to the sense of community (Wilson, et al, 1996) in achieving the basic idea defined by Rapoport (in Altman, 1975: 17) as the ability to control interaction, to have options, devices, and mechanism to prevent unwanted interaction, and to achieve desired interaction. This may suggest that the need for privacy is reflected in the way an individual chooses to interact or not interact with people both as individual and as a group.

Privacy as one of the forms of the relationship between individuals and their environment is expressed through the performance of the activity or action, so the privacy meaning can be derived mainly from the activities. Particularly when privacy is linked with the conflicting space when various activities are carried out in the same space, the actual need is depending on the meaning of the activities. In other words, activities may happen within the space but its meaning may not depend on the space. This supports the idea that activities are an important variable of human environment that can define the 'function' and 'meaning' (Rapoport, 2005: 41).

Some studies of dwelling refer to certain space with certain activities which require privacy such as kitchen or bedroom or living room and the home as a whole (Oseland, 1993: 254) resulted in the privacy to be a function of the type of room and activities (Oseland 1993: 259). Other research on privacy such as privacy gradient (Alexander 1977: 610) is more focused on the relationship between the space and the person but lacking in observing the meaning of activity itself. Therefore, there is a need to study the actual activities performed by the targeted users to construct the real meaning of different activities which may need different degree of privacy.

Much literature has stated that privacy is affected by sociological needs, psychological state, and individual differences and has different form according to its purposes. Regarding privacy need, the sociological need is fulfilled through the social interaction, and the psychological state is fulfilled through the perception of the three access of privacy: acoustic, visual, and physical, and the individual differences are reflected in the variance of activities and the different response from the group of community for each activity. Activity of the residents of shop house is considered to be a unique condition depending on the way the residents respond to the social interactions. This study proposes that the daily activities elicit different privacy degree analysed in the way the residents interact with people. This study aims at revealing the privacy degree of the residents through activities based on social interaction.

Privacy Gradient

That a house is private is universal. Consider a house of one room. It has value of privacy of 100% (greatest value). Abruptly when stepping outside, the value will go down to 0%. The person will be exposed to public, to the noise, to the physical and visual disturbance. Yet in general a house does not contain only one room, but many rooms. And the residents may arrange the rooms inside the house, aiming to perform certain activity with the high consideration of his/her privacy. Then privacy at home can be considered to have gradient.

Alexander (1977: 610) mentioned in his idea on intimacy gradient that the arrangement of space based on sequence that corresponds to their (the space's) degree of privateness. Second, he implied that the degree of privateness relates to the interpersonal relationship between residents and strangers, friends, guests, clients, and family.

"Unless the spaces in a building are arranged in a sequence which corresponds to their degrees of privateness, the visits made by strangers, friends, guests, clients, family will always be a little awkward."

About the degree of privacy Habraken (1998: 138) clearly mentioned about the distinction between the designation of space as private and the degree of privacy it affords.

"Neither backyards without fences nor bedrooms without window curtains may afford much privacy. But both spaces are clearly private, relative to the street and alley."

Rapoport (2005: 81) define privacy as controlling unwanted interaction. It is the matter of the definition of 'interaction' and 'unwanted' i.e., between whom and whom, when, where, and why. Privacy includes rules and manners, organization of time (temporal), spacing, use of physical element, psychology (withdrawal), and so on.

1.2. Previous Studies

1. Residents' Activities in Shop house

There are several studies on shop house in Indonesia. One study of shop house or multi-purpose house in Yogyakarta (Melina, 2011) mentions the mixed activities of the residents and workers as well as the customers. They were using the same room or space for different purposes depending on the time. They were also utilizing rooms for both shop and household. Another study of shop house in Malang, Java mentions there was a significant effect of trading activity on the interior pattern of shop house building in Chinese area (Aryanti, 2005).

It is likely that the characteristic of the Javanese people that is sociable and open is the supporting factor. This seemingly recent trend probably has been growing ever since society existed even though this notion needs another study to disclose the real motivation. The growing need of housing has many cause factors. It may be new established family. Even though many factors may cause it, the emergence of shop house is overwhelming. In average, everyone from ten houses has altered into a mini shop selling everyday necessities called "warung", a shop selling ready-to-eat food called "warung makan", or renting room/space for shop or services as reported elsewhere.

The important thing is the daily activities of the residents within the house when they open their shop. The daily activities can be varied among individuals and ranging from shop keeping to housekeeping activities. This study will not compare Chinese & Javanese community but examine the influence of different community and various cultural backgrounds in doing their daily activities.

2. Privacy in Houses

There have been tremendous researches on privacy in various fields. Several papers concerning privacy mentioned that there are many factors that influence the various perceptions on privacy. These factors may convey the many values. Schwartz and Bilsky (1987, 1990 in Newell, 1998) derived ten value types: self-direction, universalism, benevolence, tradition, conformity, security, power, achievement, hedonism, and stimulation.

Privacy in houses is revealed as a function of the type of room & activities (Oseland, N. et.al, 1993). Spatial overlap was minimal or rarely spatial because of the adjustment people make to manage setting boundaries—spatial, temporal, behavioral, and social—to restrict and control information and/or interaction from one role setting to another (Ahrentzen, S. B., 1990).

The arrangement of spaces based on sequence corresponds to their degree of privateness; known as privacy gradient (Alexander, 1977). Private space is placed relative to the position with public space (Habraken, N.J., 1998)

Privacy is needed to provide security and protection during the process of interpersonal interaction (Altman, 1975). Regardless of many different definitions of privacy found in literature, a study by Newell (1998) stated that the function and definition of privacy across cultural group emphasized on no disturbances as the main factor and differences.

Without understanding the character of the people which is often neglected, we may not understand why spaces are used in different way. Even if it is used for the same purpose but we may find great variety of doing it. For example, eating, some people may accustom to eating with chopsticks, while another culture may accustom to eat with spoon and fork. We cannot say one custom is better than the other. Each has its own uniqueness in executing their purpose of eating. this paper is trying to reveal the custom of inhabiting for the purpose of live-work dwelling. this paper is not trying to generalize the custom, but to find the uniqueness which is seen through its similarities

1.3. Research Objectives

The purpose of this study is to investigate the control of privacy by analyzing activities related to the spatial arrangement of various shop houses of two different communities, Chinese and Javanese. This study is focusing on the way the residents control privacy which is influenced by many factors such as socio-cultural background and manifested in the way the resident perform their daily activity. As Rapoport mentioned that culture lead to particular ways of doing things (2005: 78), this study has chosen two communities, Chinese and Javanese, in Yogyakarta to see the impact factor of cultural differences to the perception of privacy. This study does not aim at representing the typical shop house of each culture and does not compare the Chinese and Javanese shop houses for their architectural styles as an artifact. The intention is to get the samples of shop house that mixed activities for residential and business purposes in various shop houses.

This study states the following premises:

1. There is a conflict of space which is resulted from the mixed-use of living and working activity in one shop house.
2. The residents are susceptible to unwanted interaction with outsiders.

Based on the above premises, this study attempts to:

1. Inquire the privacy requirement of the residents through their daily activities which take place inside their shop houses
2. Investigate how the residents control their privacy through spatial control, time, or cultural norm/value.

Privacy in this study is broken down into acoustic, visual, and physical accessibility[5]. Acoustic accessibility stresses on how much one can hear and be heard by others. Visual accessibility addresses the ability to limit other's view of oneself related to privacy control. Inherent in human behavior is the tendency to avoid situations in which one can be watched without being aware of who is watching. In shop house where the residents deliberately open their house to the outsider, acoustic, visual, and physical accessibility is important determinant in controlling privacy. Privacy is also about getting into someone else's house. Physical accessibility in this study may include the situations in which one can get into or intrude during activity. However, this study particularly concerns more about the incoming of acoustic, visual, and physical intrusion which affect one's privacy.

[5] Based on common sense that how much one can control what to hear and see or what is not to hear and see by someone else, and how much one can go into someone else's or someone else's can go into one's space can refer to one's privacy requirement .

1.4. Organization of Study

This study conducted two surveys and consists of five chapters. The first chapter of introduction states the background and purpose of study. Chapter two explains the development of method to obtain data based on interview and observation. Chapter three is analyzing the data from the interview to examine the relation between activity and the privacy level. Chapter four is to examine the relation between privacy levels of activity with the spatial depth, and then all the results are summarized in chapter five.

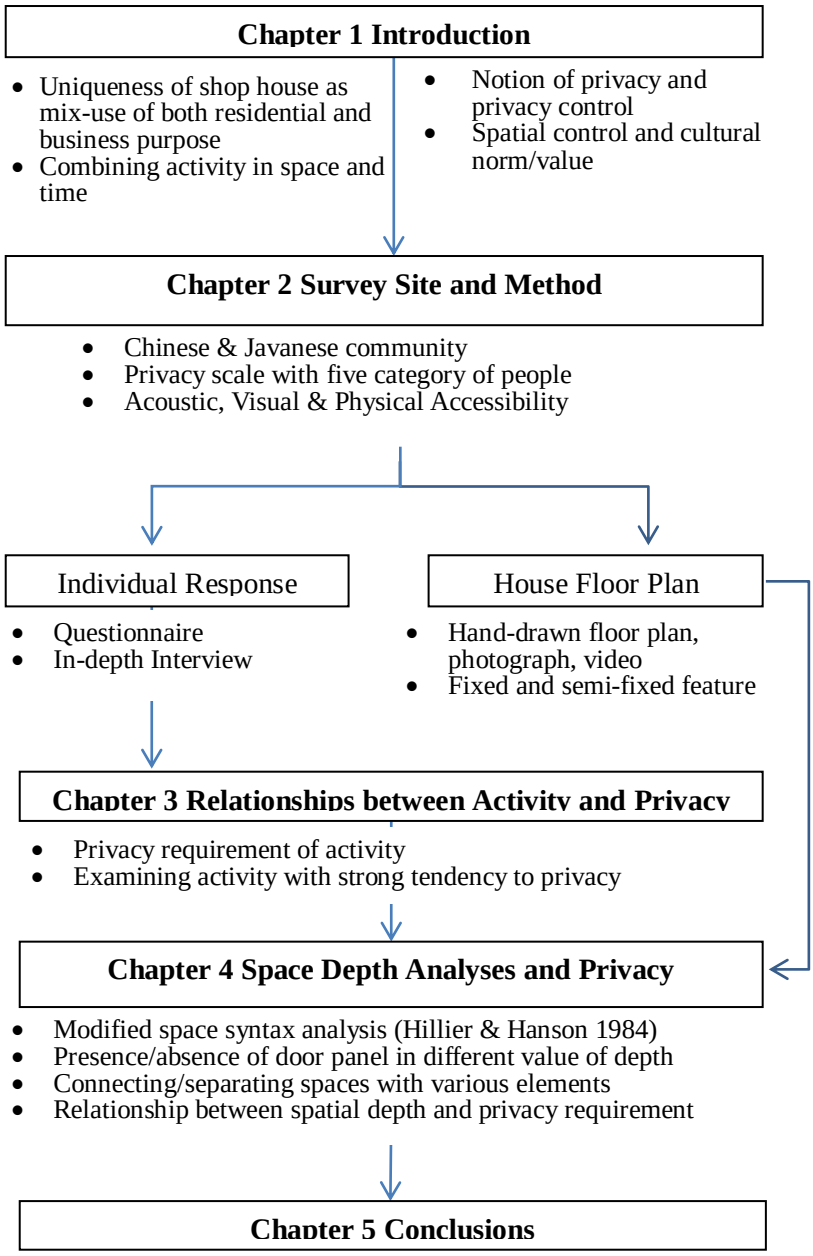


Figure 1.7. Organization of Study

CHAPTER 2 Survey Site and Method

2.1. Survey Site

1. Observation Area

The observation areas are Ketandan & Kauman, Yogyakarta (see Figure 2.1). Ketandan and its vicinity area was where many Chinese shop houses remained existed and became the center of business and urban settlement. Kauman was the early urban settlement of native Javanese predated the Chinese shop house, but now several houses were turned into shop house.

The difference between the shop house in Ketandan and Kauman was the original purpose of the building. In Ketandan, shop houses were constructed for the purpose of opening the business (the first room was shop like), so naturally the design imitated the design of shop house introduced by Chinese immigrants. The location which was close to the city market strengthened this intention. Every building was obviously made to hold business as the main purpose. In Kauman, houses were generally built for the purpose of living with family member. Opening the house for business was assumed as a strategy to support the household as secondary income, but some respondents were depending on their business at home as the main income source. The fact that in many observed houses, the room used for business was not necessarily separated from the rest of the house let alone the appearance, a mere house to live. Even though according to some previous studies shop houses originated from China were a transformation from an agricultural house into long, narrow houses. In the same way, the shop houses in Kauman were supposedly an alteration of local Javanese agricultural house. Certainly, the process was through different paths and therefore this study chose these two areas to investigate the variant of the type of shop house within the scope of Yogyakarta city.

Observation was conducted several periods: 2004, 2006, & 2010 in Chinese settlement and in 2008 & 2009 in Javanese settlement. The Chinese settlement was now dispersed in several locations, but the observation focused on the location at the heart of the Yogyakarta city, near the oldest big market. Second observation site was conducted in the new urban area which was built and occupied by mainly native Javanese. As case study, the author simply asked permission to obtain the house plan of as many as dwellings of shop house type and interviewed in an open-ended question as many as residents (as we asked permission we engaged in conversation). Since the main focus was the unique physical formation of settlement and the characteristics of the neighborhood, totally different period of construction was opted out from the criteria. The interview was mainly asking about the history of the buildings, resident's background, the choices they had in living in shop houses, problem with neighborhood, location, etc. The author tried to capture from the resident's point of view the advantage and disadvantage of living in shop house.

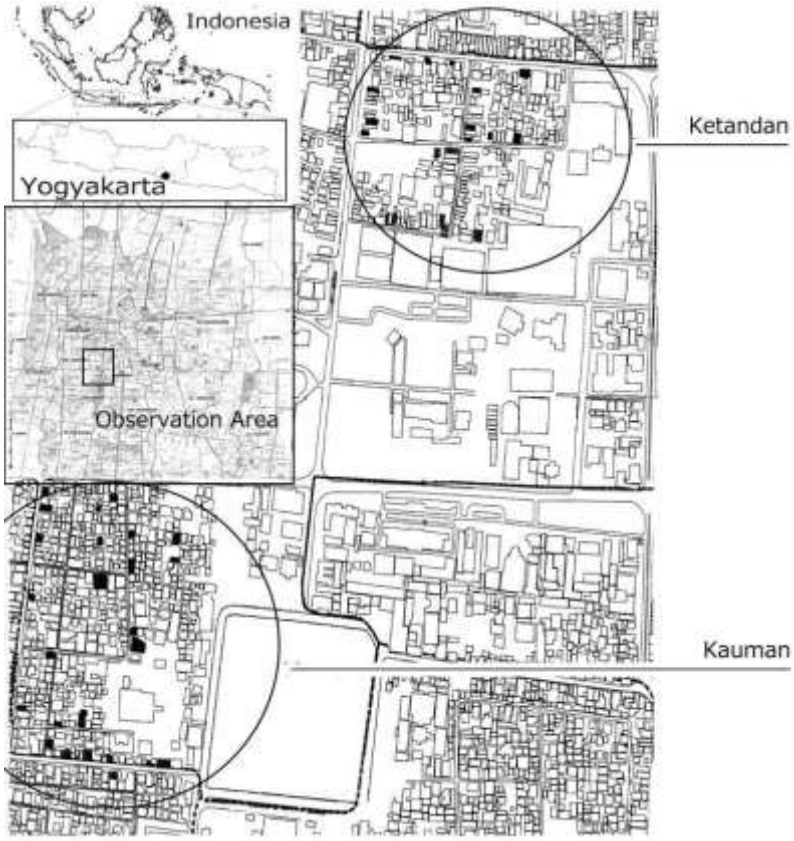


Figure 2.1. Survey Site of Ketandan and Kauman, Yogyakarta

This study proposed that the uniqueness of shop house is at the mixture of the activities which occurred daily in the house because of the combining purpose of living and working. The observed shop houses in this study should contain both types of activities in order to fulfill the purpose of this study, privacy mechanism.

The notion of privacy defined by Western culture is not acknowledged among the residents of shop house in Yogyakarta. Privacy for most residents is considered subconscious mind and less recognized than any other psychological need as part of human environmental quality. The issue of privacy is brought up through in-depth interviews combined with intensive direct observation to the real situation. The main data is the sets of questions designed to construct the idea of privacy reinforced by direct observation to the actual situation. This paper focuses on this questionnaire data to get the valid findings and uses multiple method of assessment to draw the result. Therefore this heuristic approach is chosen because of the fact that the residents of shop house cannot understand privacy as a conscious idea.

Since privacy was not a familiar topic among the residents, it doesn't mean that residents do not have privacy. It is therefore a matter of bringing up the subject into their conscious mind through a right approach.

Several trials had been made concerning the right method to get the valid and reliable result. The first questionnaire concerning the qualitative data resulted in some invalidity. Some answers were showing bias or contrary to each other. There was a tendency that the residents did not answer that questionnaire correctly because of old age, lack of interest, or they did not think the question has a meaning at all. For example, the answer of the question of where to have lunch was at the shop, but when it was confirmed by the question at interpersonal level, the answer showed the resident preferred to be in quiet place, to be alone and sometimes seen by people. There is rational explanation: that the answer was the ideal or original thought of the residents, thereby contrary to the actual condition. Another explanation: the actual condition is not within their control, which could be totally far from the possible honest answer. In this sense, the residents need some technique to provide privacy they needed in carrying out certain activity.

One study on how two different cultures reacted to similar modern housing solutions performed a similar way of research. They have collected more than 300 plans of contemporary apartments from cities as diverse as Sao Paulo and Belo Horizonte in Brazil, Cairo in Egypt, Moscow in Russia, and Seoul in Korea. Their analysis was based on those selected plans of buildings taken from publicity folders or web-based advertisements being redrawn in Auto-Cad for accuracy and brought them to scale using doors as the dimensional reference when no dimensions were given or the scale was misleading (Lara &Kim, 2010: 98). Next step was a series of area calculations and then coded the information into an Excel spreadsheet, which was used to compare, for instance, the proportion of areas devoted to social, private, or service-oriented functions. Then, a simple space-syntax calculation of mean depth (how far the spaces are, on average, from the entry door), giving them the idea of the level of privacy. Later, they analyzed the plans in terms of integration and visual connectivity using the space-syntax software Depth Map.

The above study covered the plans of unit of apartment, which has similar plans and somehow standard unit regulated by the standard rule in construction. In Indonesia, unit apartment as common housing was not popular, especially for the majority of people built their own house based on eclectic ideas that produces such a wide range of housings. In order to cover these wide variety of house plans, a method has to be devised considering the loosen rules in construction. The room unit measurement and the door unit measurement in housings in Yogyakarta could as well be in such a high variety, not to mention the floor area. There was no standard in constructing the shop house based on room unit and the number of room. This study on shop house plan is then being based on the physical structure, the division of rooms, the use of furniture and fixture that divides into smaller rooms or space, and the location of rooms relative to the entrance and the other rooms regardless of the unit of physical measurement. The standard of measurement is one room or area separated and designated for a particular use having a certain level of depth which may indicate the level of privacy. Using the modified space depth, every identified room/area with its use is connected to each other with a line as the representative of door.

2. Characteristic of the Respondents

Chinese shop house in Yogyakarta had some uniqueness through its historical background. Basically, In Ketandan are those without arcades but a shared roof structure and were constructed as double or triple houses without any space between the houses. In the course of time, there have been rapid changes in the interior, yet slower change in the exterior (Anggraini, 2007) (Pratiwo, 2010: 236). Particularly at the northern part of Beringharjo Market which once was known to be material and construction supplier is now revived again with a greater variety of small scale retail goods and services. Families living in the houses were generally from the first generation that moved into the region from different parts of Southern China and built and relied on their own resources. Later generations left these houses for other places with a better environment and more business prospects. The other common characteristic of shop house was the whole front area on the first floor was utilized as a shop and the dwelling space was at the back, second floor and any additional areas. These houses were built side by side with a shared construction as row houses in a narrow but a long piece of land for each unit.

They have only one entrance but it used to be back entrances, and some houses are still using it. The observed residents were living in building with the original intention for shop house when it was constructed. Many shops have front narrow space with large storage above the shop. However, some houses built later have bigger front area (Figure 2.2). The living areas are on the back part connected through corridors and stairs. Some houses have changed the storage into other functions such as sleeping room. For Chinese residents, praying is always individual and mostly not a routine which has only fewer respondents than Javanese.

Residents in Ketandan were generally from the first generation that moved into the region from different parts of Southern China and built and relied on their own resources. Later generations left these houses for other places with a better environment and more business prospects. Those born in the household are quite even with those not born in the household. The nuclear family type is higher than extended family. Those who have servant/worker are only few.

Figure 2.2.One of the Observed Chinese Shop houses

The original shop house buildings were without arcades but a shared roof structure and were constructed as double or triple houses without any space between the houses. One house was ordinary house which open the side part of the house for the business. The common characteristic of those shop houses was the whole front area on the first floor was utilized as a shop and the dwelling space was at the back, second floor and any additional areas. These houses were built side by side with a shared construction as row houses in a narrow but a long piece of land for each unit. Typically the shop is at the front narrow space with large storage above the shop. The living areas are on the back part connected through corridors and stairs. Some houses have changed the storage into other functions such as sleeping room.

Particularly at the northern part of Beringharjo Market which once was known to be material and construction supplier is currently revived again with a greater variety of small scale retail goods and services. The range of the business are rice, flours, sundry & daily necessity, cooking utensil, false tooth, fresh pork, parking space, electronic parts, sewing clothes, cooked food, plastic pouch, and meat grinding.

The common characteristics were a single detached house with a separate structure from the main house for the shop or included in the house plan but slightly ahead of the rest of the rooms. Even though some of the houses were built close to each other, but they maintained a separate structure to allow some space between the houses to let the light and fresh air flowing into the rooms, in other words, the Javanese houses are characterized in their outward orientation. Looking at these characteristics of the houses built by Javanese, one may see it as most likely as a transformation from a traditional farming house, too.

Shop houses that were built by Javanese in the new urban areas were of great variety from very simple to more complex structures. Some houses were an eclectic style freely copied from any design that suited the demand or image of the builder's wishes without any deeper meaning. Generally, they were built as detached houses, not in a row, that the areas were less crowded and were built at various time periods. Families living in the houses were mostly new families moving into the region as newly-weds or immigrants from other areas who were interested in establishing business in this city. Some of the houses were built and rented to other families.

Respondents in Kauman were mostly born there and moving from nearby areas, who were interested in establishing business in this area. The nuclear family type is also higher than extended family. Those who have servant/worker are also only few.

Figure 2.3. One of the Observed Javanese Shop houses

Many were built as detached houses, sometimes with spaces with the next houses that were renovated or added later on to accommodate business. The current appearance of house was maintaining the ordinary house structure (Figure 2.3) and the other buildings were renovated into the design of shop house. The common characteristics were a single detached house with a separate structure from the main house for the shop or included in the house plan but slightly ahead of the rest of the rooms. Even though some of the houses were built close to each other, but they maintained a separate structure to allow some space between the houses to let the light and fresh air flowing into the rooms.

The range of the business are also quite various: woman's clothing/accessories, boy scout attribute, sundry & daily necessity, TV service, gas tube distributor, sewing service, typing service, soft drinks, beauty salon, and cooked food.

The number of floors in Chinese shop houses is commonly two or more. Javanese shop houses are various with one floor, or with additional small room, attic, or open room upstairs or more rooms upstairs. In conclusions, typical Chinese shop house in Kauman is deep and more than two rooms upstairs, and the typical Javanese shop house in Kauman is relatively square with or without room upstairs.

2.2. First Survey

1. Criteria for Selecting the Respondents

The first observation in June-July 2011 was conducted to attest the issue of privacy by distributing questionnaire to the potential residents and to expand the idea of privacy based on locality. As many as 100 respondents were chosen from various places (see Figure 2.4.a and b).

According to a survey in 2002 by Zahnd[6], the number of shop house of Chinese community (including Ketandan) was 232 and 109 houses was in Kauman. However, there is no specific detail about these shop houses, such as location and the type of the shop house. So we decided to directly visit the location to and choose our respondents based on their availability to be willing to fill out the questionnaires. Responses were of great variety. To each resident we introduced the purpose of this study and explained the meaning of the questionnaire for them to fill out by themselves. It was difficult to draw a statistical conclusion from the data result because of the validity of answer.

This study performed similar steps of analysis by providing a collection of plans of the buildings to measure the level of privacy. The difficulty is that the tremendous variety in the plans of buildings since it was built by ordinary people, which is of high variety of material and style. In order to perform the same procedure of analysis, this study recorded all necessary and basic data, from the number of residents of one shop house, the gender and age range, the type of business, the shop and building floor areas, the number of story of the shop house.

Since this study does not aim at representing the typical shop house in each area but to investigate the combination of both shop keeping and housekeeping activities within the shop house and choosing the residents who have direct connection to the Chinese and Javanese cultural background, in this first survey we set some criteria: (1) various types of business, (2) various types of shop house (3) the house & the owner is from Chinese or Javanese background. The intention is to get the random sampling of shop house from each area which meets the criteria above and emphasizes on the mixed activities for residential and business purposes in one shop house.

[6] Zahnd (2008) has compared and analysed the urban structure and design of Chinese and Javanese communities in Semarang and Yogyakarta.

Figure 2.4.a. Respondents of the First Survey in Kauman

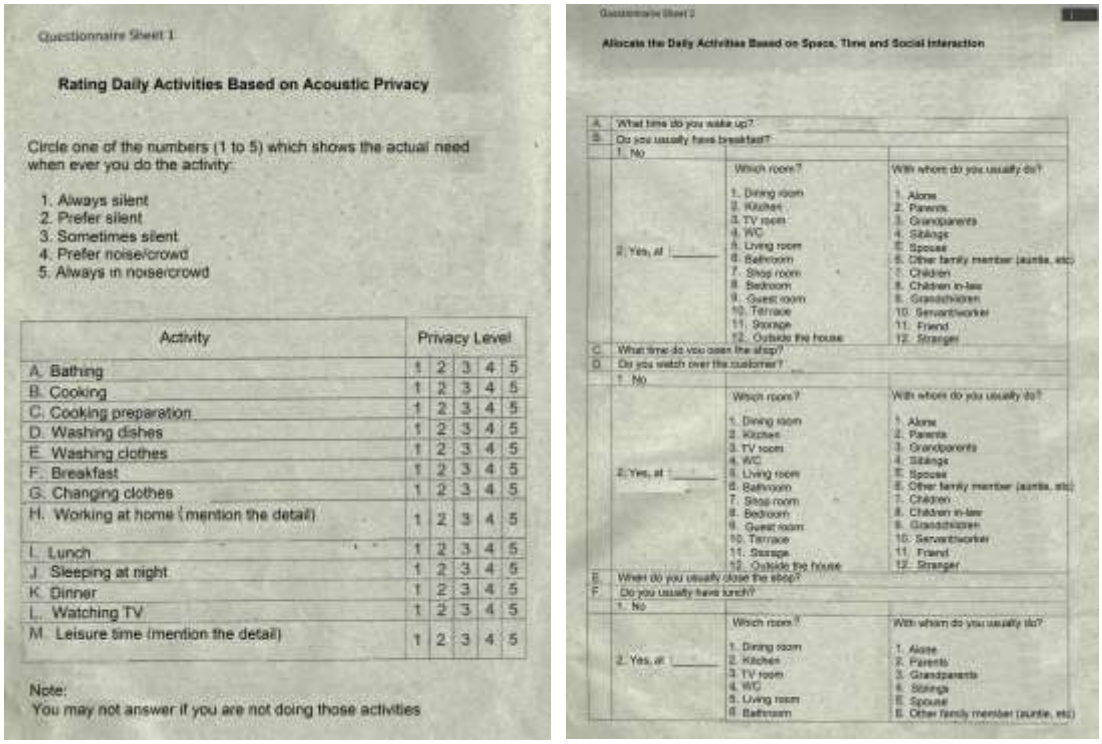
Figure 2.4.b. Respondents of the First Survey in Ketandan

2. Questionnaire Survey on Acoustic, Interpersonal, and Visual/Physical Aspects

Purpose of this study is focusing on two systems of activities: working and dwelling within the spaces of multi-purpose dwelling in the context of different cultural background of user. Each system or group of activities need to break down into more detailed activities in order to find the relation to the space assigned for each function, which activities take place where. This will also include the time of when the particular activity occurs in the space and the occurrence of how often the activity occurs in the space. Since it is focusing on the activity in the space, it will require sketch or diagram of the house plan which indicates the space boundary.

The approach of this study is to gather the poll on the scale of preference for each 13 given activities that are assumed to be related to privacy concerned. The 13 activities are scored according to 5-scale level of privacy in each aspect and the allocation of time, space, & people (see Figure 2.5.a). The resident was also asked to make the sketch of the spatial layout of their house with the name of each space (Figure 2.5.b).

Questionnaire sheets (Figure 2.5.a) consist of the acoustic, interpersonal, and visual/physical privacy with the 5-scale of preference. The scale is from always quite to always noisy/crowded for acoustic, from always alone to always with other people for interpersonal, and from always hidden to always open/visible to people (public) for visual/physical privacy.



Questionnaire Sheet 1

Rating Daily Activities Based on Acoustic Privacy

Circle one of the numbers (1 to 5) which shows the actual need when ever you do the activity:

1. Always silent
2. Prefer silent
3. Sometimes silent
4. Prefer noise/crowd
5. Always in noise/crowd

Activity	Privacy Level				
A. Bathing	1	2	3	4	5
B. Cooking	1	2	3	4	5
C. Cooking preparation	1	2	3	4	5
D. Washing dishes	1	2	3	4	5
E. Washing clothes	1	2	3	4	5
F. Breakfast	1	2	3	4	5
G. Changing clothes	1	2	3	4	5
H. Working at home (mention the detail)	1	2	3	4	5
I. Lunch	1	2	3	4	5
J. Sleeping at night	1	2	3	4	5
K. Dinner	1	2	3	4	5
L. Watching TV	1	2	3	4	5
M. Leisure time (mention the detail)	1	2	3	4	5

Note:
You may not answer if you are not doing those activities

Allocate the Daily Activities Based on Space, Time and Social Interaction

A. What time do you wake up?
B. Do you usually have breakfast?
1. No
2. Yes, at _____
Which room?
1. Dining room
2. Kitchen
3. TV room
4. WC
5. Living room
6. Bathroom
7. Shop room
8. Bedroom
9. Guest room
10. Terrace
11. Storage
12. Outside the house
With whom do you usually do?
1. Alone
2. Parents
3. Grandparents
4. Siblings
5. Spouse
6. Other family member (auntie, etc)
7. Children
8. Children in-law
9. Grandchildren
10. Servant/worker
11. Friend
12. Stranger
C. What time do you open the shop?
D. Do you watch over the customer?
1. No
2. Yes, at _____
Which room?
1. Dining room
2. Kitchen
3. TV room
4. WC
5. Living room
6. Bathroom
7. Shop room
8. Bedroom
9. Guest room
10. Terrace
11. Storage
12. Outside the house
With whom do you usually do?
1. Alone
2. Parents
3. Grandparents
4. Siblings
5. Spouse
6. Other family member (auntie, etc)
7. Children
8. Children in-law
9. Grandchildren
10. Servant/worker
11. Friend
12. Stranger
E. When do you usually close the shop?
F. Do you usually have lunch?
1. No
2. Yes, at _____
Which room?
1. Dining room
2. Kitchen
3. TV room
4. WC
5. Living room
6. Bathroom
With whom do you usually do?
1. Alone
2. Parents
3. Grandparents
4. Siblings
5. Spouse
6. Other family member (auntie, etc)

Figure 2.5.a. Questionnaire Sheets of the First Survey

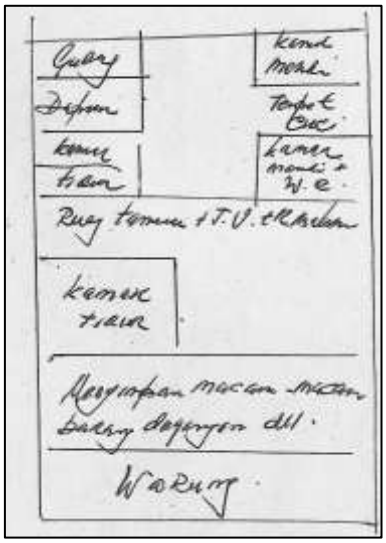


Figure 2.5.b. Sketch of Spatial Layout by the Resident

3. Procedure of the Survey

First task to do is to list the activities into items that is possibly done within the group of dwelling or working, apart from the space. The check list of activities shall be universal that include all basic activities regardless of the culture, for cultures determine the way of doing but not the activity itself.

Either working or dwelling, shares some of their activities in term of purpose, for example, eating, drinking, writing, reading, for working purposes. On the other hand, one particular activity can be separated from another activity in term of place, for example receiving guess is in separated space from serving customer, or eating is in separate space instead of shop. In this part, motivation or intention of user is examined through interview and assumed to be culturally different. It will reveal the reasons behind separation or sharing.

Each activity group and item varies according to the cultural group. Culture A may include several activity items in one group of activity but may not happen in culture B. The combination among groups of activity alone is determined by custom of the users, for example, eating activity group in culture A may consist of drinking (alcohol or not), smoking, chatting, etc., whereas in culture B may only include drinking and chatting, never smoking regardless the space.

Second is to group them into categories in order to identify which activity item is in each group and which is in the shared group in term of space.

Third is to explain why they are shared and why they are separated which is related to custom (cultural reasons). To think of it, the activities are most probably difficult to separate between working and dwelling activities if we focus on the activities alone. In other words, there are high possibility to share activities between working and dwelling, for example if the shop is restaurant, then kitchen (or cooking space) can be only one and it is used for working purpose. Therefore, the type of shop is also examined, whether retail shop, restaurant, workshop, or service. This can be the control variable for the targeted houses that will be surveyed.

There are concept, norm, and "who" behind the activity, which is clarified through the six questions; what, where, when, who, why, and how.

"What" is the activity item.

"Where" is the space the activity occurs, either inside or around the house.

"When" is the time that the activity occurs.

"Who" is the person doing the activity.

"Why" is the reason behind the activity.

"How" is the way the activity is done.

Human activities are organized in time -- day/night, weekday/weekend, workday/rest-day, mundane/sacred, etc. -- and many consequences follow: images of the city differ at different times; privacy can be achieved by organizing activities in time, as well as through spatial separation, physical devices, and other (culturally specific) mechanism. Cultural differences in the organization of time may lead to more conflicts or difficulties than space organization (late dinner, and hence late noise, among early-to-bed people; the effect of siesta on the closure of shops or banks at other people's working time, etc.) (Rapoport, 2005:25). Recording the activities which occur inside and around the house (if necessary up to the neighborhood scale) and photographing are the primary data. Detailed activity may be taken from interview and observation in one day. The time range of observation for each house shall be the same to control the time variable.

Observing the number of occupant, their relationship, age, and how they deal with the customer coming to the house and so on. Having a relationship with the house owner and revisit is very important to build the trust. Include every aspect in the questionnaire that may support the reasons behind the activity; norm, concept, individual factors.

4. Result of Questionnaire Survey

The results of this survey do not show the meaningful correlation between the privacy level and the activity for some reasons as below.

1. The same resident tends to answer the same level most of activities for all the three aspects of privacy.
2. Some residents seem to confuse the meaning of the questions, for example one female resident preferred to work alone in her shop while she's in fact always working together with her brother and servants/workers.
3. Some residents did not respond to some activities either not doing it or do not understand the question.

The result also shows that question concerning privacy is not distinguished enough between each aspect and that the questions in interpersonal relationship may be considered similar to those in visual/physical aspect. Both aspects of interpersonal and visual/physical contain the existence of other people. The existence of people that may involve in each activity may represent the different degree of residents' privacy requirement according to the notion that people is assumed to possesses status in social interaction.

The result reveals that there may be other activities not mentioned in the questionnaire that may be related to privacy, and it may be greatly varied among the residents.

2.3. Second Survey

1. Delimitation of the Respondents

The 30 residents of shop house were interviewed and observed in December 2011-January 2012, Chinese community in Ketandan and Javanese community in Kauman. They are selected among the respondents from the previous observation done in June-July 2011 (see Figure 2.6.a and b). The number of respondents was narrowed due to some situations that some residents were not living in the shop house or own the house. They were renting the shop house from the original owner and use the house only during opening hours. Some had another house to live, so they did not need to live in the shop house. Therefore this study opted out the residents who were not living in their shop house and only chose those residents who were living and working in the same shop house, a family shop house. There are some limitations. Some residents do not live in the same building. Some are temporary residents and only come to work in the shop. They are opted out from the selected respondents.

There are delimitations in selecting the respondents in this second survey. In the first survey, we found some unexpected situation, so we set some limitations:

1. Residents were willing to be interviewed and observed inside of their houses.
2. Residents were not only working in the shop house but also living there.
3. Residents were originally from that area by considering those of at least the second generation (meaning since their parents, they have been living there).

Figure 2.6.a. Respondents of the Second Survey in Kauman

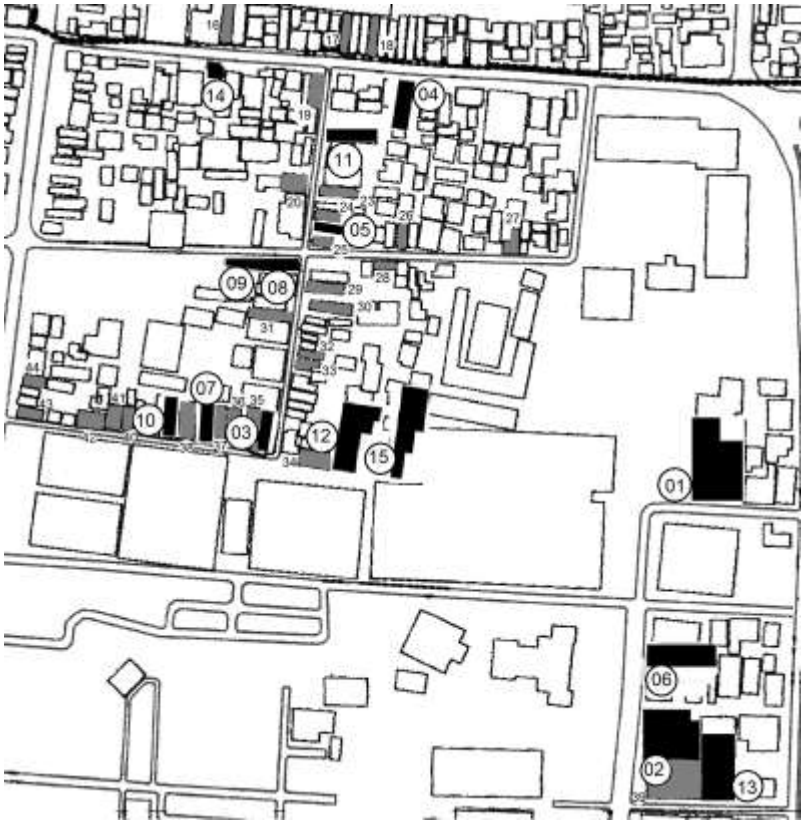


Figure 2.6.b. Respondents of the Second Survey in Ketandan

2. Procedure of the Survey

As we conducted the interview, at the same time we observed how the residents were interacting with us as strangers and a guest. Interview was thorough but casual to let the respondents feel relax while we explained and delivered the questions. The interviewer engaged in longer conversation if necessary to get the thorough answer and had to direct the conversation back to the question sheet while two assistants drew the layout of the house and took pictures of the situations.

The researcher will ask in relax and polite manner after allowed to sit in. Starting with the introduction about privacy that in shop house the residents deliberately open their house to the outsider, throughout the interview session, the residents were asked their daily activities from getting up to sleeping at night and their response on each aspect of privacy.

The question is whether he/she would feel annoyed or disturbed while doing an activity to be seen by each category of people from outside of the room or the house. The interviewer mentioned each category based on the hypothetical order from farthest distance which is stranger down to the closest distance which is oneself. The negative answer 'no' means the category is eliminated, and the remaining positive is the degree of category. The interviewer did all the questions and put marks on the answer sheet for each activity. In the same way, the same questions will be repeated against the physical intrusion that it is whether he/she would feel annoyed or disturbed while doing an activity to be intruded bodily from outside of the room or the house each category of people.

The interpersonal relationship between residents and different category of people represents different social distance as in an ordering scale. Between residents as oneself and family member is the closest, between residents and friend is the farther distance, between residents and servant/worker is even farther but maybe closer than between residents and customer, and the farthest is the between residents and stranger. Relationship with the shop owner for each category of people was predefined and explained to the shop owners in the interview as described below.

1. Strangers (S): those whose presence is without direct purpose to the shop owner, such as passers-by, visitors to the area (both Ketandan & Kauman are part of tourist-destination area), beggars, street musicians, market people, parking guards, street vendors, etc. They are not necessarily unfamiliar with the owner, but no particular/direct relation with the owner.

2. Customers (C): those whose presence is for business purpose and directly interacting with the shop owner, even though the owner may not necessarily know personally. This includes neighbor, friends, reseller & supplier.
3. Servants/workers (W): those who work either for the shop or for the household purpose, such as cleaning the house, washing clothes, cooking, etc. either staying or not with the shop owner.
4. Friends (F): those who are close or just acquaintance with the owner, and their visits are for other than business purposes as a mere guest, assuming that the presence of friends who visits the shop owners may be highly regarded.
5. Family members (Fa): they are either the member of the owner's nuclear family or extended family.

3. In-depth Interview on Acoustic, Visual, and Physical Accessibility

Privacy in this study is broken down into acoustic, visual and physical accessibility. Visual accessibility addresses the ability to limit other's view of oneself. Inherent in human behavior is the tendency to avoid situations in which one can be watched without being aware of who is watching. Physical accessibility is about getting into someone else's house. In this study it may include the situations in which one can get into the room or intrude during activity.

In the first interview, we asked their daily activities during the ordinary weekdays when they work at their shops (Figure 2.7). Later, for each of the activity we asked two sets of question concerning visual and physical privacy against five categories of people who are interacting with the shop owners when they do their daily activities. In the first interview basically we asked questions as summed up below.

1. What are activities you are doing every day from waking up to sleeping at night at home (during weekdays)?
2. Where do you do those activities (mention the room)?
3. With whom do you do this with? (S, C, W, F, Fa)
4. What time do you usually do that?

Getup	1	S	C	W	F	Fa	S	C	W	F	Fa	S	C	W	F	Fa	S	C	W	F	Fa
Praying	2	S	C	W	F	Fa	S	C	W	F	Fa	S	C	W	F	Fa	S	C	W	F	Fa
Cooking meal	3	S	C	W	F	Fa	S	C	W	F	Fa	S	C	W	F	Fa	S	C	W	F	Fa
Bathing	4	S	C	W	F	Fa	S	C	W	F	Fa	S	C	W	F	Fa	S	C	W	F	Fa
Breakfast	5	S	C	W	F	Fa	S	C	W	F	Fa	S	C	W	F	Fa	S	C	W	F	Fa
Open the shop	6	S	C	W	F	Fa	S	C	W	F	Fa	S	C	W	F	Fa	S	C	W	F	Fa
Cleaning the house	7	S	C	W	F	Fa	S	C	W	F	Fa	S	C	W	F	Fa	S	C	W	F	Fa
Displaying the goods	8	S	C	W	F	Fa	S	C	W	F	Fa	S	C	W	F	Fa	S	C	W	F	Fa
Serving customer	9	S	C	W	F	Fa	S	C	W	F	Fa	S	C	W	F	Fa	S	C	W	F	Fa
Accounting money	10	S	C	W	F	Fa	S	C	W	F	Fa	S	C	W	F	Fa	S	C	W	F	Fa

Figure 2.7. Second Survey Interview Sheets

In the second interview, the questions concerned about the acoustic, visual, and physical accessibility such as (1) "Is it annoying if you were seen by [such of people] while doing this [such of activity]?" and (2) "Is it annoying if you were intruded from outside (the room/house) by [such of people] while doing this [such of activity]?" When they said "no" to one of the five categories of people, that category will be omitted from the list. The positive answer is then recorded as the data.

When they refer to none of these five categories of people, the answer would be oneself. Since this study assumed that if the residents would responds positive to the one of the category of people, the other categories having closer relationship with the shop owner would be considered positive. For example, in cooking meal if the residents do not feel annoyed by strangers, it implies that customers, servants/workers, friends, and family members would not be annoying as well. These sets of questions are summed up below.

1. Do you feel disturbed or annoyed while doing activity and seen by (S, C, W, F, Fa)?
2. Do you feel disturbed or annoyed while doing activity and intruded by (S, C, W, F, Fa) from outside the room?

4. House Floor Plan

In the second observation in December 2011-January 2012, the number of the observed shop houses is 30 buildings which have all the complete information about the house layout with the function of each room and its furniture placement, and other semi-fixed elements recorded by hand-drawing and photograph or video. Each shop house is drawn by hand complete with the fixed features (wall, window, door, floor elevation, stairs, etc) and semi-fixed features (furniture) on a scaled paper to measure easily the dimension (see Figure 2.8).

Identifying each room (setting) through its specific function -- porch, entry, corridor, living room, dining room, master bedroom, bedroom, study, family room, kitchen, bathroom, laundry, toilet, pantry, closets and other storage, basement, attic, and so on -- the presence of such settings and their names are culture-specific (Rapoport, 2005: 29). However, as we interviewed the residents, they could mention the function of the rooms, but the daily activities do not always occur in that designated room. Habitually, the residents may use various spaces based on their convenience and other reasons.

List of room and its Indonesian name (in brackets):

1. Terrace (*teras*)
2. Shop (*toko/warung*)
3. Guest room (*ruang tamu*)
4. Corridor (*koridor/lorong/gang*)
5. Stairs (*tangga*)
6. Kitchen (*dapur*)
7. Dining room (*ruang makan*)
8. Living room (*ruang keluarga*)
8. Storage (*ruang simpan/gudang*)
9. Bedroom (*ruang tidur*)
10. Master Bedroom (*ruang tidur utama*)
11. Bathroom (*kamar mandi*)
12. WC (*WC*)
13. Washing room/well (*ruang cuci/sumur*)
14. Worship room (*ruang doa/sembahyang*)
15. Recess/setback (*ruang sisa*)
16. Drying room (*ruang jemur*)

As we interviewed, we drew the floor plan and asked the residents to indicate the function of the room. We found some conditions: (1) that the function of the room is changing according to the activity performed in that space such as praying room becomes sleeping room, or (2) it retains the function but allows other activities to take place in the space such as praying in the sleeping room.

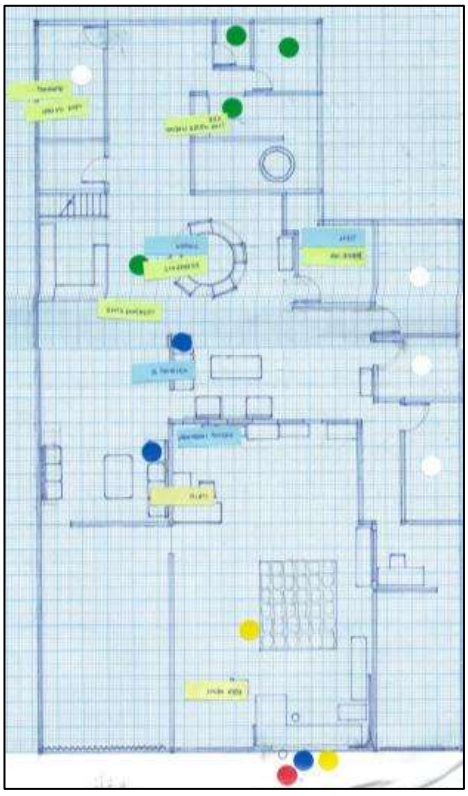


Figure 2.8. One of House Floor Plans Hand-drawn by Author in the Second Survey

CHAPTER 3 Relationships between Activity and Privacy

3.1. Introduction

This chapter intends to examine the relationships between activity and privacy requirement through the accumulative responses for each activity. The first stage is sorting out the 16 activities from the total 34 identified based on what is mentioned through interview to focus on the most popular activities performed by the residents to be associated with their privacy requirement. Associated activity and shared activity has similar meaning which can take place occur either in separated or same space. Associated/shared activity means one activity is associated with one or more activities, for example eating is associated with both working and dwelling, but it can happen either in separated or in the working area/shop.

We collected as many as 34 activities which are happening inside the house and related to working and dwelling activity (see Table 3.1) and classify them into 16 activities according to the commonality and its potential to relate to privacy: (1) serving customer, (2) storing shop goods, (3) displaying goods, (4) waiting for customer, (5) praying, (6) reading, (7) lunch, (8) watching TV, (9) breakfast, (10) dinner, (11) drying clothes, (12) serving guest, (13) cooking meal, (14) washing clothes, (15) sleeping, and (16) bathing.

How activity relates to the privacy is analyzed in this chapter. The second stage is sorting out the all the number of response for each activity in each group of communities according to the six category of people, from stranger (as the lowest degree of privacy) up to oneself (as the highest degree of privacy). The everyday activities which take place inside the house during one of weekdays are taken as the primary data. Every day the residents of shop house are assumed to interact with wide range of people as stranger (S), customer (C), servant/worker (W), friend (F), family member (Fa) while doing their daily activities apart from oneself. The sort of activity is determined through its purpose.

Table 3.1. List of Activities Gathered from Interview

	Activities	C	J				
1	Serving customer	15	15	18	Changing clothes	15	15
2	Storing shop goods	15	15	19	Praying	15	5
3	Display goods	15	15	20	Talking on the phone	14	15
4	Watching TV	15	15	21	Breakfast	13	15
5	Bathing	15	15	22	Reading book/news	11	9
6	Sleeping	15	15	23	Preparing breakfast	9	10
7	Waking up	15	15	24	Ironing	5	2
8	Dinner	15	15	25	Taking a nap	3	2
9	Storing vehicle	15	15	26	Listening to radio	3	3
10	Lunch	15	15	27	Listening to music	3	1
11	Drying clothes	15	15	28	Doing exercise	3	2
12	Cooking for meals	15	15	29	Preparing food to sell	2	2
13	Washing clothes	15	15	30	Cooking to sell	2	2
14	Waiting for customer	15	15	31	Storing household goods	2	3
15	Sitting with family	15	15	32	Studying	2	2
16	Serving guest	15	15	33	Desk working	1	3
17	Washing dishes	15	15	34	Working with computer	1	3

3.2. Privacy Requirement

The presence of the shop owner at the front shop is necessary to control the customer and strangers coming into the shop during opening hours. It is not likely for the shop owner to think to leave the shop opened while doing the things inside the house. The solution to this is to keep a worker or family member to stay and keep the shop. That is why the opening hours are relatively stable and fixed at certain hours, even when the business scale was considerably small. There is no apparent measure for the scale of business, because the residents tend to be humble when it comes to questioning the scale of business.

Based on the responses to each category of people according to acoustic, visual, and physical accessibility (as the results of the responses to the questions by interview in the second survey elaborated in chapter 2), this chapter presents the level of privacy requirement for each activity. In detail, the residents' responses to visual accessibility will produce the requirement of privacy in visual aspect that is called visual privacy in this study. As the aim of this chapter is to relate the activities with the privacy requirement, we will consistently use acoustic, visual, and physical accessibility in the tables and graphs referring to the original responses from the residents. However, we refer the meaning to the privacy in acoustic accessibility, and so on when we explain the result.

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Each activity which requires high social interaction will require low privacy. According to the type of activity, the way the residents respond to possible visual and physical intrusion may be different from the expectation. This analysis will show which activity have lower or higher degree of privacy requirement according to each individual and group of community. The higher degree means the most concerned and most permissible degree. These six types of people are the category of the degree which is associated with the degree of privacy. Each category of people may suggest the different degree of tolerance, for example "stranger" may suggest the least intimate relationship with the resident that it may propose the lowest privacy degree.

1. Requirement in Acoustic Accessibility

The privacy requirement for Chinese in contrast to Javanese are very different in acoustic access as expressed in the different composition of the category of people. Figure 3.1 strikingly evidences that Chinese do not distinguish their privacy requirement in acoustic access. They allow the category of stranger in almost all activities. It may imply that they allow all the other categories of people to be acoustically intervene. In other words, they have tolerated the interference of noise/voice from any category of people. Perhaps, their responses are the consequence of good acoustic insulation of their buildings, or it may show their indifference in acoustic aspect. Their houses are facing the street or busy alley where there is no or little control over the acoustic interference other than their own building or themselves.

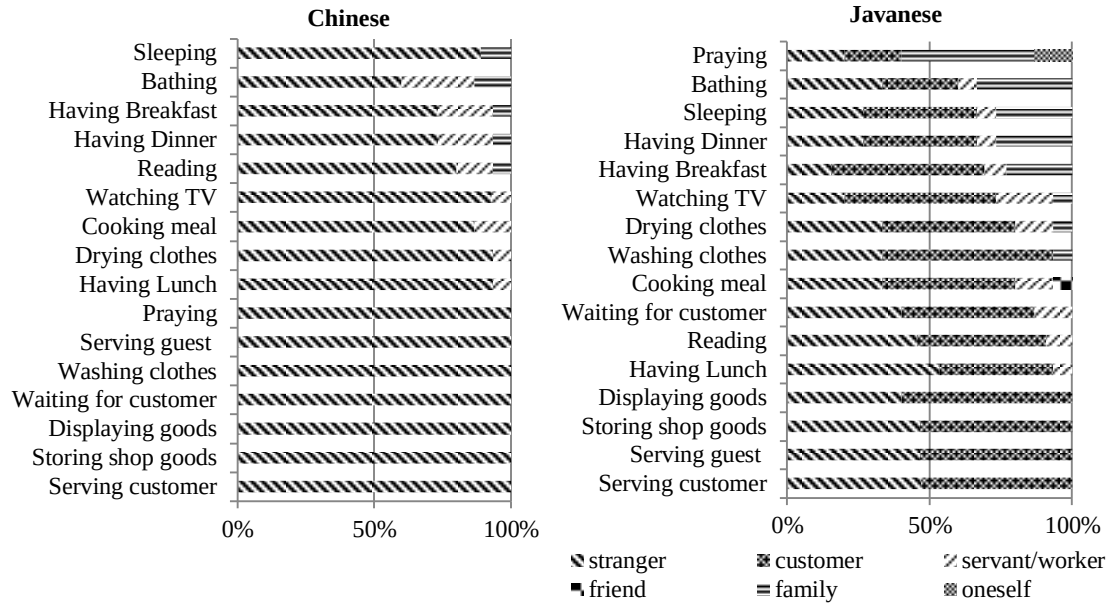


Figure 3.1. Proportion of Category of People for Each Activity in Acoustic Access

On the contrary, Javanese have shown more responsive to the different category of people for each activity. Each activity has received distinct proportion of category of people that allow

all of those activities to fulfill the order of privacy from top to down which represents the requirement of privacy from low to high (Figure 3.1 right figure). Javanese are likely to have higher sensitivity than Chinese in defining their requirement of privacy for acoustic aspect. They are more aware and recognize there is a difference in allowing the noise/voice of stranger from customer, to servant/worker, friend, and family member in doing their daily activities. This is perhaps caused by their relatively quieter neighborhood with their Chinese counterpart. As in many spots inside the neighborhood, there are signs to turn down the motorcycle engine when entering the neighborhood. But as we also observed and interviewed those who are living by the big road, they show less concern with the acoustic accessibility. In addition, the street musicians are also banned from entering the neighborhood. The acoustic interference is controlled by the society other than individuals. Therefore it is more likely for Javanese to be socially controlled in the acoustic interference than Chinese who are more depending on the individual control.

2. Requirement in Visual Accessibility

The privacy requirement for Chinese in contrast toto Javanese are quite distinguished in visual access as expressed in the different composition of the category of people. The most apparent activity is serving customer. The composition of serving customer activity for Chinese shows much higher visual access for stranger than customer. As expected, serving customer for Javanese is similar with serving guest which allows lesser composition of stranger meaning that customer could be the guest for Javanese, while stranger is taken more seriously by Chinese as different from customer.

Out of the 16 activities for Chinese, serving customer, displaying goods, storing shop goods, serving guest, waiting for customer, and reading have much bigger composition of stranger and customer. This can be explained that those activities are related to shop keeping activities. Other activities which include stranger or customer are lunch, washing clothes, breakfast, cooking meal, and watching TV.

Looking at the small number of response, it can related to the type of business (such as cooked food), but it must have been related to the physical condition of the house or room. The shop area may be connected with the inner room where the residents do their domestic activities. Other activities such as dinner, bathing, praying, and sleeping may be personal and individual which only include family member and oneself, even though there are few residents who think that dinner or bathing is visually accessible by servant/worker or friend. This may be related to the habitual condition of living together with the servant/worker or having a friend visited often. Drying clothes is exceptional; since several residents allow stranger to visual access, it may mean drying clothes could be outside of the house.

The 16 activities of Javanese showing that the composition is much considerable for visual access from customer than stranger for the activities that are related to shop keeping activities such as serving customer, displaying goods, storing shop goods, and reading, lunch, waiting for customer, and watching TV. Even for some activities such as dinner, breakfast, washing clothes, cooking meal, praying, and sleeping, few residents responded in allowing customer for visual access. This may be related to the long opening hours and that some residents combine the shop area visually with the guest room or living room and that the residents may do their domestic activities freely while shop keeping.

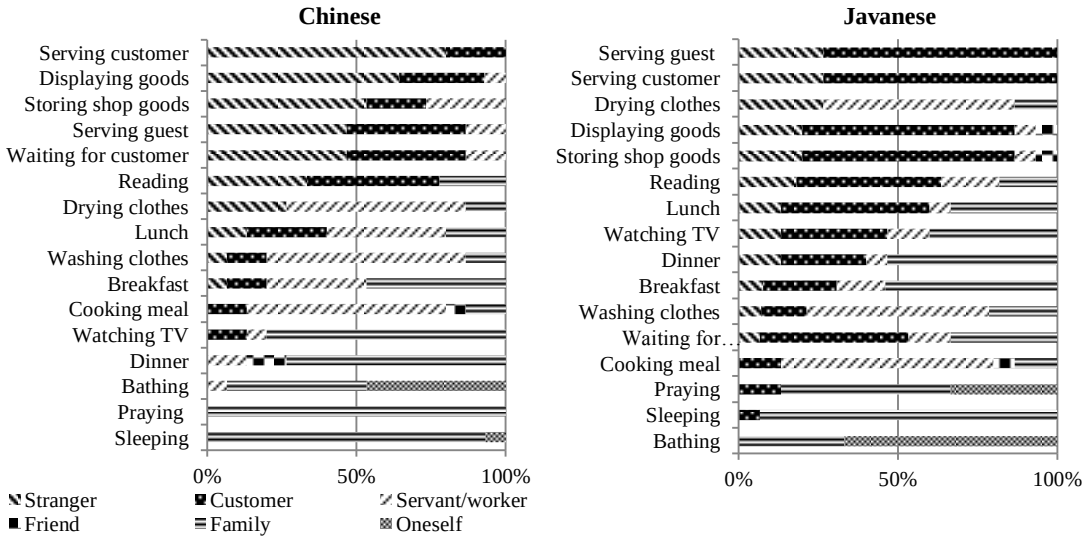


Figure 3.2. Proportion of Category of People for Each Activity in Visual Access

Another result reveals that there are quite large proportions formed by the category of stranger in high privacy activities in visual access (Figure 3.2). For example "serving customer" in Chinese is composed of stranger as the major category, in contrast toto "serving customer" (and "serving guest") in Javanese which is composed of customer as the major category. This means that when serving their customer, Chinese would allow visual access to stranger. It may

imply that for Chinese customer may be viewed similarly as stranger.

Unlike Javanese who will clearly distinguish customer from stranger. As clearly described and explained in chapter 2 that each category may contain different type of people. Stranger includes those who have no direct purposes when interacting with the residents as the shop owner, such as passers-by, visitors to the area (tourists or onlookers), beggars, street musicians, market people (who came regularly to the local market), parking guards, street vendors, etc. These people are possibly interacting with the shop owners without necessarily having a business purpose, but rather social purpose for just a pep-talk or make a conversation, asking for information, as typical social life in the area. The residents and the surrounding people may maintain their visual accessibility during the shop opening hours.

3. *Requirement in Physical Accessibility*

The privacy requirement for Chinese is rather similar in physical access as expressed in the bigger composition of the category of people. The most apparent activity is serving guest. The composition of serving guest activity for Chinese shows much lesser visual access for stranger than customer. Customarily, serving guest will take up separate place than the shop area for Chinese and Javanese.

Out of the 16 activities for Chinese, serving guest, displaying goods, serving customer, storing shop goods, and waiting for customer have the bigger composition of stranger and customer. Reading is physically blocked from stranger, which may mean that reading requires separation in physical condition. This can be explained that reading activity may not always be related to shop keeping activities but personal. Other activities which may include customer but not stranger are lunch, cooking meal, breakfast, and watching TV. Looking at the small number of response, it can be related to the shop keeping activities or to the physical condition of the house or room. The shop area may be connected with the inner room where the residents do their domestic activities. Other activities such as dinner, bathing, praying, and sleeping again are personal and individual which only include family member and oneself, even though there are few residents who think that dinner or bathing is physically accessible by servant/worker or friend for the same reason as in visual access. Drying clothes and washing clothes are both physically accessible to stranger and servant/worker and family member because several residents allow such category of people for physical access. Again, it may mean washing clothes and drying clothes could be outside of the house.

The 16 activities of Javanese showing that the composition of customer is much considerably higher for physical access from stranger and other categories as well for the activities that are related to shop keeping activities such as serving customer, displaying goods, and storing shop goods, including serving guest. Other activities such as reading, lunch, waiting for customer, watching TV, and cooking meal may be related to both shop keeping and domestic activities that the residents allow customers for physical access. Even for some activities such as dinner, breakfast, washing clothes, drying clothes, washing clothes, and praying, few residents responded in allowing customer for physical access. This may be related to again the long opening hours and the combining of shop area with guest room or living room. This is what is different from Chinese group.

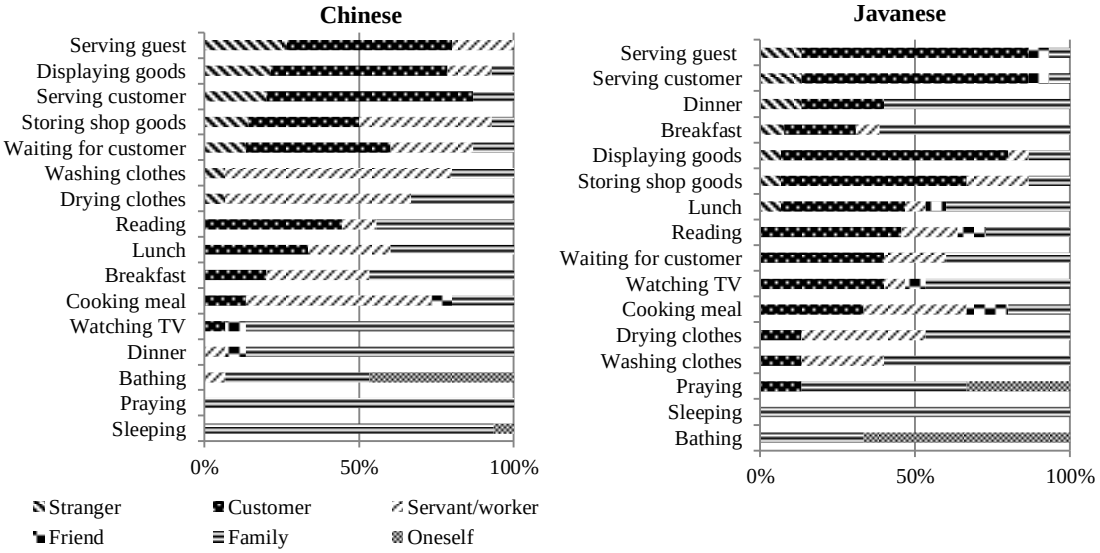


Figure 3.3. Proportion of Category of People for Each Activity in Physical Access

Figure 3.3 reveals the order of the 16 common activities from top to down as having different proportion of category of people. The categories of people are ranging from the lowest privacy requirement to the highest as stranger, customer, servant/worker, friend, family member, and oneself. If the biggest proportion is stranger or customer, it may assume it requires very low privacy. On the contrary, if the biggest proportion is family member or oneself, it may assume it requires very high privacy. Activity which has the more distributed proportion of many of those categories in between would show the privacy requirement between low and high that is moderate.

The result of the figure 3.3 reveals that for physical access, even though "serving guest" is placed on the top list, meaning it requires high privacy, the proportion of each of the category of people is different. In Javanese, it tends to have more proportion for customer than in Chinese. It may imply that unlike Chinese, Javanese is more considering their guests as their customers.

So they would treat their guests and customers in the same way (proven by the same composition of "serving guest" and "serving customer").

It is also important to note that those activities at the bottom of the list have the proportion of category of people of family members considerably big. For example, "sleeping" will answer that family member is allowed to visually access (Figure 3.2). For "bathing" some responses allow family member to visually access. This goes similarly with the physical access (Figure 3.3). This proves that inside their house which is supposed to be the most private area such as bathroom or sleeping room, high privacy means for some residents at the level of family member instead of oneself. This is typical to Asian countries which are more family or social oriented than Western countries which are more individual oriented.

3.3. Relation between Visual and Physical Accessibility

1. Order of Activities According to Privacy Requirement

Since the result of the responses to acoustic access is totally different in Chinese in contrast to Javanese, in this section we examine the visual and physical access of both groups and try to find the relation between visual and physical access. The combined result of these arrangement of proportion of responses from both Chinese and Javanese shows stronger tendency of each activity (see Figure 3.4).

The further result of the analysis shows the order of the 16 activities which are different in physical privacy from visual privacy. The differences are much greater expressed when both Chinese and Javanese residents' responses are combined together with total number of respondents for each activity reaching 30 (see Figure 3.4). This order of activities which is different in physical access and visual access, however, can be grouped into three levels of privacy which is low, moderate, and high (see Table 3.2). The grouping is following the composition of the number of response for each category of people in each activity. The low privacy requirement activities are serving guest, serving customer, displaying goods, storing shop goods, and waiting for customer. The moderate privacy requirement activities are dinner, breakfast, lunch, washing clothes, drying clothes, reading, cooking meal, and watching TV. The high privacy requirement activities are praying, bathing, and sleeping.

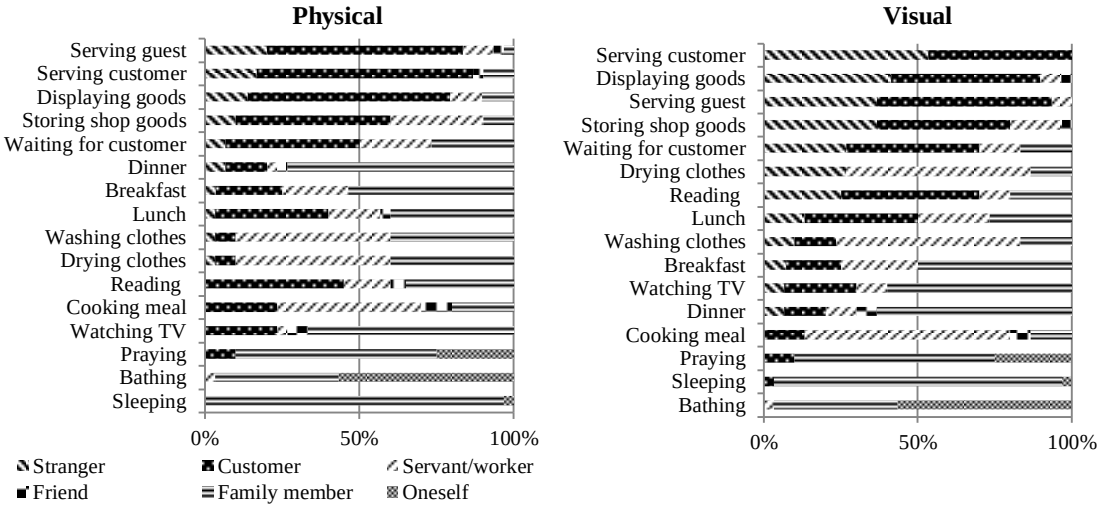


Figure 3.4. Order of Activity of Physical and Visual Accesses both Chinese and Javanese

Table 3.2 shows that there are similarity and differences in activities between Chinese and Javanese which belong to each group of privacy such as sleeping, praying, and bathing. The accumulative number of activities is denser in the privacy level of family member to oneself, but few residents have lower privacy level, which are customer and servant/worker for praying and bathing activities. They are Javanese residents, and it is probably more to personal reason, rather than connected to house layout, etc.

Table 3.2. Activity Considered Low, Moderate, and High Privacy Level

Order	Physical Access	Visual Access	Group
1	Serving guest	Serving customer	
2	Serving customer	Displaying goods	
3	Displaying goods	Serving guest	Low privacy
4	Storing shop goods	Storing shop goods	
5	Waiting for customer	Waiting for customer	
6	Dinner	Drying clothes	
7	Breakfast	Reading	
8	Lunch	Lunch	
9	Washing clothes	Washing clothes	Moderate privacy
10	Drying clothes	Breakfast	
11	Reading	Watching TV	
12	Cooking meal	Dinner	
13	Watching TV	Cooking meal	
14	Praying	Praying	
15	Bathing	Sleeping	High privacy
16	Sleeping	Bathing	

In physical access, the order of activities from low to high privacy are somehow similar with the order in visual access even though they are not exactly the same. As elaborated in table 3.2. In either physical or visual access we found that these order of activities can be divided into three groups which the same type of activities belong to. The first group, which belongs to low privacy, consists of 5 kinds of activities. Those activities related to the business purposes are:

- Serving guest
- Serving customer
- Displaying good
- Storing shop goods
- Waiting for customer

We found that it is easier to distinguish the high privacy group as the second group because it is more noticeable. This second group of activities which related to private-residential purposes consists of 3 kinds of activities as follows.

1. Praying
2. Bathing
3. Sleeping

Lastly, the third group of activities which belong to the moderate privacy consists of 8 kinds of activities which related to the residential purposes as follows.

1. Dinner
2. Breakfast
3. Lunch
4. Washing clothes
5. Drying clothes
6. Reading
7. Cooking meal
8. Watching TV

The order of activity within each group may not necessarily be meaningful, but we can expect this order of activities as the tendency if more interviews were conducted. Inadvertently, this order of activities shows dynamic responses to privacy inquiry. Further examination will be needed to boldly say that one activity indeed requires less privacy than the other activities.

For few Javanese residents, praying is not always in deeper space but took place often in bedroom. More specific explanation is praying is either hidden or away from other is preferable even though the Javanese residents often pray together with the family member. Sleeping is not always away from others, because sleeping together with other family member in the same room is not uncommon, and some residents are sleeping in the living room while watching television.

Sleeping and praying for the Javanese residents whose houses are located in a sub-alley, sleeping activity took place in the bedroom which has direct access to the small alley in front of the house. Praying took place in the shop area which is also guest room. The resident consider it okay to pray while the shop is opened and customer who will come is willing to wait because

they can see or hear that the resident is still praying, besides the short time period of praying.

The activities which require low privacy are serving guest, storing shop goods, serving customer, and displaying goods. The accumulative number of activities is denser in the privacy level of stranger to servant/worker, but some activities occur in the privacy level of friend and family member for serving customer, storing shop goods, display goods, and serving guest. This is most likely related to the type of business and the type of customer rather than the house layout.

The Javanese shop house open their shop area not directly open to the street in front of their house, sometimes they put the display goods inside their house wherever they like and allow the customer to enter and serve themselves especially when the customer is the neighbor.

The activities which require moderate privacy such as cooking meal, waiting for customer, reading, drying clothes, washing clothes, lunch, breakfast, watching TV, and dinner are more scattered in the depth value of space more broadly. The accumulative number of activities is denser in the privacy level of stranger which is outside the house to servant/worker, within the privacy level of stranger to family member.

Some activities are having connection spatially, such as cooking meal and washing clothes, which is not necessarily connected to drying clothes. Other activities that are connected are watching TV and dinner which is commonly happened in the same room, and maybe breakfast and lunch, even though breakfast is not a main meal for many residents, or they just combine with lunch which takes place in the shop area during opening hours. Interestingly, other activities such as waiting for customer which is supposed to be related closely to the low privacy activities such as serving customer, storing shop goods, display goods, and serving guest, are more considered as moderate privacy because for some Javanese residents waiting for customer is not an important spatial activity. They are waiting for customer while doing other domestic activities.

2. Category of People

The diagram of the Chinese group shows that the physical and visual access for most of all activities according to the majority of residents is highly correlated (see Table 3.3 and 3.4). This may mean that the required physical and visual accesses are generally the same. In the diagram, all the activities are represented by symbols and the number of residents who respond. The diagram also shows that some other activities have the tendency to be higher in physical access than visual access. However, there are exceptions, cooking meal, washing clothes, and drying clothes for few residents require higher visual access than physical access. Two residents who respond differently have their drying clothes and washing clothes activities in the open space in the inner yard. Those residents whose cooking meal activity requires higher visual access do not show any special characteristic of their kitchens or relation to the type of business. This is may be personal reason. The second table below of the Javanese group shows that the physical and visual access for most of all activities according to the majority of residents is also highly correlated and that some other activities have the tendency to be higher in physical access than visual access (see Table 3.3 and 3.4).

Table 3.3. Kind of Activities Visually & Physically Accessible to Different Category of People (Chinese)

Visual Access \ Physical Access	Stranger	Customer	Servant/worker	Friend	Family	Oneself
Oneself						Bathing (7) Sleeping (1) Praying (1)
Family			Cooking meal (1) Washing clothes (1)		Reading (1) Lunch (3) Praying (5) Breakfast (7) Bathing (7) Dinner (11) Watching TV (12) Sleeping (14) Cooking meal (1) Washing clothes (1) Drying clothes (1)	
Friend			Cooking meal (1)	Dinner (1)	Dinner (1)	
Servant/ worker	Drying clothes (1)	Cooking meal (1)	Storing goods (4) Lunch (4) Breakfast (5) Drying clothes (5) Cooking meal (6) Washing clothes (8)	Cooking meal (1)	Drying clothes (3)	
Customer		Serving customer (3) Reading (3) Lunch (3) Waiting customer (4) Displaying goods (4) Serving guest (5) Breakfast (2) Watching TV (1) Cooking meal (1)	Waiting customer (2) Cooking meal (1) Washing clothes (2) Serving guest (1)	Watching TV (1)	Reading (1) Lunch (1)	
Stranger	Storing goods (2) Waiting customer (2) Washing clothes (1) Serving customer (3) Display goods(3) Serving guest (4)	Reading (1) Lunch (2) Breakfast (1) Storing goods (3) Waiting customer (3) Serving guest (3) Displaying goods (4) Serving customer (7)	Storing goods (2) Reading (1) Display goods (1) Drying clothes (4)		Serving customer (2) Storing goods (1) Reading (1) Waiting customer (2) Display goods (1)	

Visual Access

Physical Access

* Number in brackets represents the number of each kind of activities. The individual response of the residents for each activity show whether a kind of activity, for instance cooking meal, for one resident is equal between visual and physical access, or possesses higher category in visual or physical access.

** Darker shading boxes show the activities that are equal between visual and physical access. Less dark shading boxes show those that possess higher category for physical accesses than visual accesses.

The result on the above table shows that only very few activities are more concerned about visual access. The majority of activities are equal between visual and physical access or more concerned about physical access than visual access. However, there are also exceptions which are similar to that of Chinese added serving guest. Cooking meal, washing clothes, drying clothes, and serving guest for several residents require higher visual access than physical access. The number of residents who responds differently is greater than that of Chinese. There are 9 residents with various conditions of houses.

Interestingly, those who answer cooking meal, washing clothes, and drying clothes, have their kitchens or washing rooms next to each other or directly accessible from the outside through side doors. One resident who answers serving guest has the shop combined with the guest room. This may be relevant with their increased awareness of the possibility of visual access from the outside.

Table 3.4. Kind of Activities Visually & Physically Accessible to Different Category of People (Javanese)

Visual Access \ Physical Access	Stranger	Customer	Servant/worker	Friend	Family	Oneself
Oneself						Praying (5) Bathing (10)
Family		Serving guest (1) Cooking meal (1)	Cooking meal (1) Washing clothes (3)		Serving guest (3) Waiting customer (5) Lunch (5) Bathing (5) Watching TV (6) Breakfast (7) Dinner (8) Sleeping (14) Praying (8) Reading (2) Drying clothes (2) Washing clothes (1)	
Friend				Serving guest (1) Cooking meal (1)	Storing goods (1) Display goods (1)	
Servant/worker		Cooking meal (4) Drying clothes (1) Washing clothes (1)	Drying clothes (4) Serving guest (3) Cooking meal (3)	Cooking meal (1)	Drying clothes (4) Washing clothes (6)	
Customer		Reading (3) Breakfast (3) Watching TV (4) Dinner (4) Lunch (5) Waiting customer (6) Serving guest (6) Storing goods (7) Serving customer (9) Displaying goods (9)	Storing goods (2) Waiting customer (1) Cooking meal (1)	Serving customer (1) Reading (1) Lunch (1) Watching TV (1)	Serving customer (1) Storing goods (1) Display goods (1) Waiting customer (1) Reading (1) Lunch (1) Cooking meal (1) Washing clothes (1) Sleeping (1)	
Stranger	Serving customer (2) Storing goods (1) Display goods (1) Lunch (1) Breakfast (1) Dinner (2) Serving guest (1)	Serving customer (2) Storing goods (2) Display goods (2) Waiting customer (1) Reading (2) Lunch (1) Watching TV (2) Drying clothes (1)	Drying clothes (2)		Drying clothes (1) Washing clothes (1)	

Visual Access

Physical Access

* Number in brackets represents the number of each kind of activities. The individual response of the residents for each activity show whether a kind of activity, for instance cooking meal, for one resident is equal between visual and physical access, or possesses higher category in visual or physical access.

** Darker shading boxes show the activities that are equal between visual and physical access. Less dark shading boxes show those that possess higher category for physical accesses than visual accesses.

The result on table 3.4 also shows that the majority of activities equal between visual and physical access or concerned about physical access more than visual access. Only very few activities is more concerned about visual access.

Judging from the number of responses, the category of friend has the fewest number of the activities (see the following Table 3.5 and 3.6). Interestingly we can find that the number of activities which fall at the category of friend has received the lowest amount among all the other categories. Besides the category of friend, the category of oneself has received low amount of activities as well. The number of activities in the category of friend as opposed to that in the category of oneself is 5 to 9 (Chinese) and 9 to 15 (Javanese). However, the category of oneself is an important category that represents the highest level of privacy. So, we exclude only the category of friend for further examination.

Table 3.5. Number of Activities Visually & Physically Accessible to Different Category of People (Chinese)

Visual Access	Stranger	Customer	Servant/worker	Friend	Family	Oneself
Oneself						9
Family			2		63	
Friend			1	1	1	
Servant/worker	1	1	32	1	3	
Customer		26	6	1	2	
Stranger	15	24	8		7	

Physical Access

* Number in each box represents the number of activities that fall into each category of stranger, customer, servant/worker, friend, family, and oneself.

** Shading boxes show the category of friend that contains the fewest number of activities.

Table 3.6. Number of Activities Visually & Physically Accessible to Different Category of People (Javanese)

Visual Access	Stranger	Customer	Servant/worker	Friend	Family	Oneself
Oneself						15
Family		2	4		66	
Friend				2	2	
Servant/worker		6	10	1	10	
Customer		56	4	4	9	
Stranger	9	13	2		2	

Physical Access

* Number in each box represents the number of activities that fall into each category of stranger, customer, servant/worker, friend, family, and oneself.

** Shading boxes show the category of friend that contains the fewest number of activities.

The category of friend was assumed to be as important as the other category of people, so it was included. In actuality, perhaps it is difficult for the residents to consider friend apart from the other category. Other possible reasons, in the setting of behavior in the house, a friend may not be distinctively different from a family member. They may be invited into the house for eating, watching TV together, or even staying overnight as if they are the residents' own family member. Furthermore, according to the interview with Javanese, they often received visitations from their friends or friends of their family members to stay overnight. In contrast, Chinese rarely have their friends visit into their house to stay overnight. Only family member can stay overnight. However, both Chinese and Javanese consider their friends can come inside unto their bedroom freely whenever they visit.

3.4. Activities More Likely Related to Privacy

1. Common Tendency of Each Activity

As an ordering scale, each category will be represented as number 1 to 5 from stranger to oneself. We exclude the category of friend that represents the privacy level. As explained previously, those activities belong to the category of friend are put into the category of family member as the most possible reason. Now we have only 5-scale; stranger, customer, servant/worker, family members, and oneself.

As behavioral analysis, we measure privacy level based on the relational level of people (derived from observation, questionnaire and interview with the residents). The relational interaction among the residents and strangers, customers, workers/servants, friends, and family members are interpreted and converted into integer of 1 (stranger, the most public) to 5 (oneself, the most private). By putting those people according to the closest relationship with oneself, the order of the scale is as follow: stranger is at 1, customer is at 2, servant/worker is at 3, family member is at 4, and oneself is at 1.

This distribution of activities will show how the frequency (or percentage) of cases is falling in each category of people: strangers, customers, servants/workers, family members, and oneself. It will be meaningful to see whether the activity has a normal distribution for each category or has accumulative frequency for certain category. If it is normally distributed, the activity may not be concerned with the privacy, by avoiding unwanted interaction. It may be relatively concerned with other factors than unwanted interaction. Based on this distribution

graphs, we choose the activities which concerned with privacy and further examine with the spatial depth analysis in chapter 4.

This stage is to examine one by one of all activities for the common tendency in distribution graphs. It is easier to examine through graphs at times, but for some cases it will take further analysis. In the graphs of distribution below, the data are seen for several important features: the central tendency (the typical or average score without regard to variability), the variability, and kurtosis (related to the data variability & the mode; the greatest frequency of occurrences).

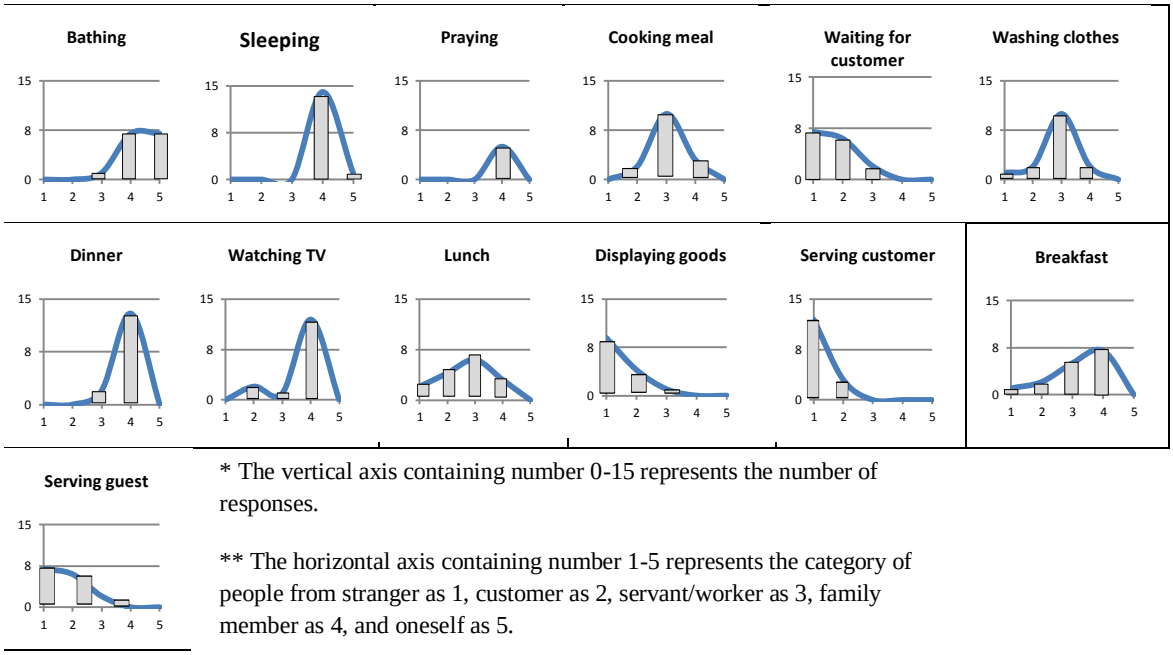
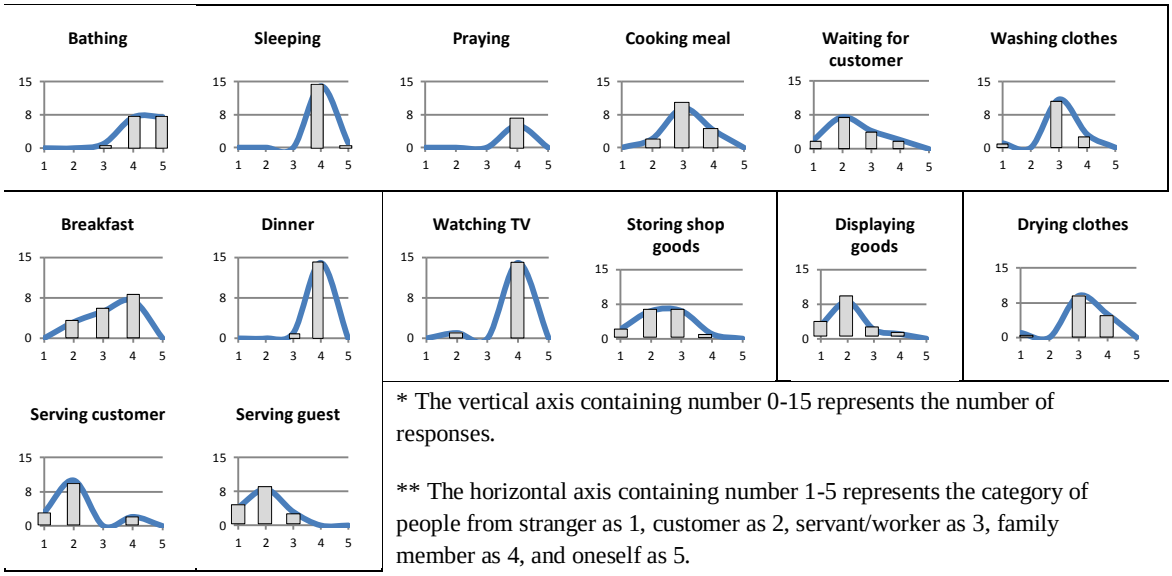


Figure 3.5. Common Tendency for Visual Access of 13 Activities (Chinese)

Figure 3.5 shows in detail the distribution of responses for Chinese group for each activity which have common tendency concerning the visual accessibility. There are 13 activities that the residents have chosen to respond with similar tendency. For "Bathing" the tendency is to the category of family member and oneself. For "Sleeping", "Praying", "Dinner", "Watching TV", and "Breakfast" the tendency is to the category of family member (only 5 respondents do "Praying" as their daily routine). For "Cooking meal", "Washing clothes", and "Lunch" the tendency is to the category of servant/worker. For "Waiting for customer", "Displaying goods", "Serving customer", and "Serving guest" the tendency is to the category of stranger.



* The vertical axis containing number 0-15 represents the number of responses.

** The horizontal axis containing number 1-5 represents the category of people from stranger as 1, customer as 2, servant/worker as 3, family member as 4, and oneself as 5.

Figure 3.6. Common Tendency for Physical Access of 14 Activities (Chinese)

Figure 3.6 shows in detail the distribution of responses for Chinese group for each activity which have common tendency concerning physical accessibility. There are 14 activities that the residents have chosen to respond with similar tendency. For “Bathing” the tendency is to the category of family member and oneself. For “Sleeping”, “Praying”, “Breakfast”, “Dinner”, and “Watching TV” the tendency is to the category of family member (only 5 respondents do “Praying” as their daily routine). For “Cooking meal”, “Washing clothes”, and “Drying clothes” the tendency is to the category of stranger. For “Waiting for customer”, “Displaying goods”, “Serving customer”, and “Serving guest” the tendency is to the category of customer. For “Storing shop goods” the tendency is to the category of customer and servant/worker.

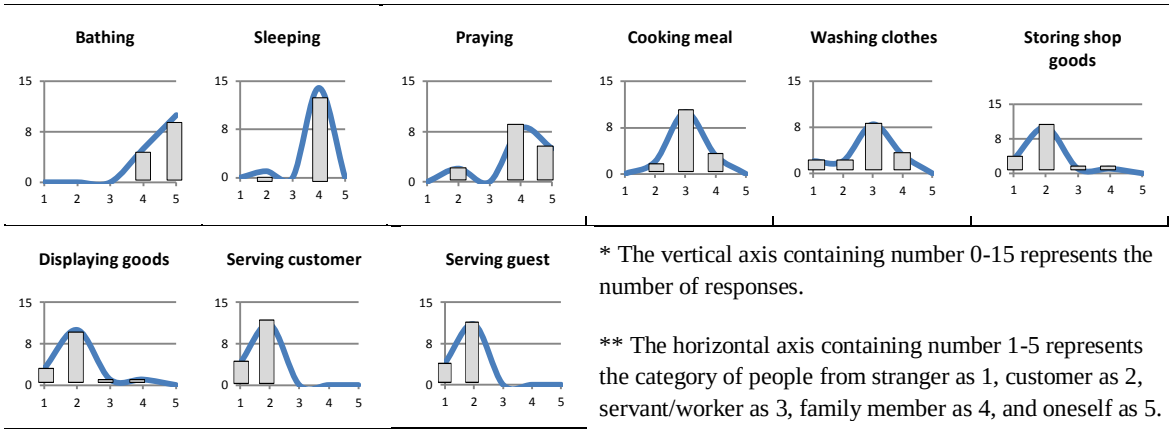


Figure 3.7. Common Tendency for Visual Access of 9 Activities (Javanese)

Figure 3.7 shows in detail the distribution of responses for Javanese group for each activity which have common tendency concerning visual accessibility. There are 9 activities that the residents have chosen to respond with similar tendency. For "Bathing" the tendency is to the category of oneself. For "Sleeping", "Praying" the tendency is to the category of family member. For "Cooking meal" and "Washing clothes" the tendency is to the category of servant/worker. For "Storing shop goods", "Displaying goods", "Serving customer", and "Serving guest" the tendency is to the category of customer.

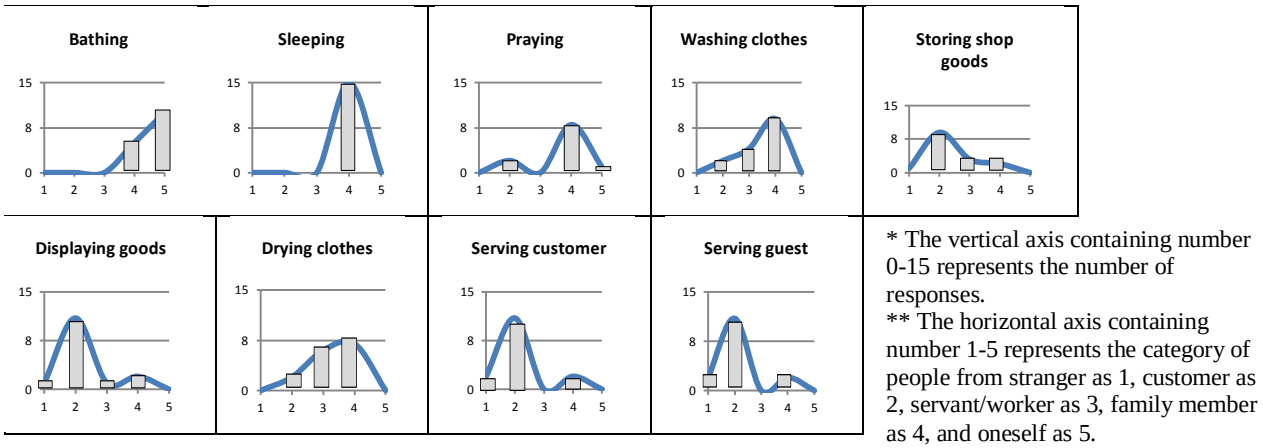
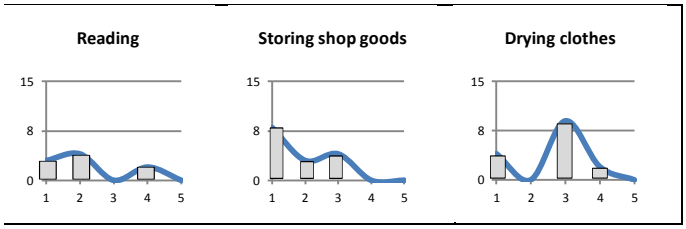


Figure 3.8. Common Tendency for Physical Access of 9 Activities (Javanese)

Figure 3.8 shows the distribution of responses for Javanese group of 9 activities which have common tendency concerning physical accessibility. For "Bathing" the tendency is to the category of oneself. For "Sleeping", "Praying", "Drying clothes", and "Washing clothes" the tendency is to the category of family member. For "Storing shop goods", "Displaying goods", "Serving customer", and "Serving guest" the tendency is to the category of customer.

The remaining activities (see the following figures 3.9-3.12) which may not be closely related to privacy or have a bias because they are inclined to be heterogeneous, indicated by having multiple peaks in the distribution diagram.

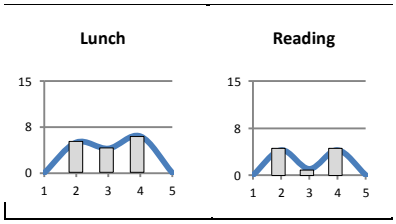


* The vertical axis containing number 0-15 represents the number of responses.

** The horizontal axis containing number 1-5 represents the category of people from stranger as 1, customer as 2, servant/worker as 3, family member as 4, and oneself as 5.

Figure 3.9. Activity with Inconsistent Tendency for Visual Access (Chinese)

Figure 3.9 shows the distribution of responses for Chinese group of 3 activities concerning visual accessibility. They are "Reading", "Storing shop goods", and "Drying clothes". It is likely that the residents do not relate these activities with privacy in visual accessibility.

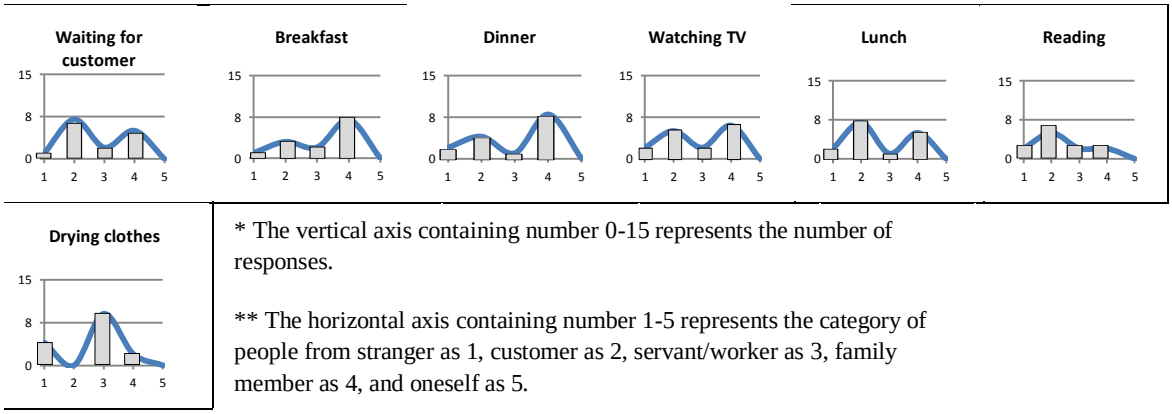


* The vertical axis containing number 0-15 represents the number of responses.

** The horizontal axis containing number 1-5 represents the category of people from stranger as 1, customer as 2, servant/worker as 3, family member as 4, and oneself as 5.

Figure 3.10. Activity with Inconsistent Tendency for Physical Access (Chinese)

Figure 3.10 shows the distribution of responses for Chinese group of 2 activities concerning physical accessibility. They are "Lunch" and "Reading". It is likely that the residents do not relate these activities with privacy in physical accessibility.



* The vertical axis containing number 0-15 represents the number of responses.

** The horizontal axis containing number 1-5 represents the category of people from stranger as 1, customer as 2, servant/worker as 3, family member as 4, and oneself as 5.

Figure 3.11. Activity with Inconsistent Tendency for Visual Access (Javanese)

Figure 3.11 shows the distribution of responses for Javanese group of 7 activities concerning visual accessibility. They are “Waiting for customer”, “Breakfast”, “Dinner”, “Watching TV”, “Lunch, “Reading”, and “Drying clothes”. It is likely that the residents do not relate these activities with privacy in visual accessibility.

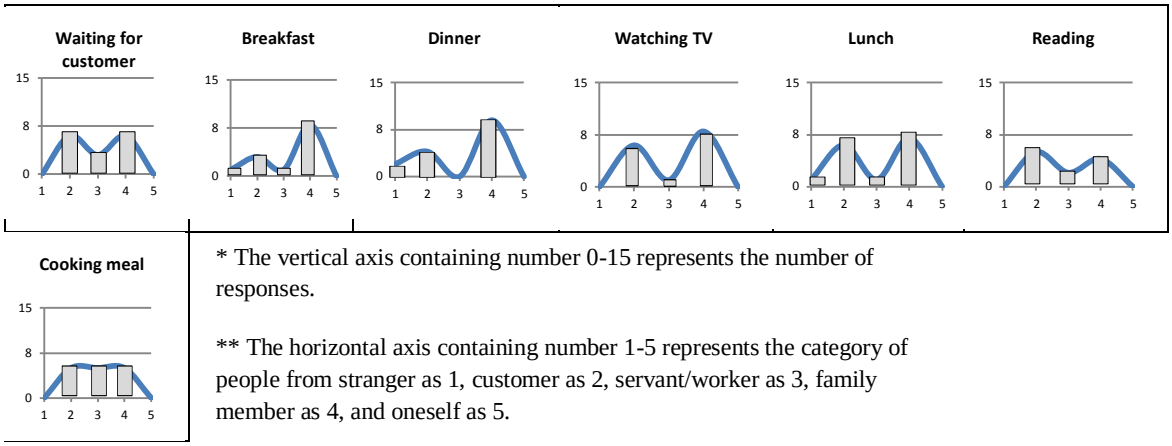


Figure 3.12. Activity with Inconsistent Tendency for Physical Access (Javanese)

Figure 3.12 shows the distribution of responses for Javanese group of 7 activities concerning physical accessibility. They are “Waiting for customer”, “Breakfast”, “Dinner”, “Watching TV”, “Lunch”, “Reading”, and “Cooking meal”. It is likely that the residents do not relate these activities with privacy in physical accessibility.

Those activities are most likely to relate to privacy for the following reasons:

1. The common tendency to be homogenous, and
2. The lesser variability (all tend to score at about the same point).

Those activities will be considered further for the analysis for their common responses as one group (one peak at the distribution graph). The other fewer activities have indicated bias and may indicate several relatively homogenous subgroups within the larger sample being studied. So, those with bias responses will not be analyzed further in the spatial depth for its too high variability. Note that the central tendency (the typical or the average score) may be varied among the category of stranger, customer, servant/worker, family member, and oneself.

Based on the above results of how respondents respond to the questions whether they are feeling annoyed when doing their daily activities, large number of activities are regarded as highly related to privacy, and some activities are different in number for Chinese and Javanese and for the visual and physical accessibility (see Table 3.7).

Table 3.7. List of Activity with Common Tendency both Chinese and Javanese

	Visual Accessibility	Physical Accessibility
Chinese	1. Bathing 2. Sleeping 3. Praying 4. Cooking meal 5. Waiting for customer 6. Washing clothes 7. Breakfast 8. Dinner 9. Watching TV 10. Lunch 11. Displaying goods 12. Serving customer 13. Serving guest	1. Bathing 2. Sleeping 3. Praying 4. Cooking meal 5. Waiting for customer 6. Washing clothes 7. Breakfast 8. Dinner 9. Watching TV 10. Storing shop goods 11. Displaying goods 12. Drying clothes 13. Serving customer 14. Serving guest
Javanese	1. Bathing 2. Sleeping 3. Praying 4. Cooking meal 5. Washing clothes 6. Storing shop goods 7. Displaying goods 8. Serving customer 9. Serving guest	1. Bathing 2. Sleeping 3. Praying 4. Washing clothes 5. Storing shop goods 6. Displaying goods 7. Drying clothes 8. Serving customer 9. Serving guest

2. Different Tendency between Chinese and Javanese

By examining the common tendency, we obtain activities that give the general picture of the kind of action and person who may involve in each activity which later may help understand the residents' requirement of different degree of privacy according to the different order in social interaction between residents as oneself and family member, friend, servant/worker, customer, and stranger. Each activity which require high social interaction apparently require low privacy, but according to the type of activity, the way the residents response to possible physical intrusion may be different from the expectation in performing the activity.

Some other activities are opted out because they are not associated with the privacy. Those activities are such as waking up and sleeping, washing dishes and cooking for meals, serving guest with serving customer, changing clothes with bathing, sitting with family with watching TV, and storing vehicle with storing household goods or shop goods. Even though it takes more analysis, it would not be included in this study.

The praying activity for Javanese residents is a routine of their religious belief which requires them to do it five times a day therefore there is a special time and area in the house for that purpose alone. This activity is performed either individually or in a group with other family member within the house.

The bathing activity is related to the tropical climate which makes people sweat easily after activity, but it also can relate to traditional belief or religious belief that requires them to take a bath very early in the morning while everybody else is sleeping. The serving customer activity is the same as welcoming visitor or guest. Some residents allow them to enter the house into deep area or serve them with food and drinks and eat together during lunch or dinner time. Even when the shop door is closed, there is a tendency to welcome and encourage customer to come at any time only when the owner is present.

Javanese residents treated customers as guests because the guests mostly were customers, so serving customer is also serving guest, but Chinese residents almost meet their guests during opening hours in the shop area, not necessarily in the guest area. Most of the guests of the Chinese are family member.

The storing shop goods activity means storing goods after buying them from the bigger store or wholesaler agent. Some residents were occasionally out for a while during the open hours and let the other family members to shop keep. Some other residents managed to buy the supply other than the open hours but this is very flexible because there is no need to keep the opening hours fixed day to day.

The displaying shop goods activity is managing to put the supply goods on display in order for the customer to see and pick easily. Even though this activity is related closely to storing shop goods, it is different, and the residents do not put much space to display the shop goods even some residents do not deliberately put the goods on display but simply store them in the storage room and let the customers come in and pick themselves, so they don't spare space to put them for display.

3.5. Conclusions

The result in this study indicate the apparent discernment in social interaction based on the category of people as also mentioned in intimacy gradient (Alexander, 1977) that each category of people as outsider carries a different sense of privacy toward the residents as insiders even with the family members. Each category may also carry different degree of how far he/she can intrude into the house which is quite distinguished visual from physical access.

Some important points can be inferred from the analysis are Acoustic privacy for Chinese is considered low, the high correlation between visual and physical access. However, even though the majority of residents may perceive their interpersonal relationship based on mutual understanding and common sense; there are individuals who show different response. They are those whose requirement of physical access higher than visual access for 3 domestic activities: cooking meal, washing clothes, and drying clothes for both Chinese and Javanese residents, and serving guest for one Javanese resident. It is likely that that several residents who put more concerned in visual than physical privacy have related to other influential factors such as the physical condition of their houses rather than personal factor apart from the gender, age, and the category of people who works/lives together in the house.

The diagram of peak distribution of visual and physical privacy for each activity selects different number of activities for Chinese group and Javanese group that have tendency to be highly related to privacy. Nevertheless, the privacy requirement of each individual is varied and its fulfillment is relatively different as individual and as a group. Further result shows the grouping of activities based on the degree of social interaction into low, moderate, and high privacy for both Chinese and Javanese residents.

We examine the privacy requirement of each activity according to the responses of all residents in each aspect of privacy, acoustic, visual, and physical. The more responses in each category of people will indicate the degree of privacy requirement of the activity. This activity analysis results in the different requirement of privacy of each activity ranging from low to high privacy for 16 common activities. The analysis of acoustic aspect of privacy does not show meaningful result for most of the residents in Chinese group in contrast toto Javanese group. It may mean their requirement of acoustic privacy while doing their daily activities is either very low or suppressed. However, it may also mean their physical environment is enough to support their need for acoustic privacy that makes it less concerned.

Analyzing activities of Chinese and Javanese resulted in different and similar responses to the visual and physical privacy. The different responses show the different concerns to each category of people. Most of the residents are concerned more about physical access than visual access or balance between both visual and physical access in performing activities. The similar responses show that some activities belong to low privacy group such as (1) serving guest, (2) serving customer, (3) storing shop goods, (4) displaying goods, and (5) waiting for customer. Some activities belong to high privacy group such as (6) praying, (7) bathing, and (8) sleeping. Still, some activities belong to moderate privacy such as (9) drying clothes, (10) reading, (11) lunch, (12) washing clothes, (13) breakfast, (14) dinner, (15) cooking meal, and (16) watching TV. As we expected, the low privacy activities are related to the category of people of stranger and customer, whereas high privacy activities are related to the category of people of family member and oneself. Another finding reveals that the category of people of servant/worker is related more to activities related to shop keeping for Chinese, whereas for Javanese it is related more to activities related to housekeeping. It is interesting that friend has low response in both groups.

We can understand that the most required privacy is that related to personal activities, while the least required privacy is related to shop-keeping activities. The moderate degree between personal and shop keeping contain many domestic activities which varied individually which depend on the other factors such as physical environment or individual preference, etc. In other words, the need for individual privacy may be flexible and varied highly in terms of social interaction.

The result of chapter 3 also reveals that, the sensitivity to the privacy requirement is related to visual and physical accessibility rather than acoustic accessibility either Chinese or Javanese. Furthermore, the sensitivity to the privacy requirement for physical accessibility is higher than visual accessibility for both groups.

Since this chapter 3 is to examine the responses from different groups of people to their perception of privacy requirement through the responses to each category of people, the result shows that there are differences and similarities. However, for future study more extensive and larger number of respondents with more detail examination of each category of people is suggested to produce more confidence results.

CHAPTER 4 Spatial Depth Analyses and Required Privacy

4.1. Introduction

> *Since dwellings encompass varying combinations of levels, it may reasonably be expected that specific functions like sleeping, eating, bathing, and cooking can also be individually accommodated on different levels. (Habraken, 1998: 70)*

In order to evaluate different kinds of housing, general rules need to be set to apply all possible situations with furniture that may substitute the enclosure walls & door panel. It is important to set the general rules because it serves as the standard of measurement. The first stage of analysis focuses on the presence or absence of the door panel. General sense gives us a hint that a room with door panel means for more private use and may convey higher privacy. A room without a door panel may loosen its control against unwanted intrusion.

This first step of analysis of measuring the degree of privacy is attempting at finding the correlation between the territorial hierarchy with the privacy meaning of having the physical distance, solely based on the assumption that the deeper the position of the space is relative from the outside the more private the space is. This assumption is later corresponded to the activity in the behavioral analysis. The logic is that the arrangement of spaces inside the house, its divisions of spaces were entirely depending on this concept of private-public space. This concept of private-public space is then connected to the idea of interrelationship among the individuals bound with activities. This final analysis is then the corresponding result of the spatial depth analysis and behavioral analysis.

Spatial depth analysis is measuring privacy level based on the level of depth relative from the outside (derived from the physical data). This spatial depth analysis lies on the concept as pointed out by Habraken (1998: 136) that one may always exit: from bunk bed into bedroom, from bedroom into house, from house into street, from city into surrounding countryside. But moving in the reverse direction, one is subject to scrutiny at each door or gate, unable to simply enter wherever one pleases. This is related to privacy rules implied at every access control in each point of entrance. The underlying idea is when the owner of the house, the landlord, who has the absolute control to place the individuals in the appropriate space, he/she may interconnect with the privacy. For example, placing the servant room at the back may risk the servant to trespass the family room which is a disturbance to the privacy of the family members. But this may indicate that the servants are considered part of family members or within the control of the owner for every going-in and going-out, otherwise the owner may provide servant room with separate access.

The division of spaces inside the house depends on the separation of the rooms into smaller spaces indicated by the structural walls, furniture, and fixture. Each space is defined as rectangular space and numbered. Each house has various numbers of connections, and it will produce various incremental degree of privateness, but the whole house is one. Every house as private property is supposed to be entirely private, which possess up to a total value of 1. Using the analogy between private and public to 1 and 0, the gradient of privateness inside the house is the incremental raise from the value of 0 to 1.

This analysis measures the relative position from a point outside the house to the next entry point inside the house which is strictly static based on the physical distance. The reachable distance from the outside is the measured degree. The diagram refers to the plan of the buildings. The incremental value of 0 to 1 represents the sequential movement from the outside of the house as the public area (the street or alley in front of the shop and around the house) to reach the certain room inside the house. The incremental raise from 0 indicates the controlled area of the residents, as is the case with occupying passageway or walkway in this study.

The spaces in each house that we analyzed are those the interviewed residents use on daily basis. This study focuses only the spaces where the 16 activities are happening most commonly. According to the interview, the residents do not always use the same room or space, also for several activities such as breakfast, lunch, sleeping, and soon. However, the residents do have a habit to choose particular place. This is what is later shown in the table of relation between depth value and privacy level. In this depth space analysis, we put the general function of the space without mentioning the activity which may takes place. We do not assign each room with its common function, such as listed in page 33 chapter 2, because the use or function of room is not the main focus in this study, but the activity that may not be necessarily occurred in the intended room.

4.2. Modification of Space Syntax Method

1. Hillier & Hanson's Space Syntax Method

This step of analysis is translating the layout into justified network according to the degree of physical accessibility from the outside as the reference space. In principle, the space syntax method by Hillier and Hanson is to connect one interior space is a cell that can be represented by a circle with the entrance to the cell that can be represented by a line (see Figure 4.1). Every cell is connected to outside (exterior) as the reference space. One study used this method in measuring the distribution of spaces of the network based on the number in the columns and rows to analyze its segregation, disintegration, and other meanings that can be interpreted from the numerical measures (see Figure 4.2) (Shoul, 1993:36-37).

The degree of physical accessibility is divided into several points from 0 to 1 as follow. That private and public spaces have transitional spaces that are semiprivate and semipublic is fixed, but since to decide which space is semiprivate or semipublic depends entirely on one's perspective as Habraken concluded (1998: 137-138), this study tries to detect the incremental degree of privateness based on the physical distance relative from the public space (outside) by dividing the house into units of space.

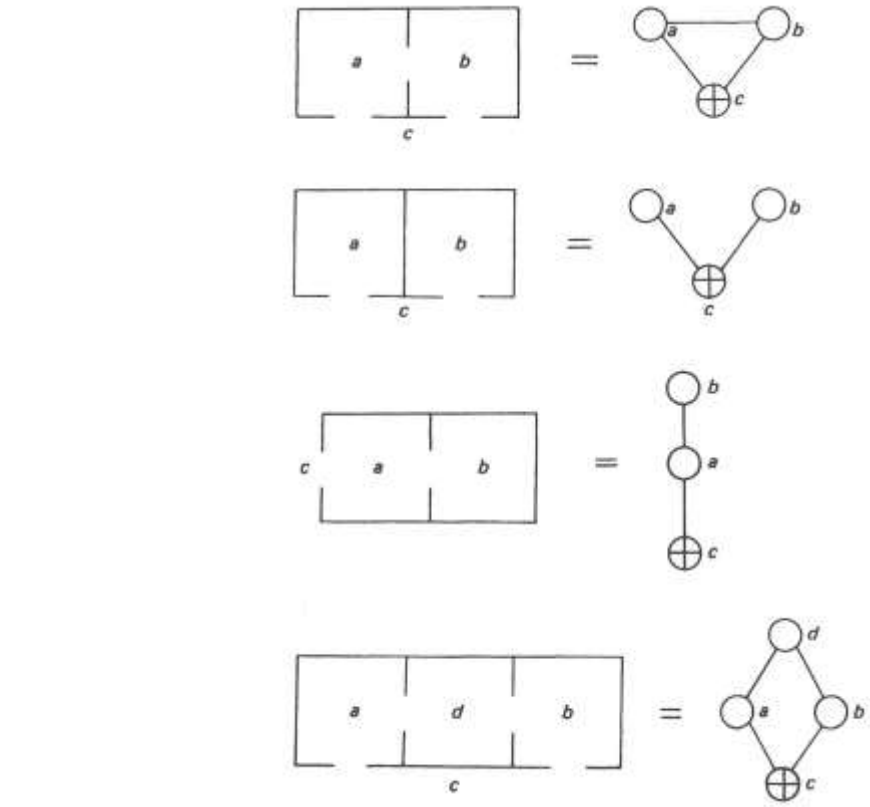


Figure 4.1. Hillier and Hanson's Space Syntax Method

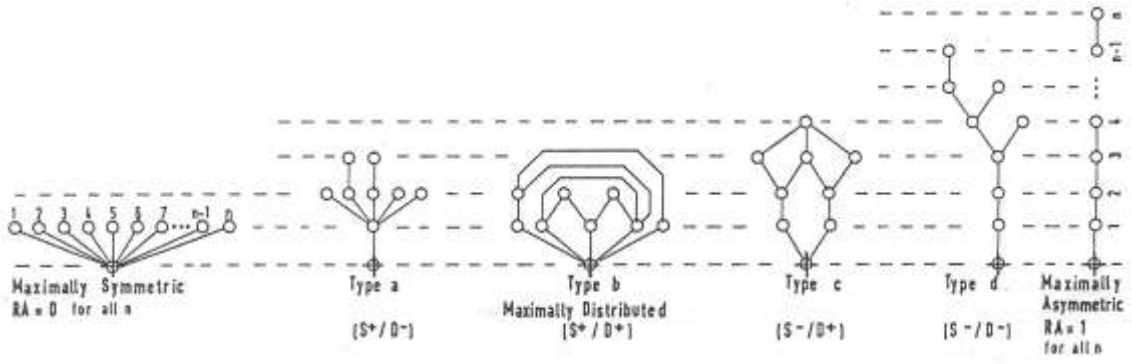


Figure 4.2. Measuring the Distribution of Spaces

2. Problem in Connection and Separation between Spaces

The concept of space syntax above, however, has some problem, that is the connection to each space with or without door panel is not indicated in the network, which is important to distinguish the different value of privacy requirement. Because door panel is important and can be the means of control for the visual and physical accessibility, there is a need to modify this method leaving the concept of connection between spaces.

This different condition by the presence of the door panel will be assigned value which indicates the "depth" or the psychological distance of "space" from the outside of the house as the "reference space". The fact that all spaces have connection with each other, starting from the reference space which is outside the house, this analysis with the layout will focus on the division of spaces by the category of doorway indicated by the structural walls and the door panel. Each space is defined as rectangular space and numbered.

That private and public spaces have transitional spaces that are semiprivate and semipublic is fixed, but since to decide which space is semiprivate or semipublic depends entirely on one's perspective as Habraken concluded (1998: 137-138), this study tries to detect the incremental degree of privateness based on the physical distance relative from the public space (outside) by dividing the house into units of space.

Another problem is that the connection is between the space where the activities take place, which is not necessarily all the spaces inside the house. The network of activities which takes place inside the house is the focus in this chapter. Some rooms can be used for many different activities, and usually it will be steady regarding the residents' daily activities. According to this concept, we map the location of these activities which have different privacy requirement (as mentioned in chapter 3) as the network of daily activities per house.

3. Modified Space Syntax with Depth Value

Each house has various numbers of divisions by the door panel, and it will increase the degree of privacy which can be express by value of 1 . Using the analogy between completely open as possessing value of 0, the gradient of privacy level inside the house is the incremental raise from the value of 0 to 1 which will be assigned for the condition of doorway without door panel will fall between 0 and 1, so it will be expressed with the value of 0.5 (Table 4.1). Assuming that locomotion will be affected much by the presence of doorway (portal) which is composed of fixed element (wall) and semi-fixed element (door panel) to control the flow. Doorway with door panel will have complete control over the flow up to the point of inaccessible/total blocked. Doorway without door panel will lessen the control but regulate the flow so that fewer can penetrate. A complete opening from wall to wall will have no control at all toward the potential penetration into the space.

Table 4.1 Value Based on the Category of Doorway

Category of doorway	Type of connection between two spaces	Value
With door panel	Completely closed (complete control over the flow)	1.0
Without door panel	Partially closed/opened (partial control to regulate the flow)	0.5
Opened wall to wall	Completely opened (no control at all)	0

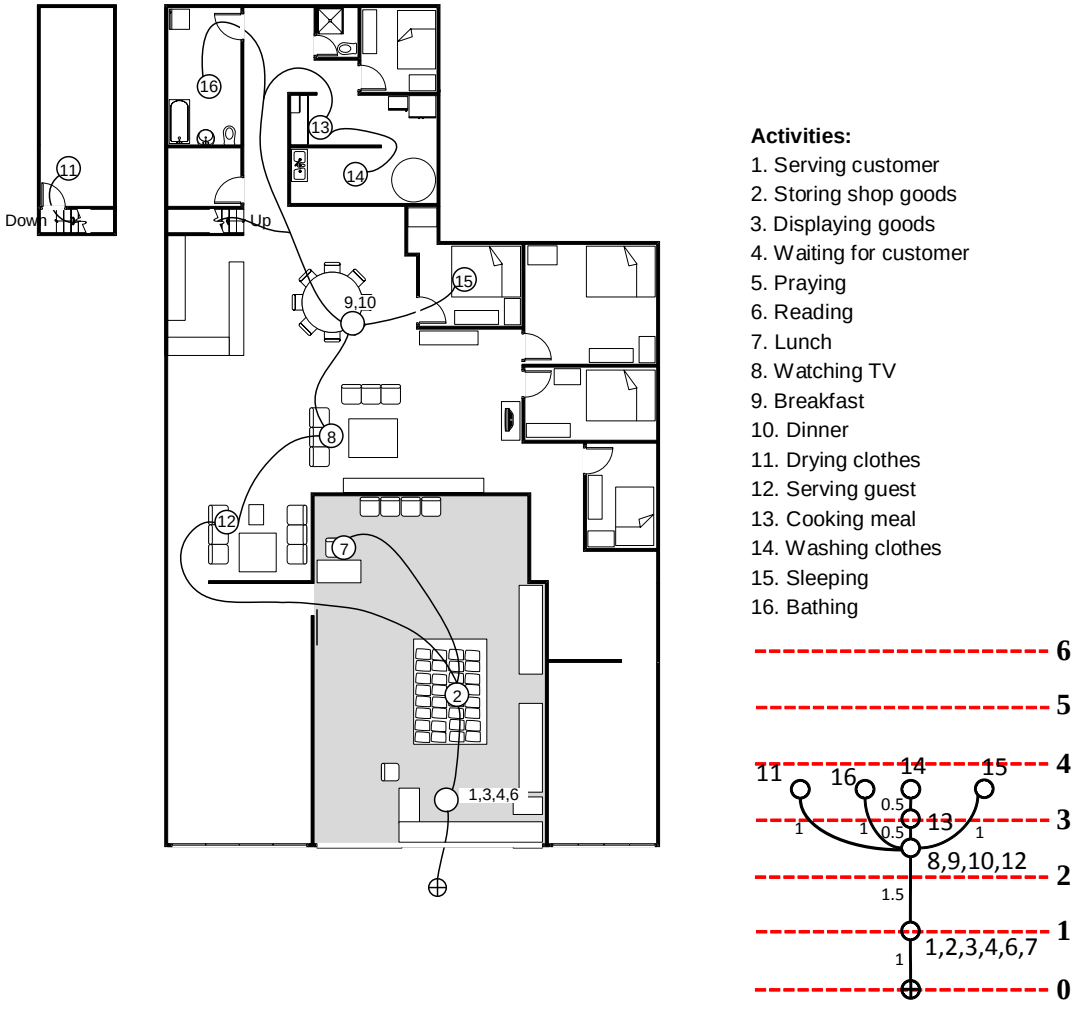


Figure 4.3. Activity Network on House Floor Plan of Chinese (C-01)

Chinese shop houses that we observed tend to have a simple connection system even though many have multiple stories. The shape of the lot is usually long with narrower front area and single entrance. The use of corridor is not only to connect the spaces, but also to accommodate daily activities such as cooking, washing clothes, and drying clothes, even serving guest. The dining room and living room are either connected or combined. Guest room is not common. Usually the residents do not entertain their guests in the house, but only accept the family members or close friend who can enter into the living room. If there is a guest (usually during opening hours), they will accept them at the shop area while they are working. Any special guest will have appointment before they are allowed to enter the house (figure 4.3).

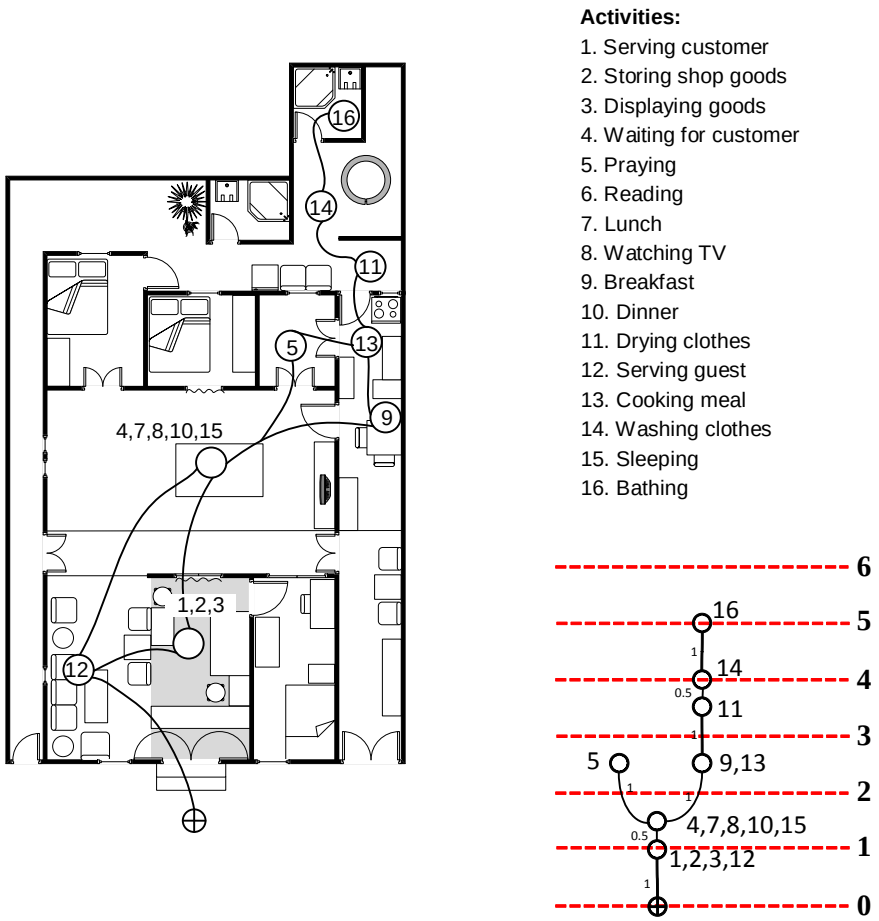


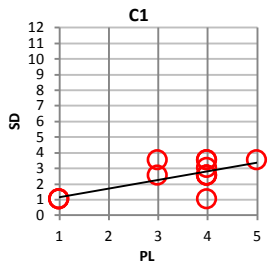
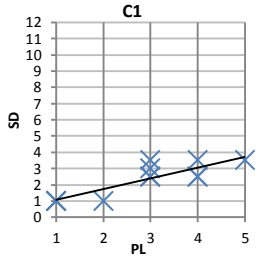
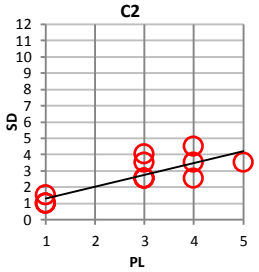
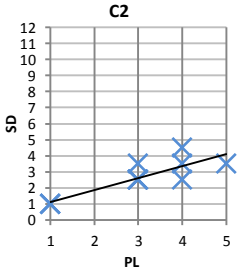
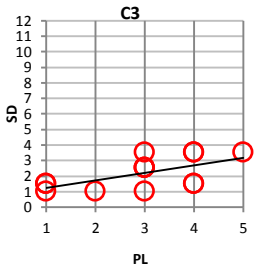
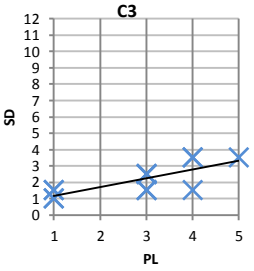
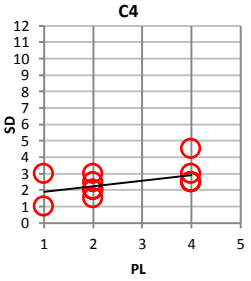
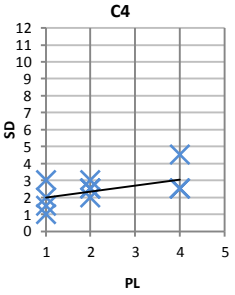
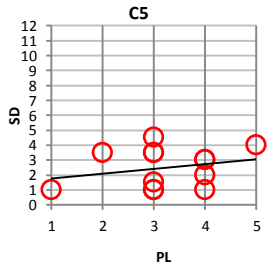
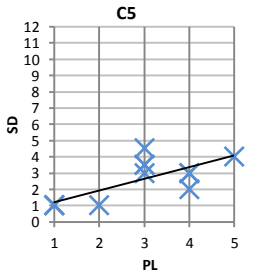
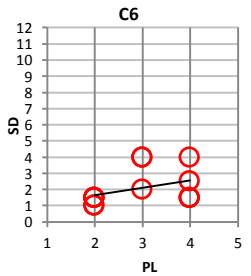
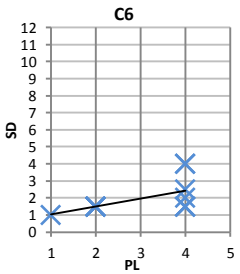
Figure 4.4. Activity Network on House Floor Plan of Javanese (J-01)

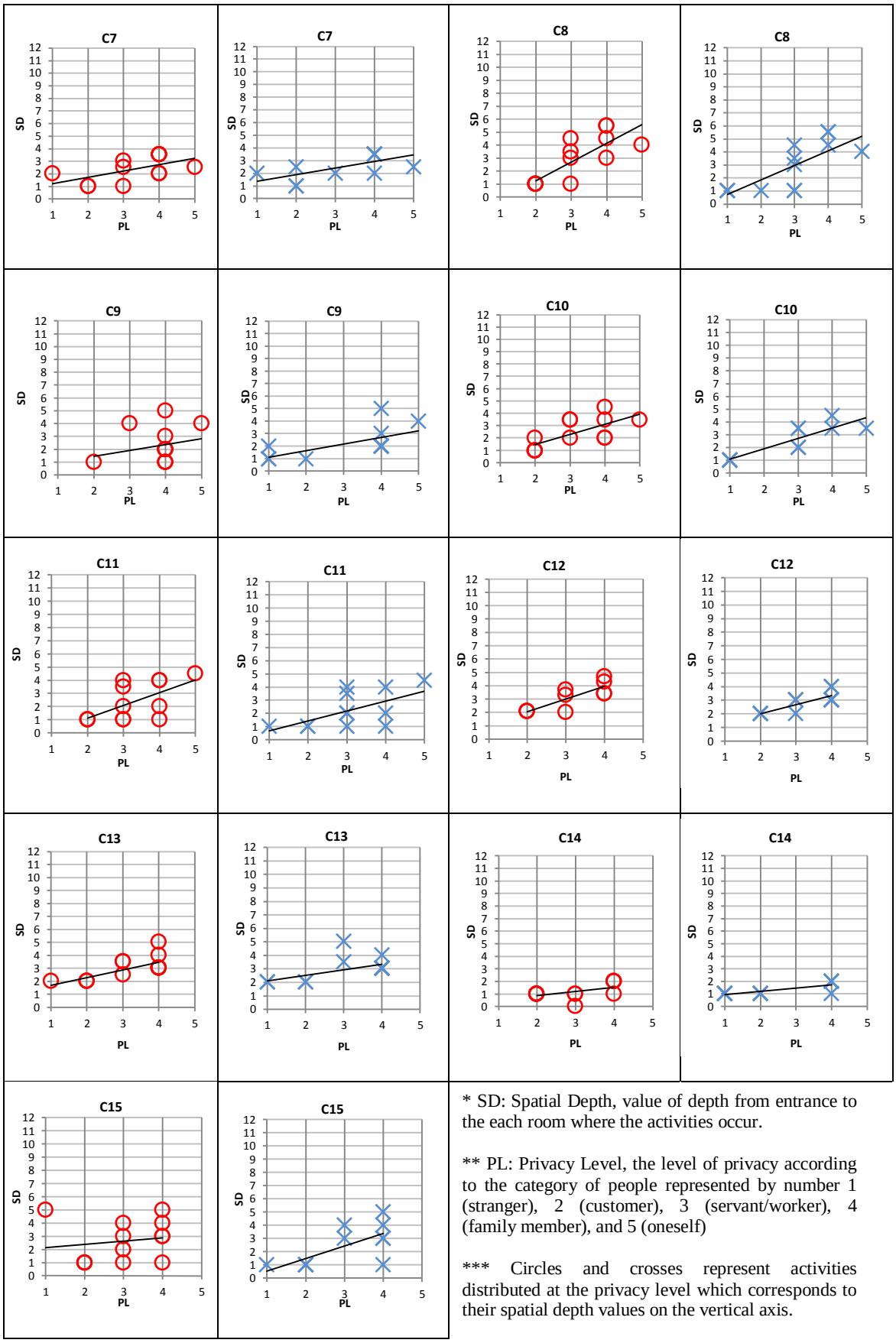
Javanese shop houses tend to have more complex connection system in contrast to Chinese shop house and those with multiple stories mainly use the ground floor for daily activities. The shape of the lot is usually wider with multiple entrances. The use of corridor is more like an open passage which is also used to accommodate daily activities such as watching TV, and serving guest.

In general, the dining room, living room, and kitchen are either connected or combined. Guest room is in a separate area, sometimes combined with the shop area. Usually the residents entertain their guests in the house, either in the guest room or living room, and not only accepting the family members or close friend, mere customer or stranger is considered important because guest brings blessing for them. Even during opening hours, they will certainly ask them to sit at the guest area. Any guest can come without appointment.

4. Result of Relationship between Spatial depth and Required Privacy

Figure 4.5 and 4.6 display the scattered graphs of activities of one house. It shows how each privacy level (horizontal axis) corresponds to the spatial depth (vertical axis) in visual and physical accessibility. The linear line in each figure shows the tendency line by which all activities have the inclination of low or relatively high. Low inclination means the distribution of activities are relatively low in spatial depth. These activities are those selected in the chapter 3 according to their common tendency to relate to privacy.

Physical	Visual	Physical	Visual
			
			
			



* SD: Spatial Depth, value of depth from entrance to the each room where the activities occur.

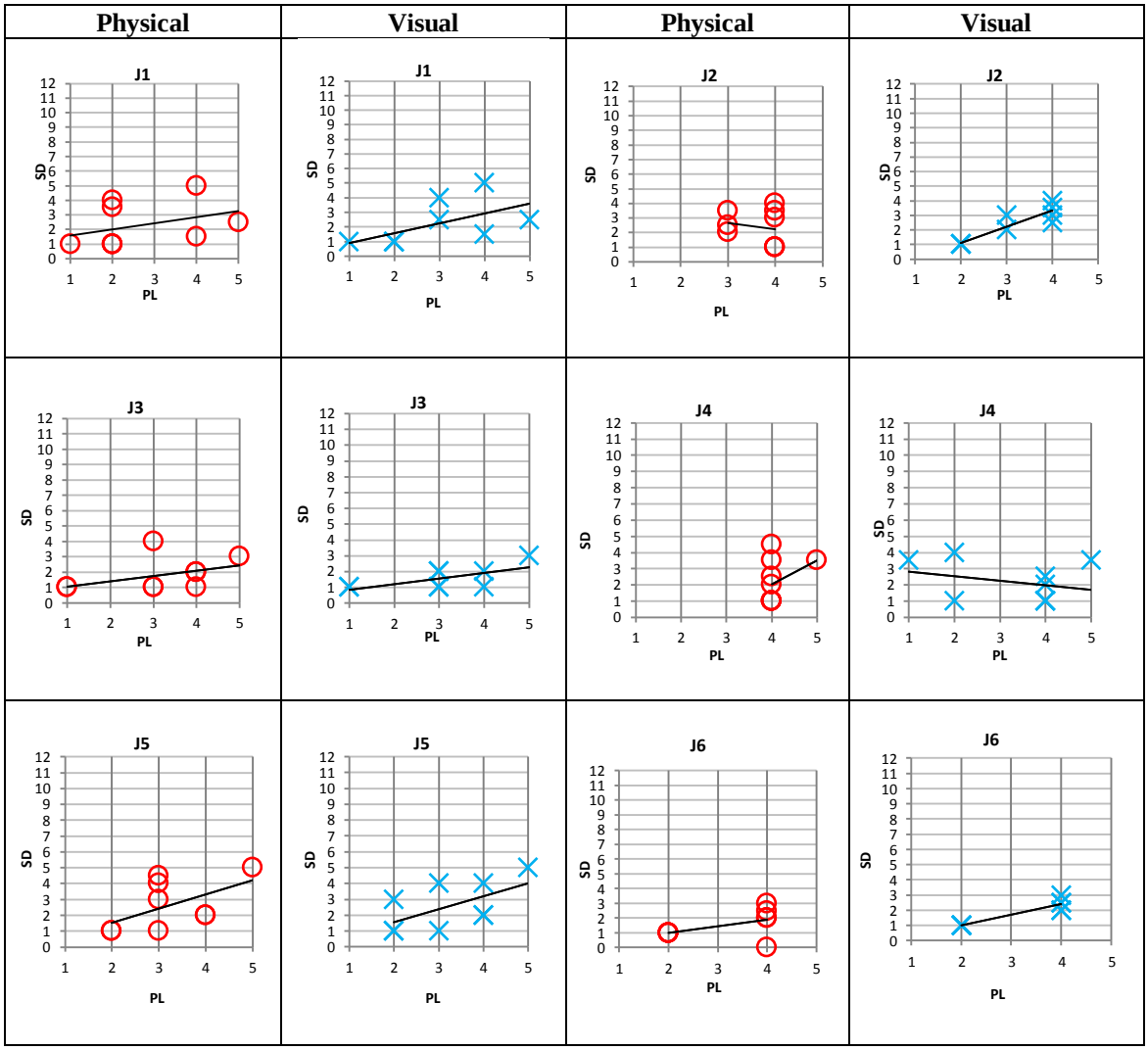
** PL: Privacy Level, the level of privacy according to the category of people represented by number 1 (stranger), 2 (customer), 3 (servant/worker), 4 (family member), and 5 (oneself)

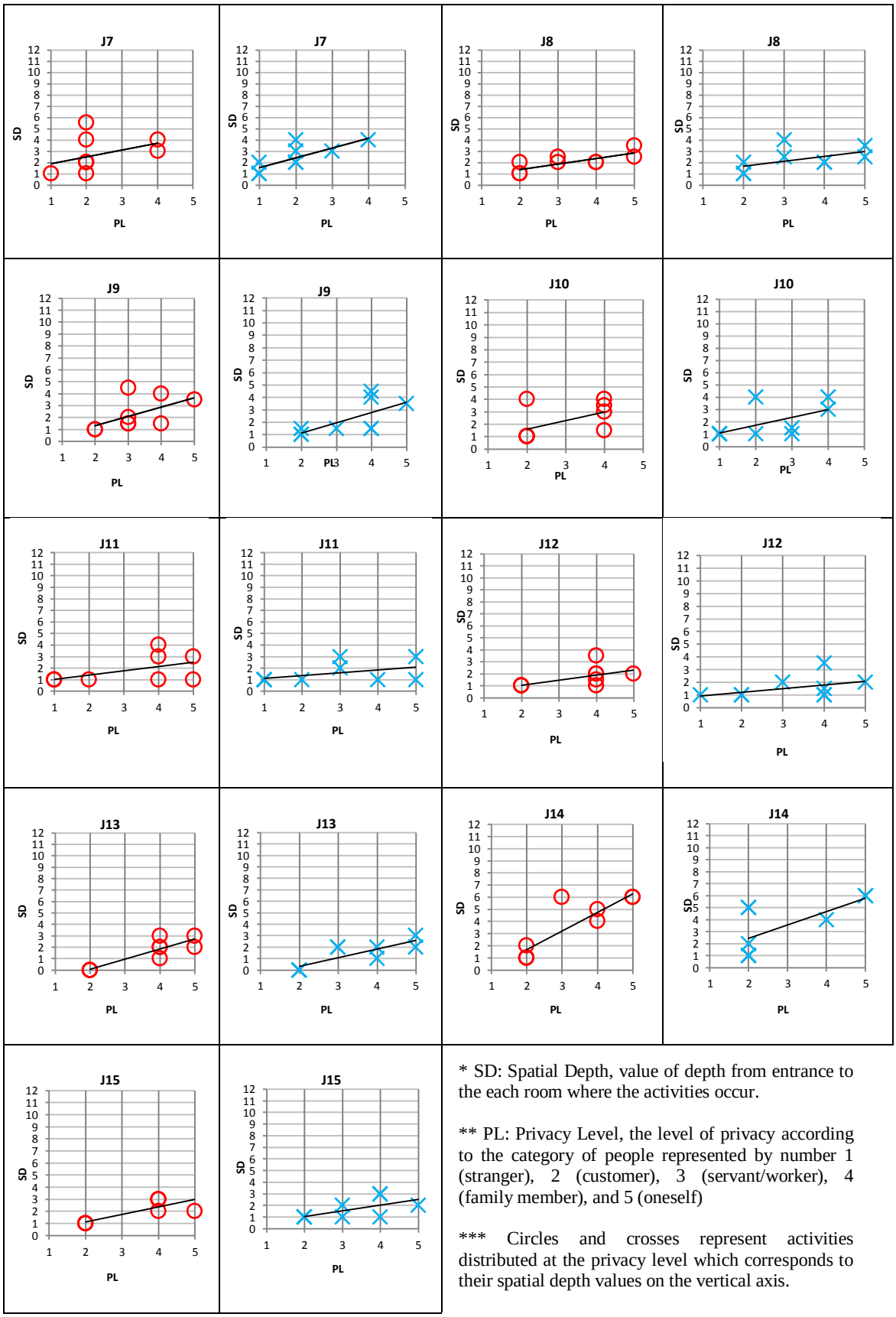
*** Circles and crosses represent activities distributed at the privacy level which corresponds to their spatial depth values on the vertical axis.

Figure 4.5. Relation between Spatial depth and Privacy Level of Individual Chinese

Figure 4.5 shows all cases of Chinese group. Every case has somehow differences in physical and visual accessibility in how each activity corresponds between its privacy level and spatial depth. In general, Chinese residents have well correlated between privacy level and spatial depth shown by the tendency line. However, few activities are scattered away from the tendency line (see also table 4.1 column *a1* for the difference of the inclination between physical and visual).

The requirement of physical and visual accessibility for each activity is not the same. This result is elaborated in chapter 3 when there is more sensitivity to physical accessibility (higher requirement or concern for physical intrusion) than visual accessibility. The variations of activities show the variety of condition of each individual house. Few activities seem not in correspond to the spatial depth because they use deep spaces for activities which require low privacy level (see figure 4.5 of C15 physical accessibility).





* SD: Spatial Depth, value of depth from entrance to the each room where the activities occur.

** PL: Privacy Level, the level of privacy according to the category of people represented by number 1 (stranger), 2 (customer), 3 (servant/worker), 4 (family member), and 5 (oneself)

*** Circles and crosses represent activities distributed at the privacy level which corresponds to their spatial depth values on the vertical axis.

Figure 4.6. Relation between Spatial depth and Privacy Level of Individual Javanese

Figure 4.6 shows all cases of Javanese group. As in Chinese group, every case has somehow differences in physical and visual accessibility in how each activity corresponds between its privacy level and spatial depth. In general, Javanese residents have well correlated between privacy level and spatial depth shown by the tendency line. However, few activities are also scattered away from the tendency line (see table 4.1 column *a1* for the difference of the inclination between physical and visual).

The requirement of physical and visual accessibility for each activity is not the same. In Javanese group, too, there is more sensitivity to physical accessibility (higher requirement or concern for physical intrusion) than visual accessibility. The variations of activities show the variety of condition of each individual house. Few activities seem not in correspond well because they occur in either lower or deeper spaces than their tendency line (see cases of J1, J3, J7, J9, and J14). Other cases of J2 and J4 have downward tendency line, which means there is tendency to be lower in spatial depth for activities with higher level of privacy.

4.3. Second Modification

1. Spatial depth Value Based on Feeling of Intrusion When Entering the Space

The result of the first modification is not satisfying because there are other physical elements such as corridor and stairs that may affect the way the rooms are connected. Corridor is opened wall to wall, so in the previous modification it has value of 0. Stairs also have the potential to act as "doorway", so it has value of 0. All the observed layouts of high variety comply with this measurement. Corridor according to the observation is used besides passage way. Some residents use it to put wardrobe with a mirror so changing clothes often take place in the corridor, to store something, etc. Stairs are also useful to store some shop goods or put the shoes, so the residents may use the flight to sit down and change the shoes there. Stairs are considered to have potential obstacle that regulate the flow. In this case, we have to consider how these elements may give impact to the whole measurement of depth.

In this chapter we create a module as a basis for the intrusion feeling when entering the space. The controlled elements are the door opening, furniture such as table, bookshelf, and the like. Window and upper window will not be counted for two reasons: 1) windows in the observed shop houses have too many variations of size and material in use and 2) both physical & visual accessibility mainly are provided by door.

The common length of room we observed is 3 m, so it may increase the sense of deepness for room more than 6 m in length. However the presence of furniture that is dining table, desk, bookshelf, and rack may reduce that sense of deepness, but on the other hands it gives obstruction. In other words, it will make the transition into the next room more gradually.

The most important thing to measure in this spatial depth analysis is the transition. When entering into the room, one may feel a sense of change of which the sense of intrusion is considered raising the value of depth. Therefore the depth in this study is not only interpreted as real distance but also the relatively feeling of intrusion from the physical elements. Initially, this study proposed the idea of measuring the whole surface area that covers the next room as the relative value (Figure 4.7). However there is one weakness, the feeling of entering the room should be the focus. The surface of the façade of the next room may not affect directly to the transition value, if at all, when entering. The size of the next room is not always visible from the previous room where one is about to enter. Therefore, the most affecting element should be at the side of the previous room. And height may be also not affecting directly to the feeling of intrusion when entering the room. This brings so much different in that the condition before entering will not consider the information of the next room, and only consider the condition of the current room.

If the condition that is affecting the feeling of intruding into the next room, so the width of the opening (door) is important relatively to the width of the whole part of the wall. The narrower the opening the lesser the feeling of intrusion is. In this case, the measurement from the layout plan is very important. Consequently, the value of entering into any room is applicable in every change of width.

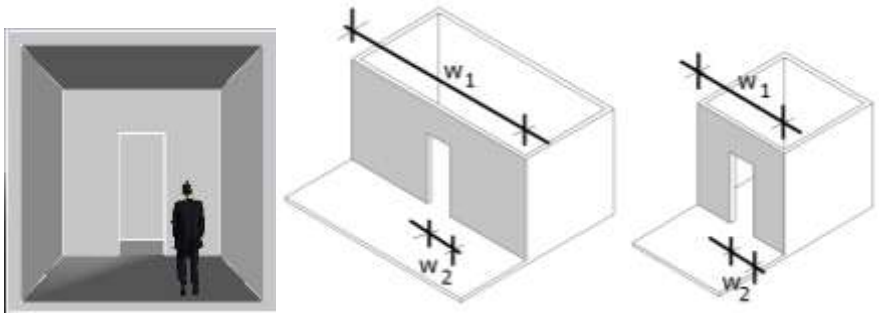


Figure 4.7. Feeling of Intrusion When Entering the Space

2. Measuring Value of Barrier that Separates Spaces

It is the feeling of intrusion that may lead to the feeling of 'intruding into the space' that is measured by the width of the opening relatively to the width of the wall. The relative closeness/openness will be related to the incremental degree of 'privacy' when entering the room. The more closed the more privacy one may sense (see Figure 4.8 below). Each condition will have different value calculated by formula below. This value will affect both visual & physical accessibility.

$$\frac{W1 - W2}{W1}$$

* W1: total width of the wall
** W2: width of the opening

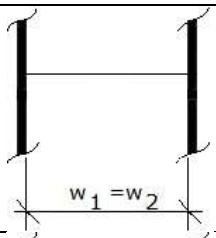
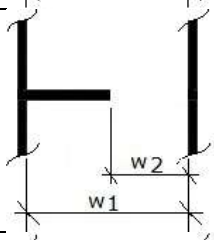
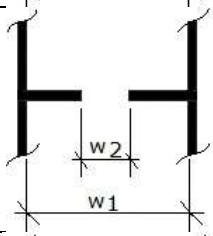
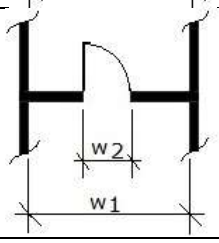
Condition	Valuation	Remarks
	e.g.: w1=w2=3m $\frac{3-3}{3} = \frac{0}{3} = 0$	Completely open such as corridor or stairs. The length of the room will be counted furthermore. The value to reach the next room is 0.
	w1=3m, w2=1.5m $\frac{3-1.5}{3} = \frac{1.5}{3} = 0.5$	About half-width closed. The value to reach the next room is 0.5.
	w1=3m, w2=1m $\frac{3-1}{3} = \frac{2}{3} = 0.67$	Small opening, about a normal door-width. The value to reach the next room is 0.67.
	w1=3m, w2=0m (potential width) $\frac{3-0}{3} = \frac{3}{3} = 1$	Completely closed with door panel. The value to reach the next room is 1.

Figure 4.8. Measuring Value for Door Panel

Corridors are counted when the length of the room is more than the width and the width relatively narrow (see Figure 4.9 below). They will be considered for its spatial value. How will a corridor give the same value of 1 as when the room opening is with door panel? In this way, we understand that the longer the length compare to its width, the higher the feeling of intrusion is. If it is assumed that fourth times of the length relatively to the width will start to give the feeling of intrusion at the highest value of 1, then the formula can be computed as:

$$\frac{L}{6W}$$

* L: length of the corridor
** W: width of the corridor

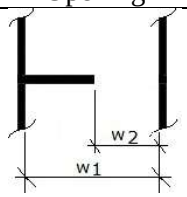
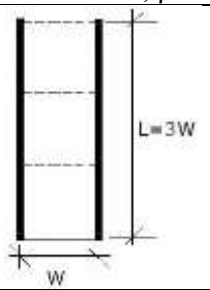
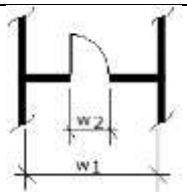
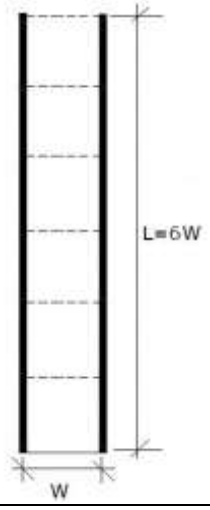
Value	Opening	Corridor, β=6
0.5		
1		

Figure 4.9. Measuring Value for Corridor

Some corridors have a turning point (see Figure 4.10 below), which will be considered the angle as below.

$$\frac{|\alpha|}{180°}$$

When there is change of the width after the turn, the value will be added as below.

$$\frac{W1}{W2} \text{ x } \frac{|\alpha|}{180°}$$

*W1: first width
**W2: width at the turn
***α: the angle of the turn

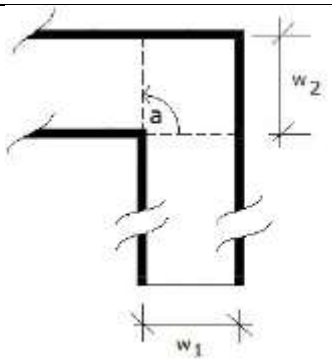
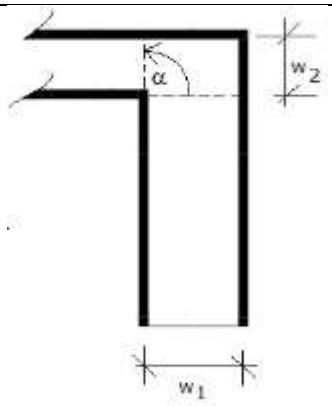
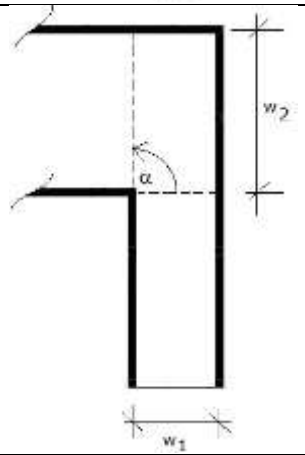
Condition	Valuation	Remarks
	e.g.: w1=w2=1m $\frac{W1}{W2}$ x $\frac{\lvert\alpha\rvert}{180°}$ $= \frac{1}{1}$ x $\frac{90°}{180°}$ $= 1$ x 0.5 $= 0.5$	This corridor has value of 0.5 because it has the turning angle of 90°.
	e.g.: w1=1m, w2=0.5m $\frac{1}{0.5}$ x $\frac{\lvert 90°\rvert}{180°}$ $= 2$ x 0.5 $= 1$	This corridor has value of 1 because it has the narrower entrance to the next room.
	e.g.: w1=1m, w2=2m $\frac{1}{2}$ x $\frac{\lvert 90°\rvert}{180°}$ $= 0.5$ x 0.5 $= 0.25$	This corridor has value of 0.25 because it has wider entrance to the next room.

Figure 4.10. Measuring Value for Turning Corridor

In the same way, stairs itself are considered similar to corridor (see Figure 4.11 below). It will be counted the same as corridor relatively length and width as below.

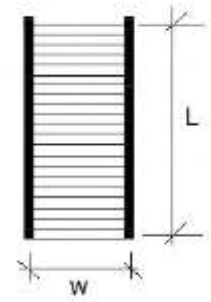
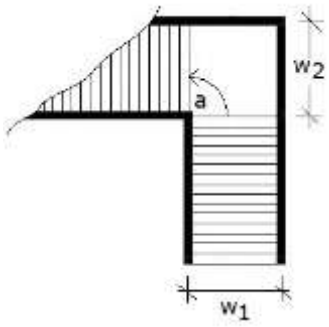
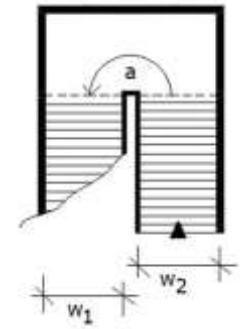
$$\frac{L}{6W}$$

*L : total length of the stairs
**W: width of the stairs

When normally the width at the end is the same as the beginning, the stairs with many turns will be considered as corridor by its angle at the turn as below.

$$\frac{W1}{W2} x \frac{|\alpha|}{180°}$$

*W1: first width
*W1: first width
**W2: width at the turn
***α: the angle of the turn

Condition	Valuation	Remarks
	e.g.: w1=w2=2m, L=5 $\frac{L}{6W}$ $= \frac{5}{6x2}$ $= \frac{5}{12}$ $= 0.4167$	Long stairs is regarded the same as corridor. Value for this stairs is 0.42.
	e.g.: w1=w2=1m $\frac{W1}{W2} x \frac{\lvert\alpha\rvert}{180°}$ $= \frac{1}{1} x \frac{90°}{180°}$ $= 1 x 0.5$ $= 0.5$	The stairs with turning is regarded the same as corridor with turning. Value for this stairs is 0.5.
	e.g.: w1=w2=1m $\frac{W1}{W2} x \frac{\lvert\alpha\rvert}{180°}$ $= \frac{1}{1} x \frac{180°}{180°}$ $= 1 x 1$ $= 1$	Value for this stairs is 1.

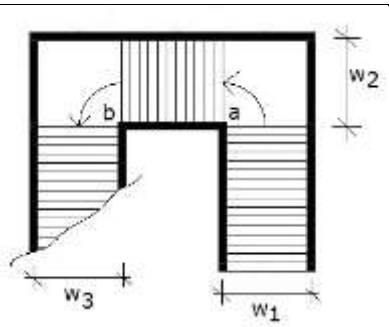
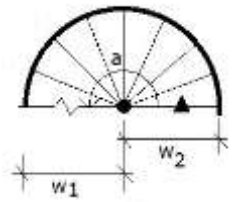
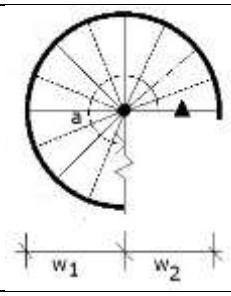
	e.g.: w1=w2=w3=1m $\frac{W1}{W2} \times \frac{\lvert\alpha\rvert}{180°}$ $= \frac{1}{1} \times \frac{90°}{180°}$ $= 1 \times 0.5$ $= 0.5$ $\frac{W2}{W3} \times \frac{\lvert\alpha\rvert}{180°}$ $= \frac{1}{1} \times \frac{90°}{180°}$ $= 1 \times 0.5$ $= 0.5$	Value for this stairs is 1.

Figure 4.11. Measuring Value for Stairs

The spiral stairs are connecting to the upstairs rooms or separating the upstairs rooms more distinctively. However, the difficulty in passing through a spiral type of stair is at its turning angle (see Figure 1.12 below). Assuming that the condition of spiral stairs is W1=W2, it will be counted the angle from the first step to the last step as below.

$$\frac{|\alpha|}{180°}$$

***α: the angle of the spiral

Condition	Valuation	Remarks
	e.g.: w1=w2=1m $\frac{\lvert\alpha\rvert}{180°}$ $= \frac{180°}{180°}$ $= 1$	It is considered more giving difficulty to pass through spiral stairs than straight stairs. Value for this 180° spiral stairs is 1.
	$\frac{\lvert\alpha\rvert}{180°}$ $= \frac{270°}{180°}$ $= \frac{3}{2}$ $= 1.5$	Value for this 270° spiral stairs is 1.5.

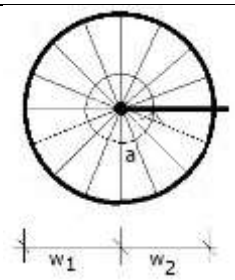
	$\frac{\lvert a \rvert}{180°} = \frac{360°}{180°} = 2$	Value for this 360° spiral stairs is 2.

Figure 4.12. Measuring Value for Spiral Stairs

For furniture , since furniture has been affecting the transition to the next room, furniture will reduce the width of the passage way that separate the space. Therefore, furniture is included in the consideration and will be counted as with the formula below.

$$\frac{W1 - W2}{W1} \text{ x } \frac{H1}{H}$$

*H : height of the room
**H1: height of the furniture

Since there are no exact data for the height of the room and the height of the furniture, relatively to the room's height, the value of furniture will be grouped into three: approximately 1/3 of room height has value of 0.33, approximately 2/3 of room height has value of 0.67, and approximately full height has value of 1(see Figure 4.13 below).

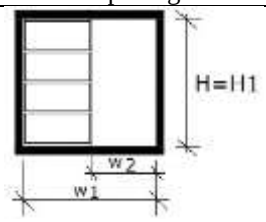
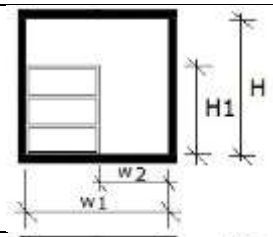
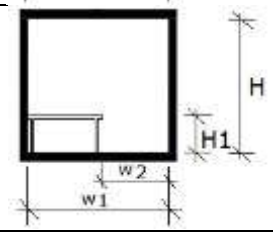
Opening	Valuation	Remarks
	e.g. w1=3m, w2=1.5m, h=3m $\frac{3 - 1.5}{3}$ x $\frac{3}{3}$ $= \frac{1.5}{3}$ x $\frac{1}{1}$ $= \frac{1}{2}$ $= 0.5$	Value of 0.5 for opening. Value of 1for furniture. Total value 0.5.
	e.g. w1=3m, w2=1.5m, h=3m, h1=2m $\frac{3 - 1.5}{3}$ x $\frac{2}{3}$ $= \frac{1.5}{3}$ x 0.67 $= 0.5$ x 0.67 $= 0.33$	Value of 0.5 for opening. Value of 0.67 for furniture. Total value 0.33.
	e.g. w1=3m, w2=1.5m, h=3m, h1=1m $\frac{3 - 1.5}{3}$ x $\frac{1}{3}$ $= \frac{1.5}{3}$ x 0.33 $= 0.5$x 0.33 $= 0.167$	Value of 0.5 for opening. Value of 0.33 for furniture. Total value 0.167.

Figure 4.13. Measuring Value for Furniture

For blind or curtain (see Figure 4.14), the value will be considered as visual value adding to the physical value. Depending on the relative width of its opening compared to the total width of the wall. Why? Because the visual penetration is blocked, the condition of the door, whether it is opened or closed without door panel will not affecting directly. The only thing that may affect is the light. If the next room is darker, it will help block the visual penetration into the room. Since the size and type of the blind or curtain is not specific, this study will assume the same value for any kind of material. Therefore, the value for the blind or curtain will be depending on the width of opening it covers added with value of 1. It is similar to completely block the visual penetration as completely block the physical penetration with door panel.

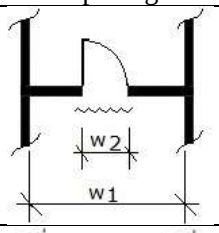
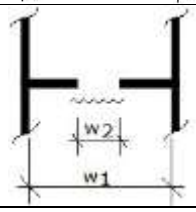
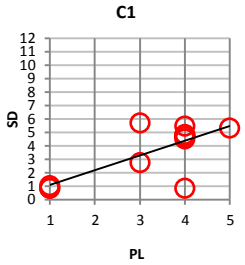
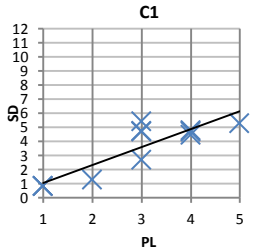
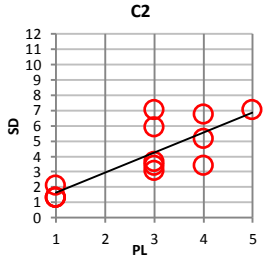
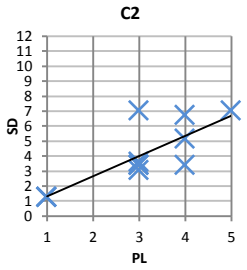
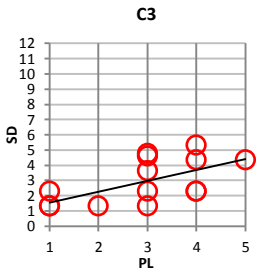
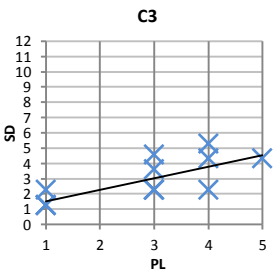
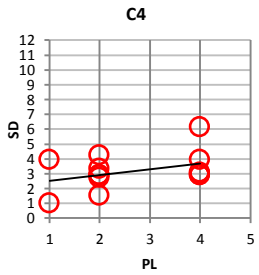
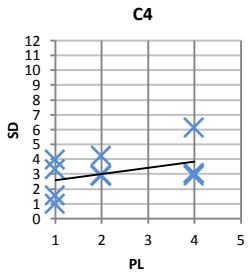
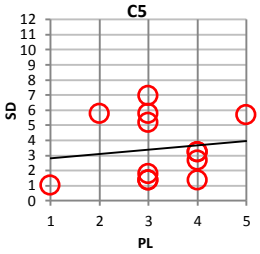
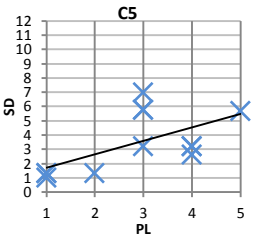
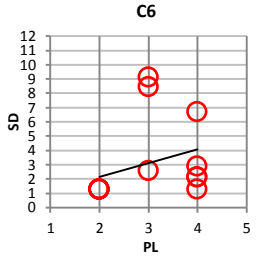
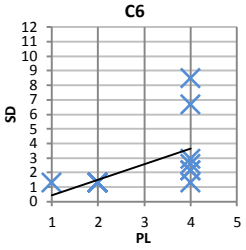
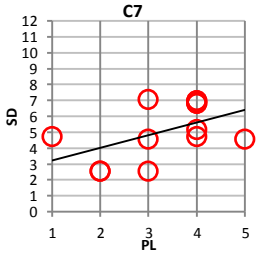
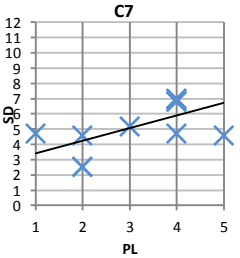
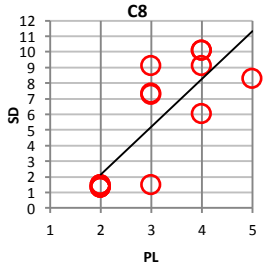
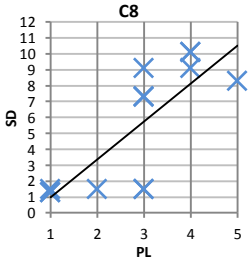
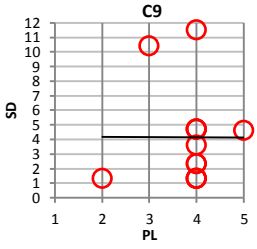
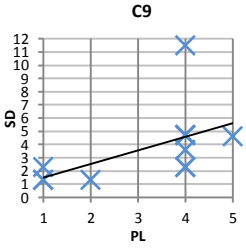
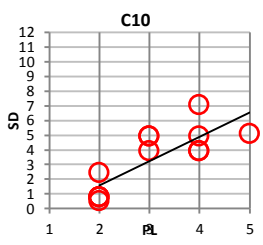
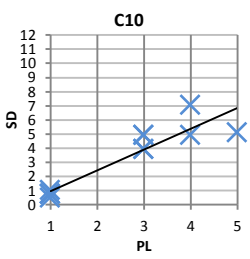
Opening	Real Condition	Remarks
		The value of blind will range from 1 as solid to 0.67 as dense (see appendix).
		The value of curtain will range from 0.67 as dense to 0.5 as sparse (see appendix).

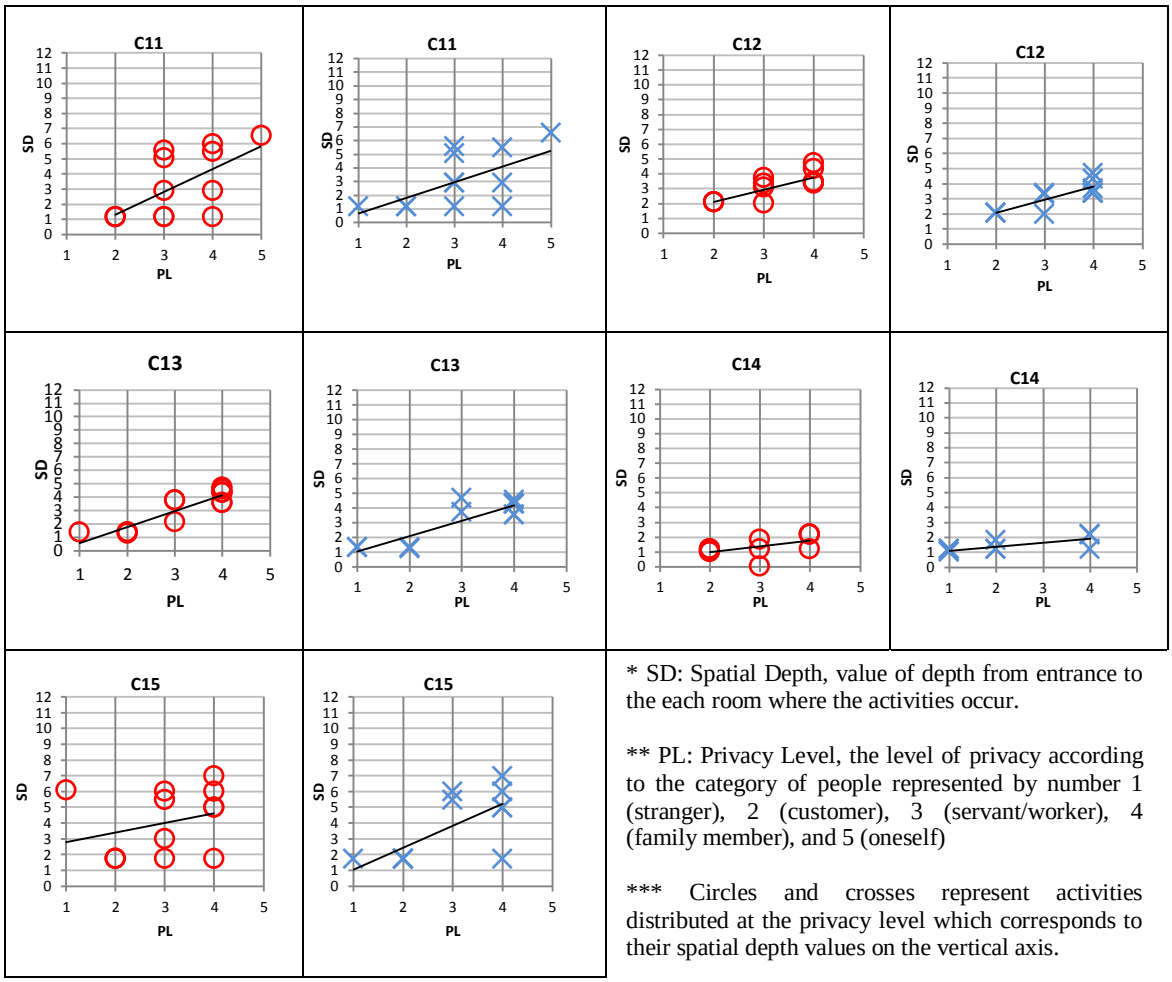
Figure 4.14. Measuring Value for Door with Curtain

4.3. Second Modified Spatial depth and Required Privacy

1. Relationship between Second Modified Spatial depth and Required Privacy

In this second modification, the result seems better corresponded between the spatial depth and the privacy level. Even though some activities are still scattered away from the tendency line, the majority of the activities are scattered closely to the line. Some cases have better steepness of the tendency line such as C1, C2, C8, C10, C15. Another case shows no connection at all because all the activities are scattered away from each other such as C9.

Physical	Visual	Physical	Visual
			
			
			
			
			



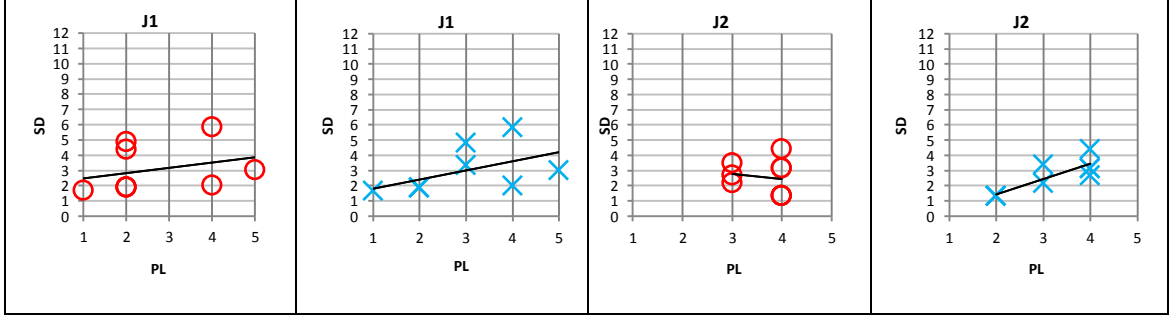
* SD: Spatial Depth, value of depth from entrance to the each room where the activities occur.

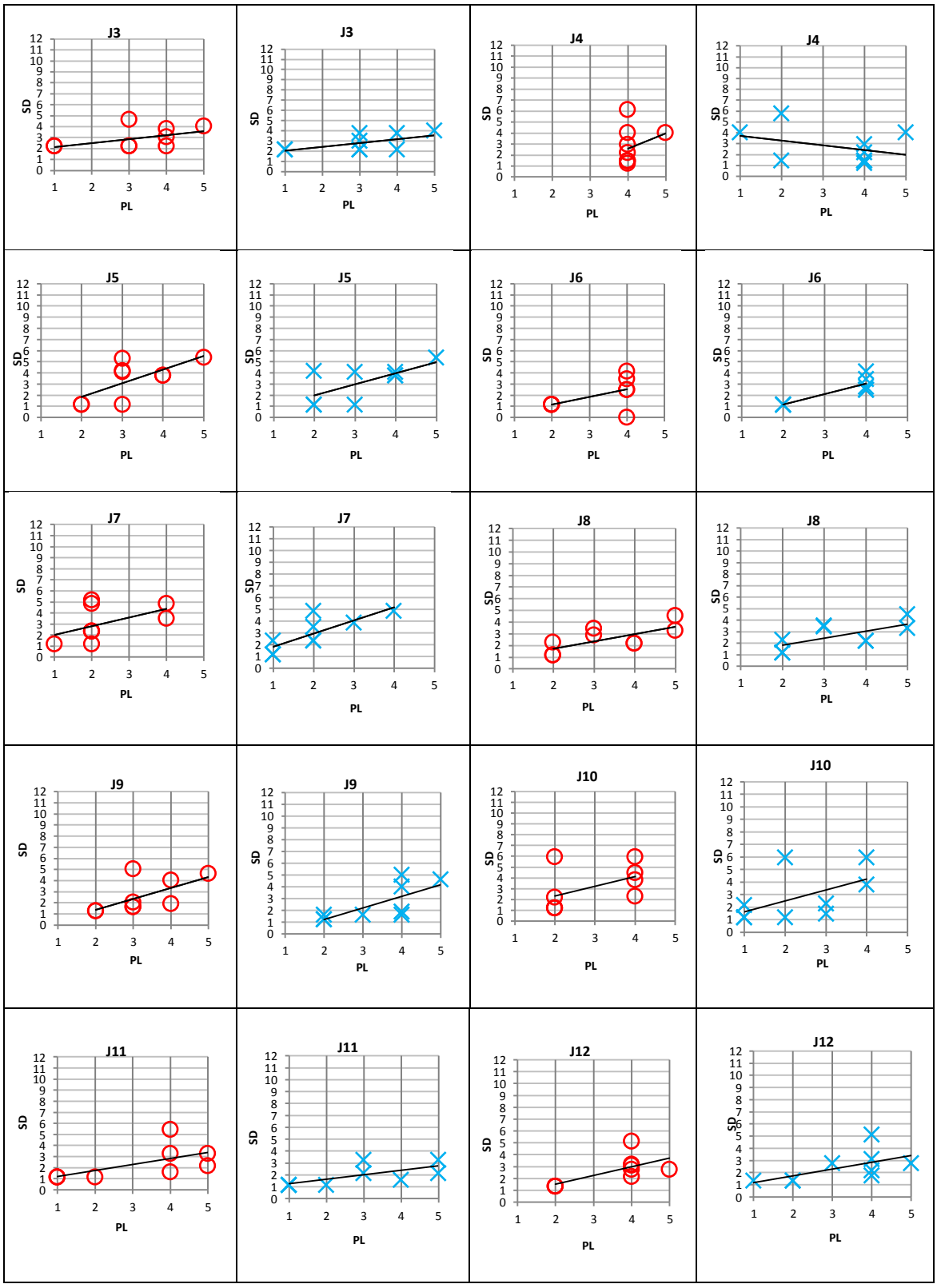
** PL: Privacy Level, the level of privacy according to the category of people represented by number 1 (stranger), 2 (customer), 3 (servant/worker), 4 (family member), and 5 (oneself)

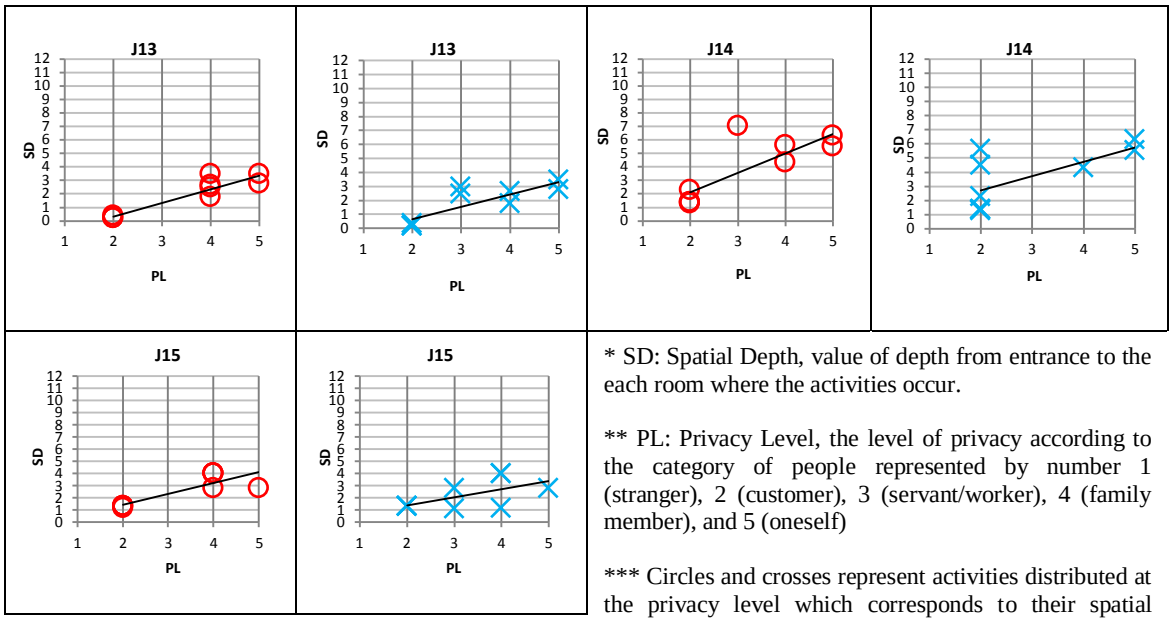
*** Circles and crosses represent activities distributed at the privacy level which corresponds to their spatial depth values on the vertical axis.

Figure 4.15. Relation between Spatial depth and Privacy Level Chinese of 2nd Modification

In Javanese cases, there are those which are also better connected, however, some cases have strange inclination. The tendency line is downward instead of upward, the normal inclination as in J2, J4. This is because many activities are in deeper spaces even though the privacy levels are low.

Physical	Visual	Physical	Visual
			


J3
J3
J4
J4
J5
J5
J6
J6
J7
J7
J8
J8
J9
J9
J10
J10
J11
J11
J12
J12
SD
PL



* SD: Spatial Depth, value of depth from entrance to the each room where the activities occur.

** PL: Privacy Level, the level of privacy according to the category of people represented by number 1 (stranger), 2 (customer), 3 (servant/worker), 4 (family member), and 5 (oneself)

*** Circles and crosses represent activities distributed at the privacy level which corresponds to their spatial depth values on the vertical axis.

Figure 4.16. Relation between Spatial depth and Privacy Level Javanese of 2nd Modification

2. Improved Fitness between Spatial depth and Required Privacy

Apparently, the value of spatial depth in the second modification has increased the value of fitness (for detail see the following Table 4.2). The result of the spatial depth analysis of the second value show that there is a disperse distribution of each of the activity in space. In this chapter, more detailed elements of semi-fixed elements are included such as furniture and other attribute such as stairs, and the different shape of space such as corridor may influence greatly the physical accessibility in the value of depth. The other elements such as blind and curtain that may influence the visual accessibility are also included in the valuation of the depth. In this case, the selected activities that take place in more than one place may be included to the frequency of occurrence in the category of elements.

Table 4.2 shows the (in shadow boxes) the better correlation between spatial depth and privacy level. When the privacy level and the spatial depth are well corresponded, the value is higher. It means it is close to the tendency line. Even though, in some cases the value is not so high because there are activities scattered quite far from the tendency line. Compared to the first modification (R1, *a1*), the values in the second modification seem to be better in the steepness (*a2*) which means it is better representing the spatial depth. However, after the omission of the category of friend, we can see that the effect of more activities on the correlation table may distract the fitness to the tendency line (Table 4.3). These activities are quite dispersed in the spatial depth value which may lead to another means to control privacy besides the spatial arrangement. This is discussed in other part of this chapter.

Table 4.2. Correlation Coefficient and Steepness between 1st and 2nd Modification

	Physical				Visual			
	R1	*a1*	R2	*a2*	R1	*a1*	R2	*a2*
C1	0.8	*1.4*	0.8	*4.5*	0.72	*1.4*	0.59	*3.7*
C2	0.76	*2.8*	0.78	*6.8*	0.76	*3*	0.86	*6.9*
C3	0.75	*1.2*	0.58	*2.3*	0.84	*1.2*	0.75	*2.9*
C4	0.43	*0.9*	0.3	*1.1*	0.46	*1*	0.41	*1.5*
C5	0.2	*0.5*	0.04	*0.3*	0.69	*1.6*	0.53	*3.3*
C6	0.46	*1.4*	0.29	*2.4*	0.69	*2*	0.69	*5.1*
C7	0.66	*1.3*	0.54	*2.3*	0.5	*0.7*	0.61	*2.7*
C8	0.77	*2.4*	0.91	*11.4*	0.81	*2.1*	0.9	*9.8*
C9	0.44	*1.3*	0.3	*4.5*	0.93	*1*	0.59	*4.4*
C10	0.73	*1.7*	0.53	*3.6*	0.81	*1.6*	0.66	*3.9*
C11	0.55	*2.6*	0.52	*3.8*	0.5	*2.5*	0.55	*3.6*
C12	0.72	*2.9*	0.78	*2.9*	0.78	*2.2*	0.87	*3.1*
C13	0.85	*3*	0.87	*3.5*	0.87	*2.7*	0.82	*3.2*
C14	0.62	*1.3*	0.5	*0.9*	0.72	*1*	0.5	*0.6*
C15	0.77	*2.7*	0.74	*2.8*	0.64	*2.2*	0.72	*2.2*
Tot	9.51	*27.4*	8.48	*53.1*	10.72	*26.2*	10.05	*56.9*
Av	0.63	*1.83*	0.57	*3.54*	0.71	*1.75*	0.67	*3.79*
J1	0.94	*2.1*	0.61	*2.1*	0.94	*2*	0.6	*2.1*
J2	0	*2*	0.09	*0.7*	0.99	*3.2*	0.86	*3.6*
J3	0.97	*1.9*	0.77	*3.3*	0.97	*1.9*	0.64	*2.9*
J4	0.56	*2.6*	0.36	*1.6*	0.72	*1.6*	0.61	*1.4*
J5	0.59	*1.5*	0.91	*5.8*	0.4	*1*	0.75	*4.6*
J6	0.91	*1.1*	0.87	*3.1*	0.91	*1.2*	0.87	*3.2*
J7	0.81	*2*	0.9	*3.7*	0.9	*2.5*	0.9	*4.3*
J8	0.49	*0.7*	0.73	*2.2*	0.49	*0.8*	0.59	*1.8*
J9	0.78	*1.5*	0.83	*5.1*	0.79	*1.2*	0.73	*4*
J10	0.92	*3*	0.6	*4*	0.95	*2.4*	0.65	*3.6*
J11	0.52	*0.6*	0.85	*1.4*	0.53	*0.6*	0.82	*1.4*
J12	0.62	*1.3*	0.74	*2.2*	0.61	*1*	0.67	*1.8*
J13	0.95	*2.7*	0.96	*3.7*	0.95	*2.5*	0.69	*3.1*
J14	0.87	*2.5*	1	*6.8*	0.87	*2.4*	0.76	*5.5*
J15	0.87	*1.5*	0.68	*2.4*	0.69	*1.2*	0.51	*1.9*
Tot	13.948	*27*	10.9	*48.1*	11.71	*25.5*	10.65	*45.2*
Av	0.72	*1.8*	0.73	*3.21*	0.78	*1.7*	0.71	*3.01*

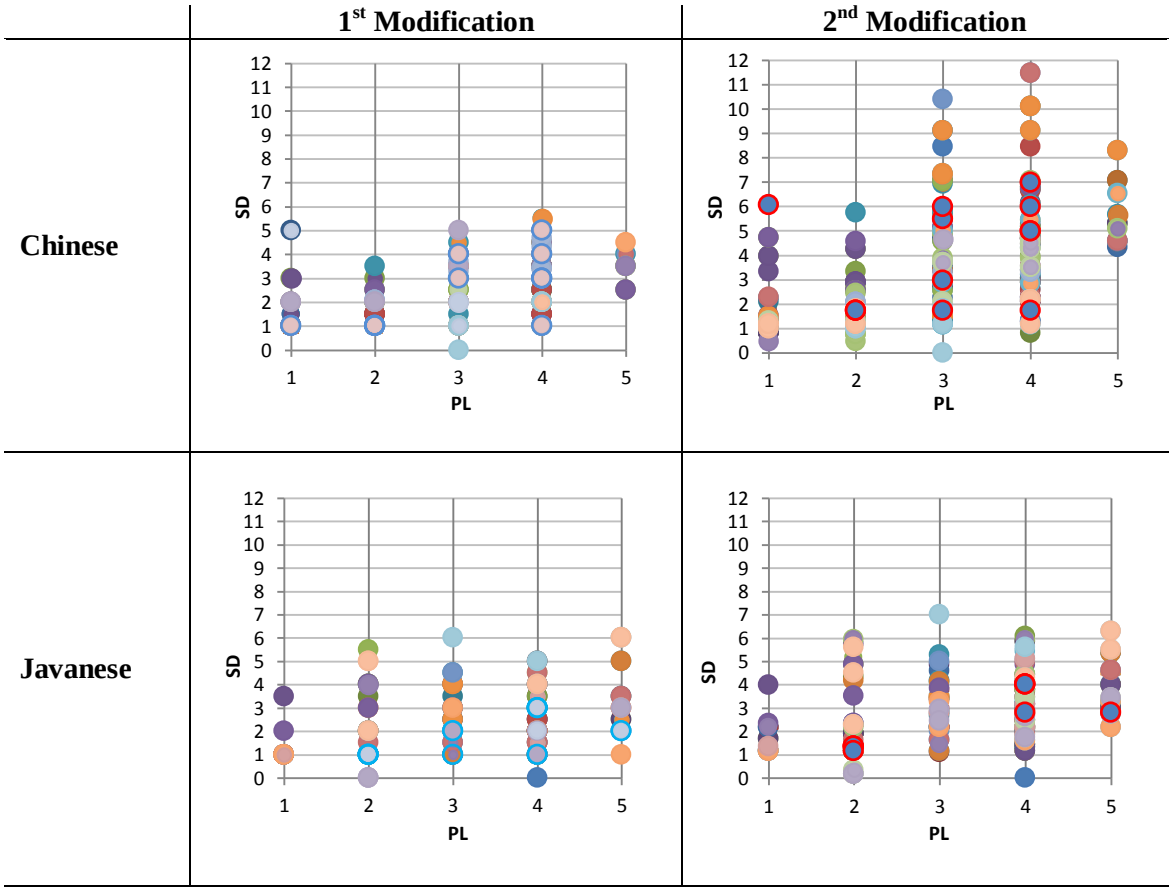
* R1: Correlation Coefficient from the 1st modification.
R2: Correlation Coefficient from the 2nd modification.

** *a1*: Steepness from the 1st modification.
a2: Steepness from the 2nd modification.

*** C1: Chinese house 1, J1: Javanese house 1, and so on.
Tot: Total, Av: Average

3. Comparison between Chinese and Javanese

We have examined the relationship between the privacy level and the spatial depth with the 1st modification compared to 2nd modification. The result shows that the 2nd modification has improved the relation between privacy level and spatial depth. Now, we examine Chinese and Javanese as a group (see Figure 4.17). In general, even though Chinese group shows higher range of spatial depth than Javanese group, it is Javanese group shows the tendency to be more consistent between privacy level and spatial depth.



* SD: Spatial Depth, value of depth from entrance to the each room where the activities occur.

** PL: Privacy Level, the level of privacy according to the category of people represented by number 1 (stranger), 2 (customer), 3 (servant/worker), 4 (family member), and 5 (oneself)

Figure 4.17. Comparison of Chinese and Javanese for the Distribution of Activities in 1st and 2nd Modification

After the omission of the category of friend, more activities are included in the analysis. However, it seems to be the same impact to the whole correlation with the spatial depth. Chinese shop houses still have much deeper spatial depth with more activities included. Javanese look the same stable in the spatial depth.

We found that the second modification of spatial depth gives the effect of deeper depth value for Chinese shop houses, while in Javanese shop houses the depth value is quite stable. Chinese shop houses utilize corridor and stairs for almost in every house. Javanese shop houses utilize look-through furniture, blind/curtain, and steps (or change of level) as the main elements to control the visual and physical privacy as elaborated in Table 4.4 by which each group may employ different kind of elements to connect between spaces (for more detail see each shop house floor plans in Appendix).

Table 4.3.Comparison of Fixed and Semi-fixed Features between Chinese and Javanese

Features	Chinese	Javanese
Massive wall/solid partition/solid furniture	96	97
Look through wall/ partition/furniture	16	33
Door panel	76	94
Blind/curtain	4	10
Steps	10	26
Corridor	52	13
Stairs	13	7
Range of depth value	0.33-11.48	0.17-7.5
Highest depth value (average)	11.48 (6.65)	7.5 (4.77)
Activity at the deepest value	Bathing, Sleeping	Bathing, Sleeping
Activity at the second deepest value	Cooking, Bathing, Sleeping	Cooking, Bathing, Praying

The comparison between the two groups shows in spatial control using the fixed and semi-fixed features are significantly different. Even though it is not always resulted in deeper spatial depth as in Chinese shop houses, besides door panel Javanese shop houses use furniture, window, blind/curtain, and steps to separate or connect spaces, that is to control the visual and physical accessibility inside the house.

4.5. Other Control of Privacy

1. Time Control

When the spatial control does not meet the requirement of privacy, the activity that takes place in that space need another control, such as time control. Few cases in both Chinese and Javanese have shown that time control can contribute to the way they arrange the spaces in order to achieve the privacy goal.

In individual case, some case showing weak relationship between privacy level and spatial depth mean they are more depending on time management to control the activity in order to meet the privacy requirement. For example in Javanese case (J2, J4) it is long opening hours made the placement of activity is crammed in one area that is more yielding to time to control when activity which requires higher privacy is taking place. For some Chinese cases (C4, C5, C6), the placement of sleeping room is close to shop room or the washing room, kitchen, & bathroom far too deep.

In general, Chinese is more fixed in time and they have more regular opening and closing hours for shop. Javanese residents are more flexible in time allocation and they may have flexible time to open and close. They are available still to serve the customer even when the shop is closed or not yet opened. For Chinese, they after closing hours, they have restricted themselves to residential and private activities.

2. Cultural Norm/Value

Another thing can be drawn from the analysis of visual and physical access is the social interaction among the six categories of people. Still, "friend" is not clearly stated and distinguished widely by most of residents in most of activities. According to the interview, it was only one resident answered "friend" in cooking meal, displaying goods, and storing shop goods. The type of business was indeed limited in number of quantity, so it was more like network business rather than local business.

More activities are considering "family" more than servant/worker. Interesting is bathing is permitting "family" other than "oneself". It may mean bathing is seen by family member is fine. It is likely that the visual access is more concerned about "family" and "oneself" since at some activities such as bathing, praying, sleeping, breakfast, dinner, some residents prefer to restrict the visual intrusion from "friend", "servant/worker", "customer", and "stranger". However, in watching TV, waiting for customer, having lunch, and reading, degree of "customer" is considerably as important as "family" besides "stranger" and "servant/worker". It is most probably because they are related activities between shop-keeping and living. As expected, washing clothes, cooking meal, and drying clothes are permitting "servant/worker" which means not for other types of people to see.

The majority of residents were considering serving customer, storing shop goods, and displaying goods as preferred to be restricted to "customer" even though few do not mind "stranger". It also imply that their doing the business for not just anyone, any stranger or passer-by, but having customer is different from just letting anyone or any passer-by to see the activities. In other words, there is a sense of exclusiveness for those who chose "customer" and it was the work of social network to gain customer, rather than fully opening the house and inviting anyone to see and interact with the owner.

Relationship with the category such as family and friend apparently do not affect Javanese of their perception of privacy as much as Chinese while living in a house which accommodating business. As consequence, both groups accommodate their activities in similar way. However, Javanese people is renowned for their highly social life it's almost impossible to distinguish and separate it from private life. Yet, it does not mean that Javanese people may need less privacy in doing their daily activities. In other words, even though Javanese people value interaction with people highly important, their requirement of privacy is agreeable with common sense. Therefore the approach to the understanding of privacy is not necessarily reflected in their perception of social interaction. An open interview about their choice of interacting with people while doing activities is basically various among individuals, but as a group, they are showing similar tendency.

Considerably, at some point "family" have important role in physical access. Some key activities such as serving customer even restricted to only family member may enter. Of course, majority even having breakfast allow customer to physically intrude into space when they are doing activities. Apparently, "customer" or "family" may determine and be distinguished quite clearly in physical interaction. At the degree of "customer" all activities except bathing and sleeping, "customer" may physically enter the space according to various respondents. It is not necessarily the same respondents answer the whole activities like that, but it shows somehow some tolerance for customer who could be neighbor or friend. Nonetheless, a considerable number of residents also chose "servant/worker" meaning to permit them to intervene physically during activities rather than "customer" or "stranger".

4.6. Conclusions

The measurement of spatial depth is necessary to range the different feeling of intrusion when entering the space. Taking into account the fixed and semi-fixed features has resulted in identifying six categories of elements such as (1) massive wall/solid partition/solid furniture, (2) transparent wall/partition/furniture, (3) door panel, (4) blind/curtain, (5) steps, and (6) corridor/stairs. The incremental value varies from 1 to 0 mainly calculated from:

1. The proportion of the width of wall to the width of door opening.

2. The changing of direction from the standing point.

3. The corridor type of room which adds the value by the length proportion relative to its width.

The control of privacy through spatial control is derived from the (1) connection to reach the next space and (2) feeling of intrusion from the elements that separate spaces. Connection to reach the next space determines the kind of fixed and semi-fixed features that separates the spaces. Feeling of intrusion is measured from the proportion of the width, length, and height of those fixed and semi-fixed elements such as the proportion of the width of the wall to the width of the door opening. This feeling of intrusion is derived from the feeling of when one is facing toward the next space and preparing to enter through the opening.

The justified network of spaces is to show the connection of all the activities performed by each resident of shop house that are happening during the weekdays when the shop is open to examine the control through space arrangement. This network is dynamic and changeable. It shows the flow of one's behavior in deciding which door is accessible and which room is used.

Generally, the tendency for activities which require high privacy such as sleeping, praying, and bathing and those which require low privacy such as serving guest, storing shop goods, serving customer, and displaying goods is consistent. The activities which require moderate privacy are more scattered in the depth value of space such as cooking meal, waiting for customer, reading, drying clothes, washing clothes, lunch, breakfast, watching TV, and dinner.

Some important points can be inferred from the analysis are the tendency to have a high correlation between depth value of space and the privacy level of activities. However, even though the majority of residents may have high consistence, depending on the arrangement of the house, and probably the situation and the physical environmental condition, they perceive their privacy requirement is in the end variety.

This variety is perhaps caused by the measurement of the category of doorway which is too simple and needing further adjustment or evaluation because the conditions of all the observed houses are also highly variety.

In conclusions, the depth value of space which varies highly depending on the physical environmental condition is related to the kind of activities that the residents perceived to have different requirement of privacy. However, the variety of relation between the depth value and the privacy level is probably resulted from the personal preference rather than the effect of physical environment, not to mention the community or group preference.

CHAPTER 5 Conclusions

Shop house is a kind of mixed-use dwelling that serves dual purpose of residential and business. The original type of shop house was brought by Chinese immigrant to Indonesia, which influenced the current development of housing. Even though Javanese do not have the same type of shop house building, nowadays mixed-use dwelling is increasing quite obviously in the urban areas in Yogyakarta. Shop house that is characterized by accommodating dwelling and business activities brings up the issue of conflicting activities in space and time.

This issue of conflicting activities in space and time concerns about privacy as defined by Rapoport (1982) as controlling unwanted interaction and by Altman (1975) as an interpersonal boundary control-process, which paces and regulates interaction with others. Furthermore, Altman also mentioned the behavioral control for managing the social accessibility of people to one another which is different among cultures in how they accomplish control over interaction. We initiate this study by focusing on the spatial control, time control, and cultural norm/value as the control of privacy.

We examine two different communities in Yogyakarta, Ketandan and Kauman where Chinese and Javanese community live. We develop new method to obtain the data which is evaluated from the result of the first survey of distributing questionnaire. We consider new approach to gathering the data in the second survey by interviewing with the residents and observing the house with floor plan of fixed and semi-fixed features. Mainly we ask the residents about their feeling of annoyance when such category of people as stranger, customer, servant/worker, friend, and family member intrudes acoustically, visually, and physically while they are doing each activity. The data gathering focuses on the residents' common activities which occur inside the house of weekdays' regular habit, starting from waking up in the morning till sleeping at night.

We examine the privacy requirement of each activity according to the responses of all residents in each aspect of privacy, acoustic, visual, and physical. The more responses in each category of people will indicate the degree of privacy requirement of the activity. This activity analysis results in the different requirement of privacy of each activity ranging from low to high privacy for 16 common activities. The analysis of acoustic aspect of privacy does not show meaningful result for most of the residents in Chinese group in contrast to Javanese group. It may mean their requirement of acoustic privacy while doing their daily activities is either very low or suppressed. However, it may also mean their physical environment is enough to support their need for acoustic privacy that makes it less concerned.

Analyzing activities of Chinese and Javanese resulted in different and similar responses to the visual and physical privacy. The different responses show the different concerns to each category of people. Most of the residents are concerned more about physical access than visual access or balance between both visual and physical access in performing activities. The similar responses show that some activities belong to low, moderate, and high level of privacy. Low level of privacy responds to the category of people of stranger and customer, and high level of privacy responds to the category of people of family member and oneself. Another finding reveals that the category of people of servant/worker is found in activities related to shop keeping for Chinese, whereas for Javanese it is found in activities related to housekeeping. It is interesting that friend has low response in both groups.

Referring to the space syntax method by Hillier and Hanson's 1984, this study proposes that the depth of space has differing value determined by means of connection such as the presence or absence of door panel. This differing value of depth means variance in control the accessibility in order to achieve the desired level of privacy. The result of the relationship between between spatial depth and privacy level shows that most of the cases have high correlation. It means spatial control plays the important part of the privacy control. Nevertheless, some activities are not fitted to the degree of requirement in terms of spatial control. In order to improve the fitness between spatial depth and privacy level, we consider both fixed and semi-fixed features to determine the depth value.

In the second modification of spatial depth, we elaborate how each fixed and semi-fixed feature has put in various values ranging from 1 to 0 by different degree of intruding the next room when entering the space. As we expected, the result is better in expressing the privacy requirement through spatial control. Spatial control by means of furniture at the shop space will retain control at the entrance door because when the shop is open, the shop door panel will have to be opened wide to invite customer, but the furniture will control how deep the customer may come into the shop space or see inside. This study emphasizes the importance of those features as part of the control, instead of simple connection.

The results of relationship between spatial depth and privacy level reveals that in order to regulate interaction spatial control is significant to control the visual and physical intrusion. As in case of Javanese, when opening and closing hours are loose the spatial control is very important. This is shown in the significantly high correlation coefficient between spatial depth and privacy level in many of Javanese case. We found that door panel, blind/curtain, and steps are significant in controlling the privacy in Javanese case. In the case of Chinese, contrary to what we expected, there are relatively fewer cases having high correlation coefficient. However, as a group the spatial depth value in Chinese is considerably higher than Javanese. We found that in Chinese cases spatial control is performed by means of corridor and stairs. It is interesting that the diagram of relationship between spatial depth and privacy level is more consistent in Javanese than Chinese case. It may show the dependency on spatial control more than other control such as time as in Javanese case.

Even though both Chinese and Javanese may show good relationship between spatial depth and privacy level for each activity, altogether Javanese group show relatively more stable spatial depth in contrast to Chinese as shown in the result of the 1st and the 2nd modification. This may imply that Javanese houses have more flexibility in fulfilling the privacy requirement through spatial depth because the spaces in their houses are better connected.

The control of privacy through spatial control is derived from the (1) connection to reach the next space and (2) feeling of intruding into the next room. Connection to reach the next space determines the kind of fixed and semi-fixed features that separates the spaces. Feeling of intrusion is measured from the proportion of the width, length, and height of those fixed and semi-fixed elements such as the proportion of the width of the wall to the width of the door opening. This feeling of intrusion is derived from the feeling of when one is facing toward the next space and preparing to enter through the opening.

The mix-use space for residential and business brings consequences of extra effort in controlling privacy. Nevertheless, the privacy requirement of each individual is varied and its fulfillment is relatively different as individual and as a group. Privacy control exists not only against the unwanted interaction (bathing or sleeping) but also to encourage interaction within the desirable space (serving customer/guest). The sleeping activity at night is not necessarily in the specific room or on bed even though it requires high level privacy.

We can conclude some similarities besides differences in Chinese and Javanese groups as follow.

Similarities:

1. As explained in chapter 3, both Chinese and Javanese promote the same requirement of privacy for activities related to business purposes, private-residential purposes, and public-residential-purposes. Activities related to business purposes are serving guest, serving customer, displaying good, storing shop goods, and waiting for customer. Activities related to private-residential purposes are praying, bathing, and sleeping. And activities related to public-residential purposes are dinner, breakfast, lunch, washing clothes, drying clothes, reading, cooking meal, and watching TV.
2. Both Chinese and Javanese have very low response to the category of friend as explained in chapter 3, so this category is excluded from the privacy level.
3. Both groups also show that for the majority of total 421 activities, the biggest portion requires equally visual and physical accessibility (147 activities of Chinese and 160 activities of Javanese). The next big portion requires physical accessibility more than visual accessibility (52 activities in Chinese and 45 activities in Javanese). And only very few activities require visual accessibility more than physical accessibility (5 activities in Chinese and 6 activities in Javanese).
4. As elements to separate/connect spaces where the activities are placed, in both Chinese and Javanese we found 6 other categories; 1.) Massive/solid wall/partition/furniture that may obstruct both visual and physical accessibility, 2.) Look-through wall/partition/furniture, 3.) Blind/curtain, 4.) Steps, 5.) Corridor and 6.) Stairs.

Differences:

1. Activities which have common tendency in relation to privacy are different in Chinese from Javanese. More activities are having common tendency in Chinese than in Javanese.
2. Chinese houses have much deeper spatial depth than Javanese houses which are correspond with the shape of the floor plan relatively from the entrance side. Chinese houses have the tendency to be deep and narrow (67%), while other houses have similar width & depth (27%) and wider and shallow (6%). Javanese houses have the tendency to be similar in width and depth (86%), while other houses have deep and narrow shape (7%) or wider and shallow (7%).
3. The number of physical features used to separate spaces is strikingly different. Chinese use corridor and stairs more than Javanese who use look-through wall/partition/furniture, blind/curtain, and steps.

As Habraken concluded that private and public spaces have transitional spaces that are fixed depending on one's perspective (1998: 137-138), it may conclude that the residents tend to decide where to perform their daily activities in relation to privacy control. This study proves that spatial control is the primary control to achieve the requirement of privacy of which the space is connected or separated. In addition, time control and cultural norm/value may justify the privacy requirement as one mechanism.

Some suggestions:

We realize that this research may not answer the real privacy requirement of the residents. However, this study is focusing on the control of privacy that is how exactly the residents manage to achieve their privacy goal. We have got a sense that privacy is dynamic, and depending on the circumstances, it might be fluctuated. It is not stagnant. One may have a range of privacy level not a point within which the level is tolerable. At some situation the privacy requirement may be low but in another situation it may be high even when doing the same activity. That is may be one of the reasons why the activity may be moveable, not fixed in one place.

The interpersonal relationship between the residents as individuals and outsiders may have different kinds of relationship which may not be as orderly as a linear connection from the category of stranger, customer, servant/worker, family member, and oneself. As shown in the result of the questionnaires that the category of friend has received the fewest responses. It may imply that this category is not distinguished in terms of relational distance related to privacy. This category of friend may be mixed with the category family member. In the case of interacting in the house, the behavior of a friend may not be distinguished or clearly separated from the behavior of a family member. Unlike the category of servant/worker who are clearly distinguished because of their role that is more clearly set, they may be invited into the most private room such as bedroom. They may eat together and stay overnight with the residents as if they were one of the family members. Especially with the Javanese residents, friend is considered the same as family member. Even every guest who comes to the house is considered to bring a blessing, so the residents would treat them and serve them with food and friendly conversation.

For future works:

The number of shop houses that we observed is too few to meet the requirement for a typical shop house in Yogyakarta. This study delimitates the number of shop house because of some conditions. The typical shop house building may not necessarily mean the residents living and working in the same building. The term of shop house used in this study does not refer to the typical shop house building as widely known but to the dual functions of shop and house. Nevertheless, this study is striving to find the model of privacy control for residents living in shop house which emphasizing the mixed activities happening in the house to serve both business and residential purposes. In the future, more number of shop houses to observe can be expected for more concrete and satisfying result.

REFERENCES

Abu-Ghazzeh, Tawfiq M. 1998. Housing Layout, Social Interaction, and The Place of Contact in Abu-Nuseir, Jordan. *Journal of Environmental Psychology* (1999) 19, 41-73.

Ahrentzen, S. B. (1990, November) Managing Conflict by Managing Boundaries: How Professional Homeworkers Cope with Multiple Roles at Home. *Environment and Behavior*, 22(6), 723-752.

Alexander, C., Ishikawa, S., & Silverstein, M., et.al. (1977) *A Pattern Language*. New York: Oxford University Press.

Altman, I. (1975) *The Environment and Social Behavior*. Monterey, CA: Brooks/Cole.

Anggraini, L. D. (2007) T*he Type of Chinese Shophouse in Ketandan Yogyakarta: Based on Form-function* (Unpublished Master Thesis). Gadjah Mada University, Yogyakarta (in Indonesian.)

Anggraini, L.D. (2012, October). Spatial Connectivity of Indonesian Shop Houses. *Asian Journal of Environment-Behaviour Studies*, Vol 3, No. 10. pp. 45-55.

Anggraini, L.D. & Ohno, R. (2013, March). The Degree of Privacy Requirement for Residents' Activities in the Shophouse. *Journal of Habitat Engineering and Design*, Vol. 5 No.1. pp. 113-125.

Dewi, A. & Antariksa, S. S. (2005, July) The Effect of Trading Activities on Interior Pattern of Shophouse Building in Chinese District in Malang City. *Dimensi Teknik Arsitektur, 33*(1), 17-26. (in Indonesian.)

Bellingar, Teresa A. & Virginia W. Kupritz. (2011) *Privacy Matters*. E-book. Haworth. http://www.haworth.com/en-us/knowledge/workplace-library/documents/privacy-matters.pdf

Dewi, A. & Antariksa, S. S. (2005, July) The Effect of Trading Activities on Interior Pattern of Shophouse Building in Chinese District in Malang City. *Dimensi Teknik Arsitektur*, 33(1), 17-26. (in Indonesian.)

Ellisa, Evawani. (1999, August 3-4th) Tracing the Adaptation Process of Shop Houses: from Traditional Vernacular into Contemporary Vernacular Settlement. *Proceedings of International Seminar on Vernacular Settlement*. Jakarta, Indonesia: The Faculty of Engineering University of Indonesia, 315-331.

Habraken, N.J. (1998) *The Structure of the Ordinary: Form and Control in the Built Environment*. USA: Graphic Composition, Inc.

Hillier, B. and Hanson, J. (1984) *The Social Logic of Space*. Cambridge University Press.

Lara, Fernando and Kim, Youngchul. (2010, Summer) Built Global, Lived Local: A Study of How Two Diametrically Opposed Cultures Reacted to Similar Modern Housing Solutions. *Journal of Architectural and Planning Research*. 27(2), 91-105.

Melina, R. (2011) House & Laundry: Strategy of Privacy in Spaces for Living and Working. *Journal of Theory and Design of Architecture*, 5(1). www.arsitektur.net. (in Indonesian)

Oseland, N. & Donald, I. (1993) The Evaluation of Space in Homes: A Facet Study. *Journal of Environmental Psychology*, 13, 251-261.

Pratiwo. (2010) *Chinese Traditional Architecture and the City Development*. Yogyakarta, Indonesia: Ombak Publisher. (in Indonesian.)

Rapoport, A. (1982) *The Meaning of the Built Environment: A Nonverbal Communication Approach*. Tucson, United States of America: The University of Arizona Press.

Rapoport, A. (2005) *Culture, Architecture, and Design*. Chicago, Illinois, USA: Locke Science Publishing Company, Inc.

Shoul, Michael. (1993, January) The Spatial Arrangements of Ordinary English Houses. *Environment and Behavior*, 25(1), 22-69.

Steinhardt, Nancy Shatzman, et.al. (1984) *Chinese Traditional Architecture*. New York City: China Institute in America, Inc.

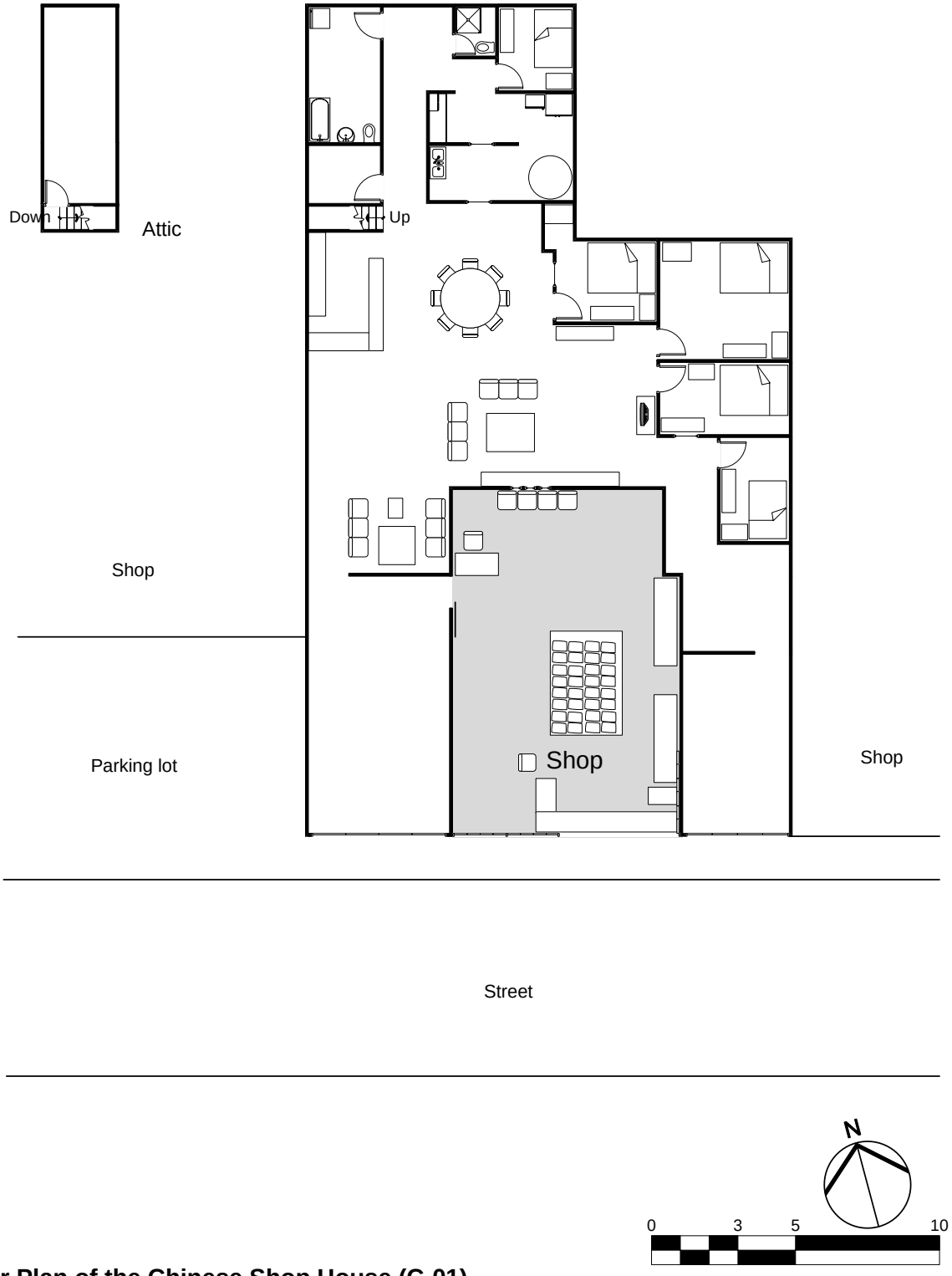
Widoro, Johannes. (1988) *Chinese Settlement in A Changing City; An Architectural Study of the Urban Chinese Settlement in Semarang, Indonesia*. Leuven Catholic University, Belgium (Unpublished Master Thesis).

Wilson, G. & Baldassare, M. (1996, January) Overall "Sense of Community" in A Suburban Region: The Effects of Localism, Privacy, and Urbanization. *Environment and Behavior*, 28(1), 27-43.

Zahnd, Markus. (2008) *New Model of Contextual Urban Design: Analysis of Traditional District in Semarang and Yogyakarta, A Potential toward An Effective Urban Design*. Yogyakarta, Indonesia: Penerbit Kanisius. (in Indonesian)

Surjomihardjo, Abdurrachman. (1988) *Yogyakarta City 1880-1930: A Historical Review of Social Development*. Gadjah Mada University. (In Indonesian)

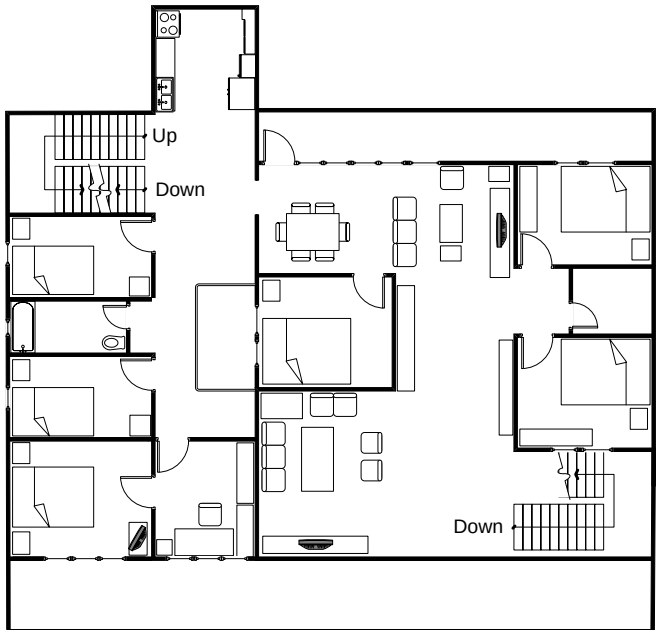
Appendix 1.1

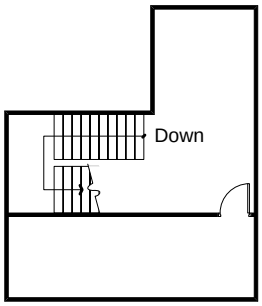


Floor Plan of the Chinese Shop House (C-01)

Number of household member: 2 (husband & wife)	Generation: Second	Code: C-01
Type of family: Nuclear	Location: Facing street	Number of floor: 1 (+ attic)
House style: Built as shop house	Open hours: 8:30-17:00	Total floor area (m²): 425.58
Kind of shop goods: Rice (medium to big scale)		Shop area (m²): 92.2 (21.6%)
Kind of customer: Passerby, neighbor		Front width/total length (m): 17/28.85 (prop. 1/1.7)

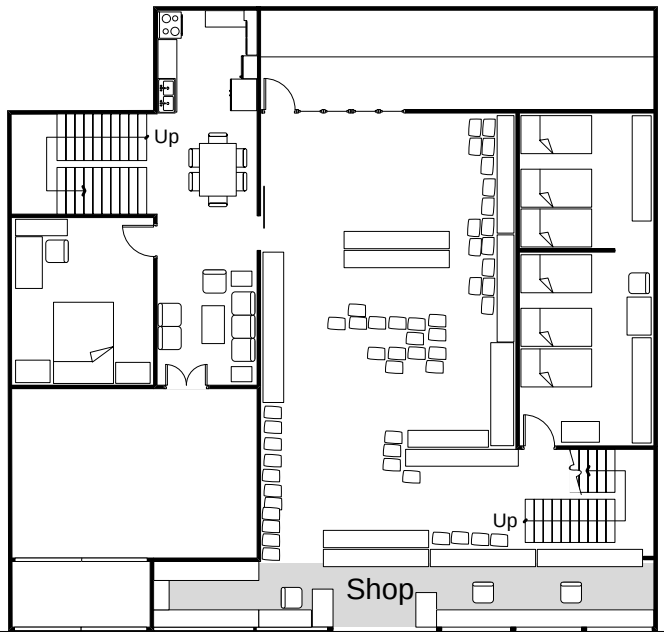
Appendix 1.2





Attic

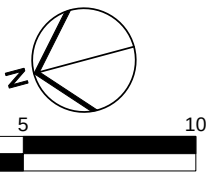
2nd floor



Shop

Shop

Street



Floor Plan of the Chinese Shop House (C-02)

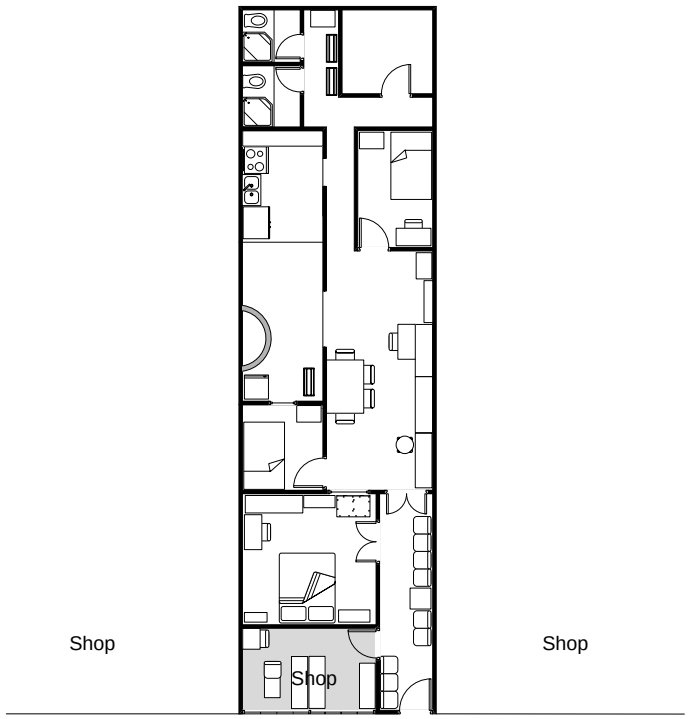
Number of household member: 8 (+3 workers stay)	Generation: Third	Code: C-02
Type of family: Extended	Location: Facing street	Number of floor: 2 (+ attic)
House style: Built as shop house	Open hours: 5:00-13:00	Total floor area (m²): 635.22
Kind of shop goods: Rice, grain, sugar, sundry, etc (medium to big scale)		Shop area (m²): 27.55 (4.3%)
Kind of customer: Reseller, passerby, neighbor, market people		Front width/total length (m): 18.85/18.05 (prop. 1/1)

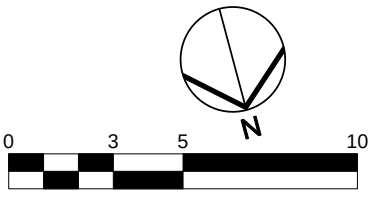
Appendix 1.3

Floor Plan of the Chinese Shop House (C-03)

Number of household member: 1 (+2 worker no stay)	Generation: Second	Code: C-03
Type of family: Nuclear	Location: Facing street	Number of floor: 2
House style: Built as shop house	Open hours: 7:00-16:00	Total floor area (m²): 155.46
Kind of shop goods: Aluminum cooking utensil, grain (small to medium scale)		Shop area (m²): 15.98 (10.3%)
Kind of customer: Far-distant customer, market people		Front width/total length (m): 5.27/18.6 (prop. 1/3.5)

Appendix 1.4

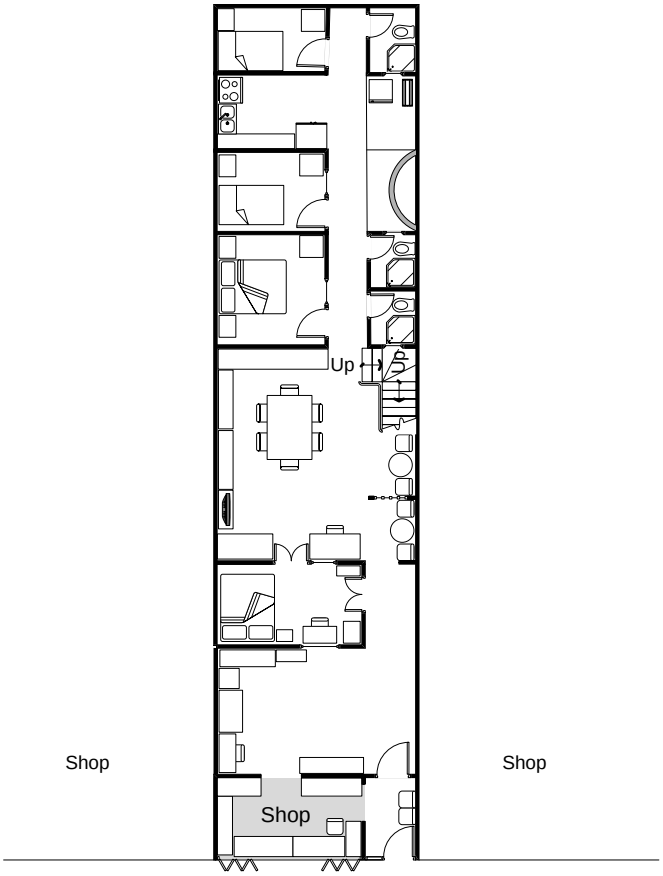


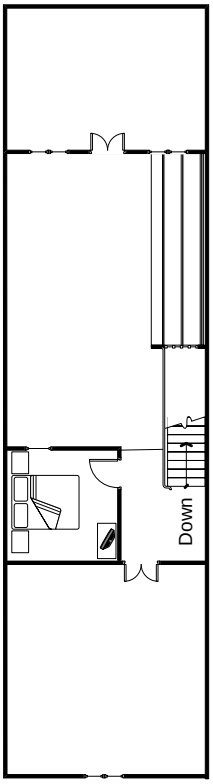


Floor Plan of the Chinese Shop House (C-04)

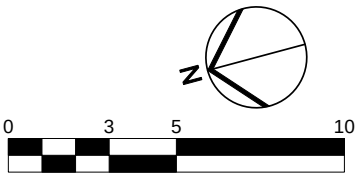
Number of household member: 3	Generation: Third	Code: C-04
Type of family: Nuclear	Location: Facing street	Number of floor: 1
House style: Built as shop house	Open hours: 9:00-19:00	Total floor area (m²): 105.01
Kind of shop goods: False tooth maker (small to medium scale)		Shop area (m²): 8.97 (8.5%)
Kind of customer: Far-distant customer, within town		Front width/total length (m): 5.66/20.25 (prop. 1/3.6)

Appendix 1.5





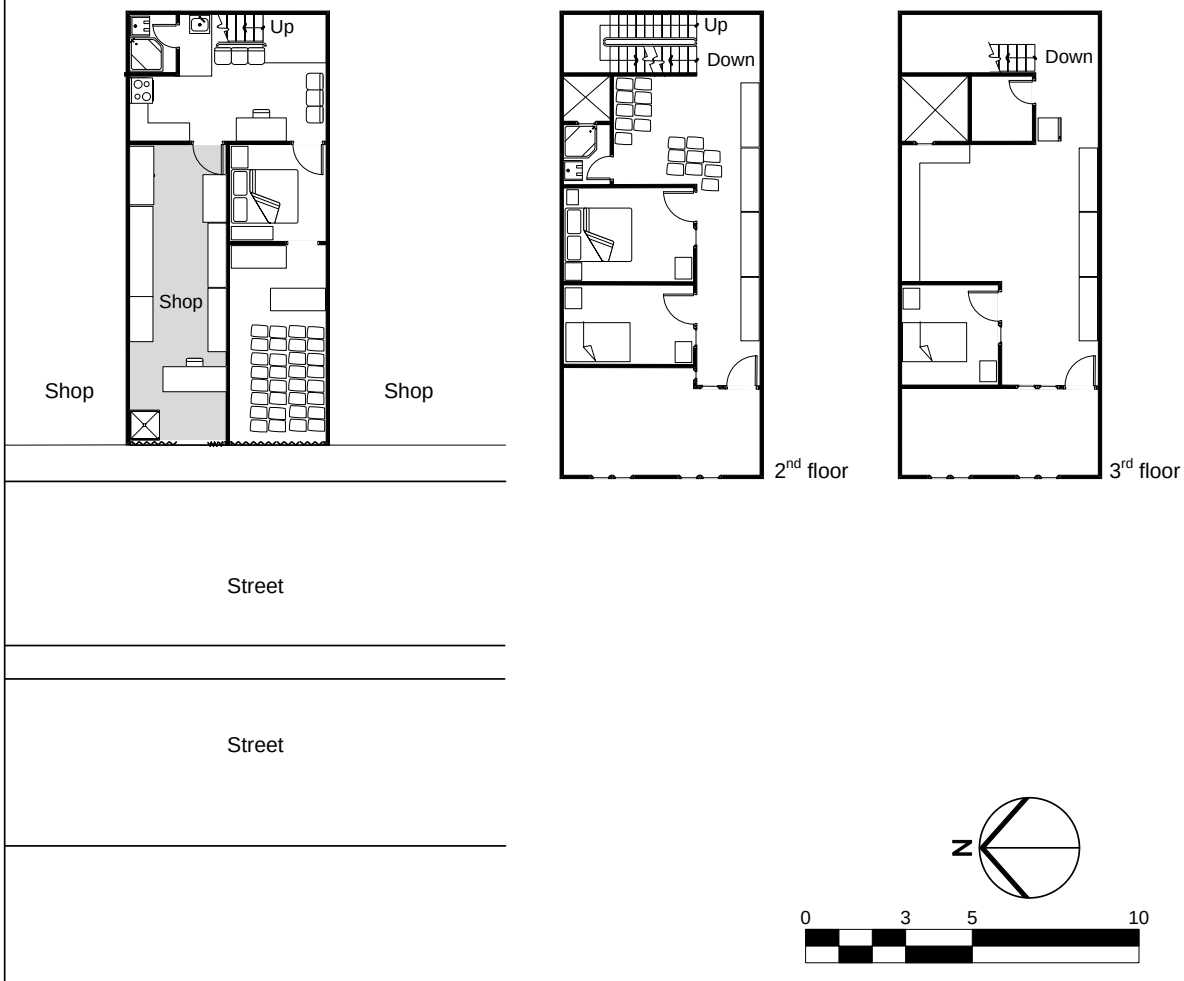
2nd floor



Floor Plan of the Chinese Shop House (C-05)

Number of household member: 2	Generation: Second	Code: C-05
Type of family: Nuclear	Location: Facing street	Number of floor: 2
House style: Built as shop house	Open hours: 7:30-15:30	Total floor area (m²): 262.97
Kind of shop goods: Sundry, snack, soft drinks, cigarette (small to medium scale)		Shop area (m²): 10.12 (3.85%)
Kind of customer: Passerby, neighbor, market people, reseller		Front width/total length (m): 6.11/25.45 (prop. 1/4.17)

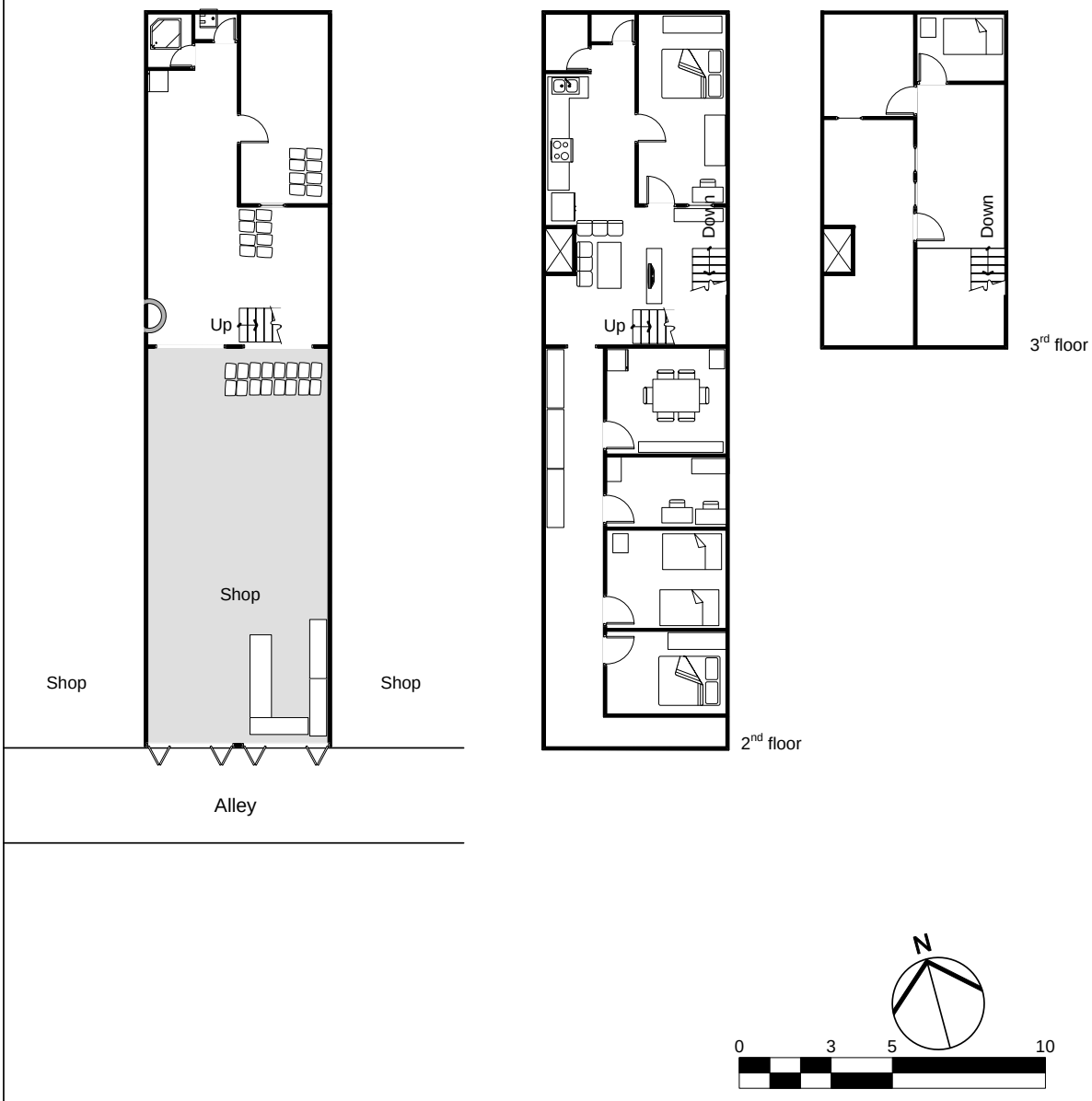
Appendix 1.6



Floor Plan of the Chinese Shop House (C-06)

Number of household member: 2	Generation: Second	Code: C-06
Type of family: Nuclear	Location: Facing street	Number of floor: 3
House style: Built as shop house	Open hours: 3:30-12:00 &	Total floor area (m²): 226.02
Kind of shop goods: Fresh pork (small to medium scale)	13:00-16:30	Shop area (m²): 25.82 (11.4%)
Kind of customer: Far-distant patron, neighbor, market people		Front width/total length (m): 6.1/14 (prop. 1/2.3)

Appendix 1.7



Floor Plan of the Chinese Shop House (C-07)

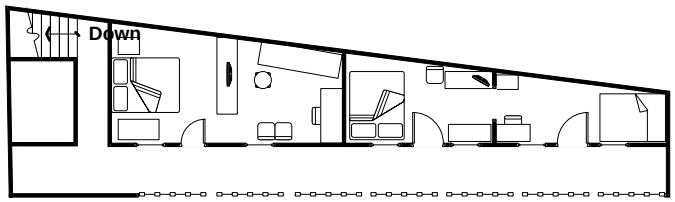
Household member: 5 (+1 male worker no-stay)	Generation: Fourth	Code: C-07
Type of family: Extended	Location: Facing alley	Number of floor: 3
House style: Built as shop house	Open hours: 6:00-17:00	Total floor area (m²): 693.43
Kind of shop goods: Motorcycle parking & lunch box (small scale)		Shop area (m²): 76.1 (11%)
Kind of customer: Neighbor, market people		Front width/total length (m): 6/24

Appendix 1.8

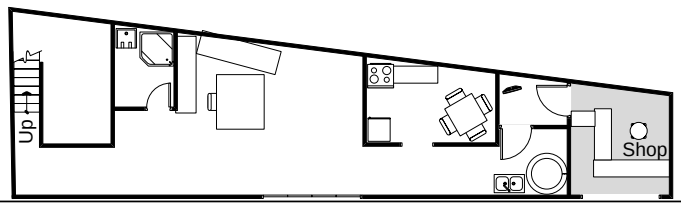
Floor Plan of the Chinese Shop House (C-08)

Household member: 5	Generation: Second	Code: C-08
Type of family: Extended	Location: Facing street	Number of floor: 2
House style: Built as shop house	Open hours: 9:00-17:00	Total floor area (m²): 188.67
Kind of shop goods: Electronic spare parts, sewing clothes (small scale)		Shop area (m²): 49.02 (26%)
Kind of customer: Friend, acquaintance		Front width/total length (m): 6.26/18.1 (prop. 1/2.9)

Appendix 1.9



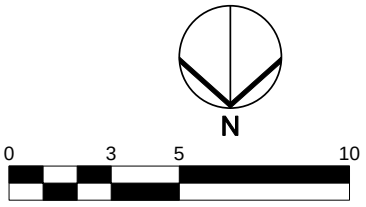
2nd floor



Shop

Mall

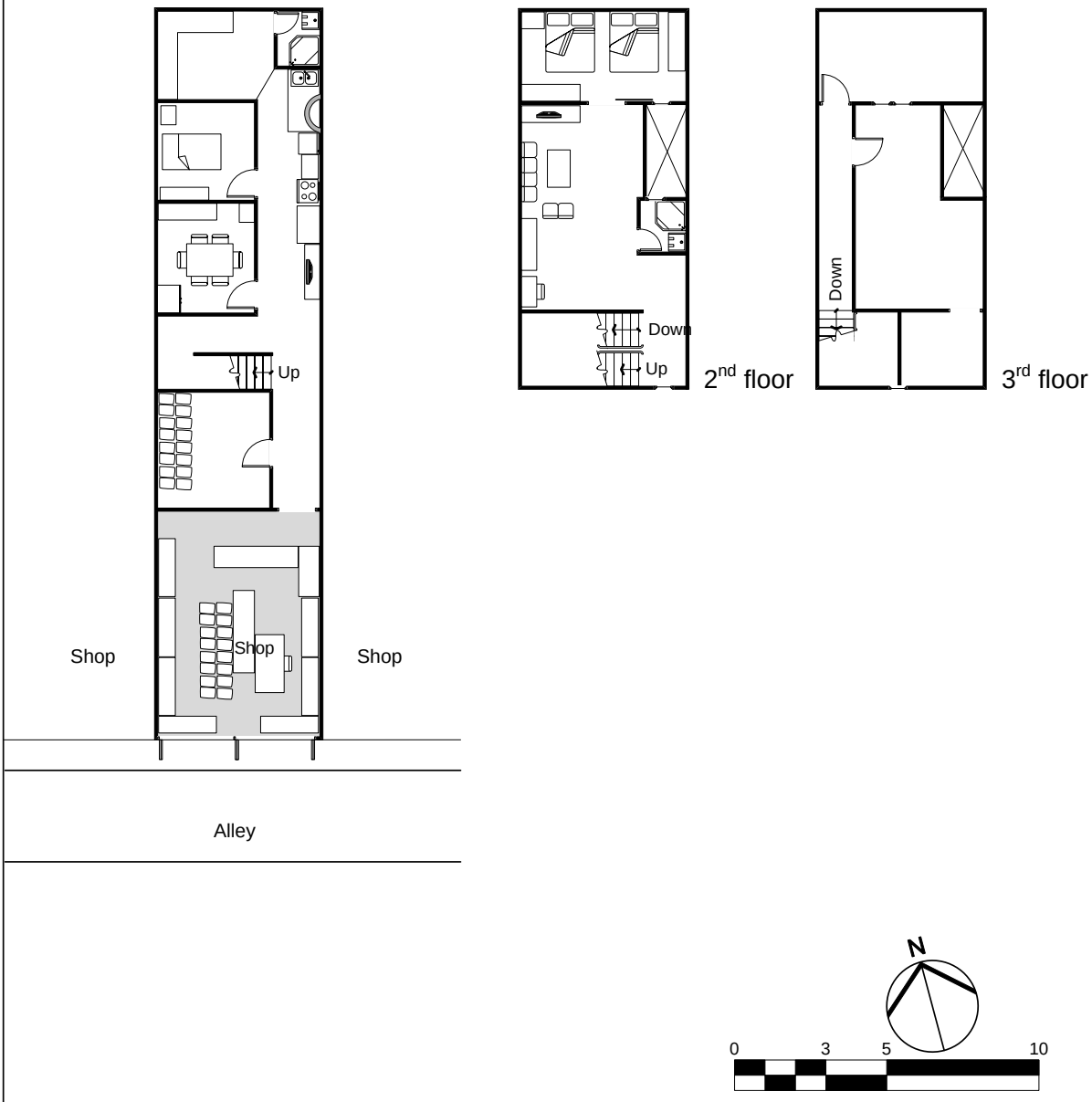
Street



Floor Plan of the Chinese Shop House (C-09)

Household member: 5	Generation: Second	Code: C-09
Type of family: Nuclear	Location: Facing street	Number of floor: 2
House style: Built as ordinary house	Open hours: 8:00-21:00	Total floor area (m^2):141.5
Kind of shop goods: Sundry, snack, soft drinks, cigarette (small scale)		Shop area (m^2): 8.99 (3%)
Kind of customer: Passerby, neighbor		Front width/total length (m): 19.5/5.6 (prop. 3.5/1)

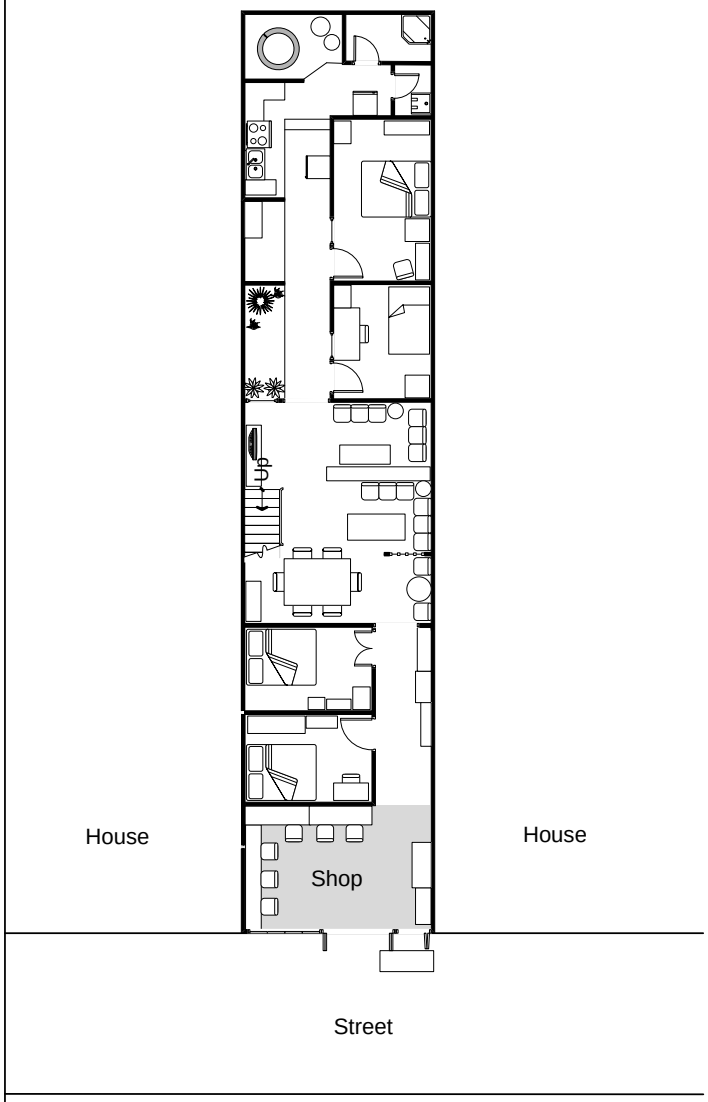
Appendix 1.10

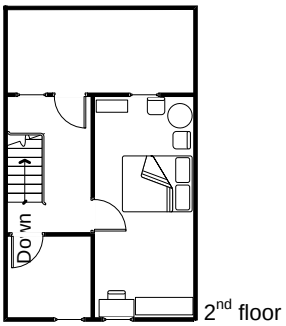


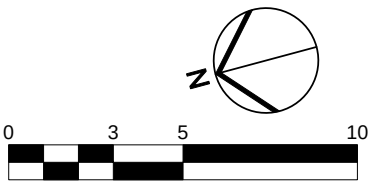
Floor Plan of the Chinese Shop House (C-10)

Household member: 2	Generation: Second	Code: C-10
Type of family: Nuclear	Location: Facing alley	Number of floor: 3
House style: Built as shop house	Open hours: 8:00-16:30	Total floor area (m²): 368.6
Kind of shop goods: Cooking utensil, etc (small to medium scale)		Shop area (m²): 39.4 (11%)
Kind of customer: Far-distant patron, market people		Front width/total length (m): 5.5/24 (prop. 1/4.3)

Appendix 1.11



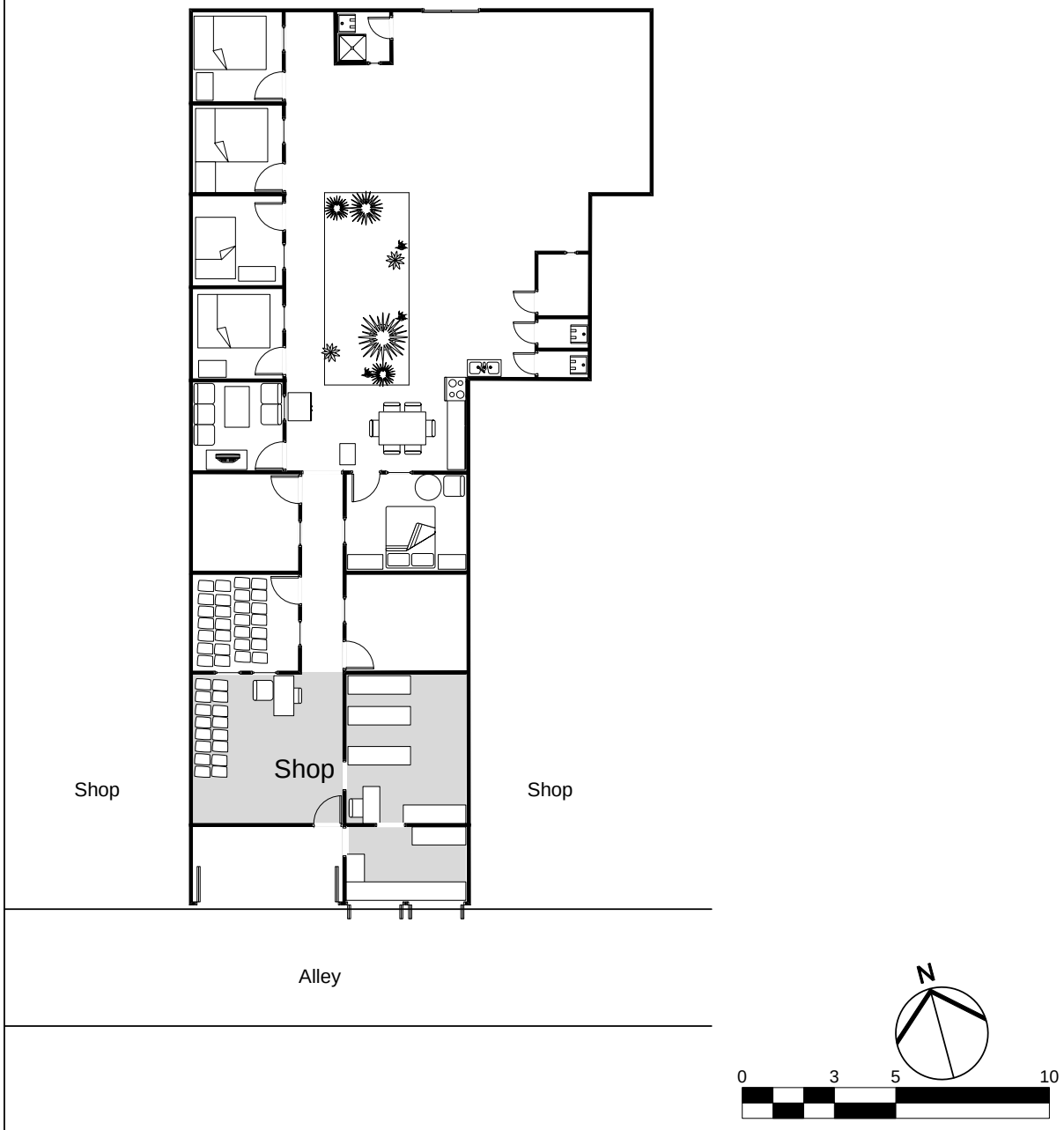




Floor Plan of the Chinese Shop House (C-11)

Household member: 6	Generation: Second	Code: C-11
Type of family: Extended	Location: Facing street	Number of floor: 2
House style: Built as shop house	Open hours: 10:00-17:00	Total floor area (m²): 181.4
Kind of shop goods: Cooked chicken (small to medium scale)		Shop area (m²): 18.96 (10.5%)
Kind of customer: Passerby, neighbor, friend		Front width/total length (m): 5.6/26.4 (prop. 1/4.8)

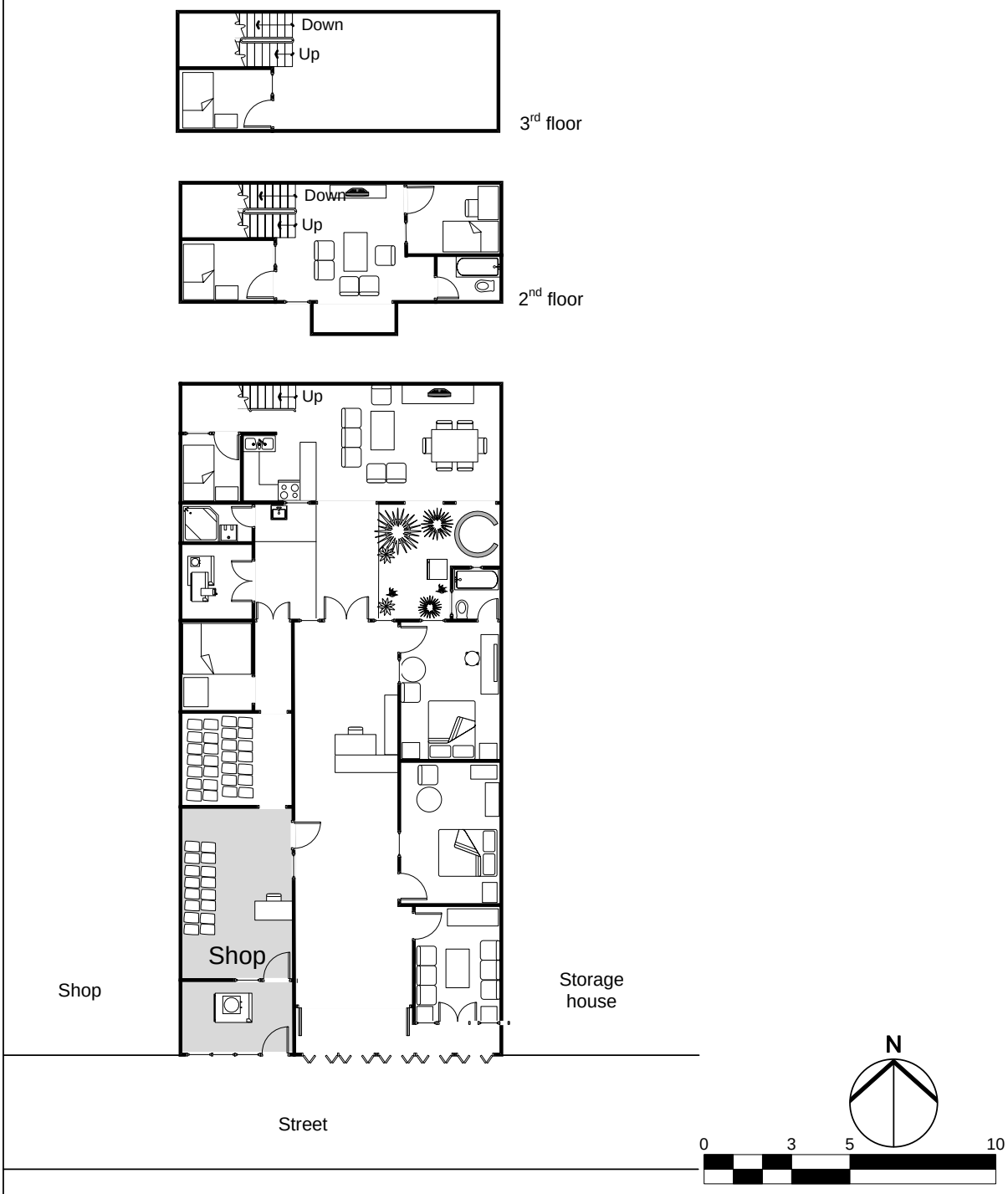
Appendix 1.12



Floor Plan of the Chinese Shop House (C-12)

Household member: 4	Generation: Third	Code: C-12
Type of family: Nuclear	Location: Facing alley	Number of floor: 1
House style: Built as shop house	Open hours: 8:00-17:00	Total floor area (m²): 221.45
Kind of shop goods: Rice, flour, plastic, sugar (medium to big scale)		Shop area (m²): 51.24 (23.1%)
Kind of customer: Within the town & far-distant patron, market people, reseller		Front width/total length (m): 9.15/29.15 (prop. 1/3.19)

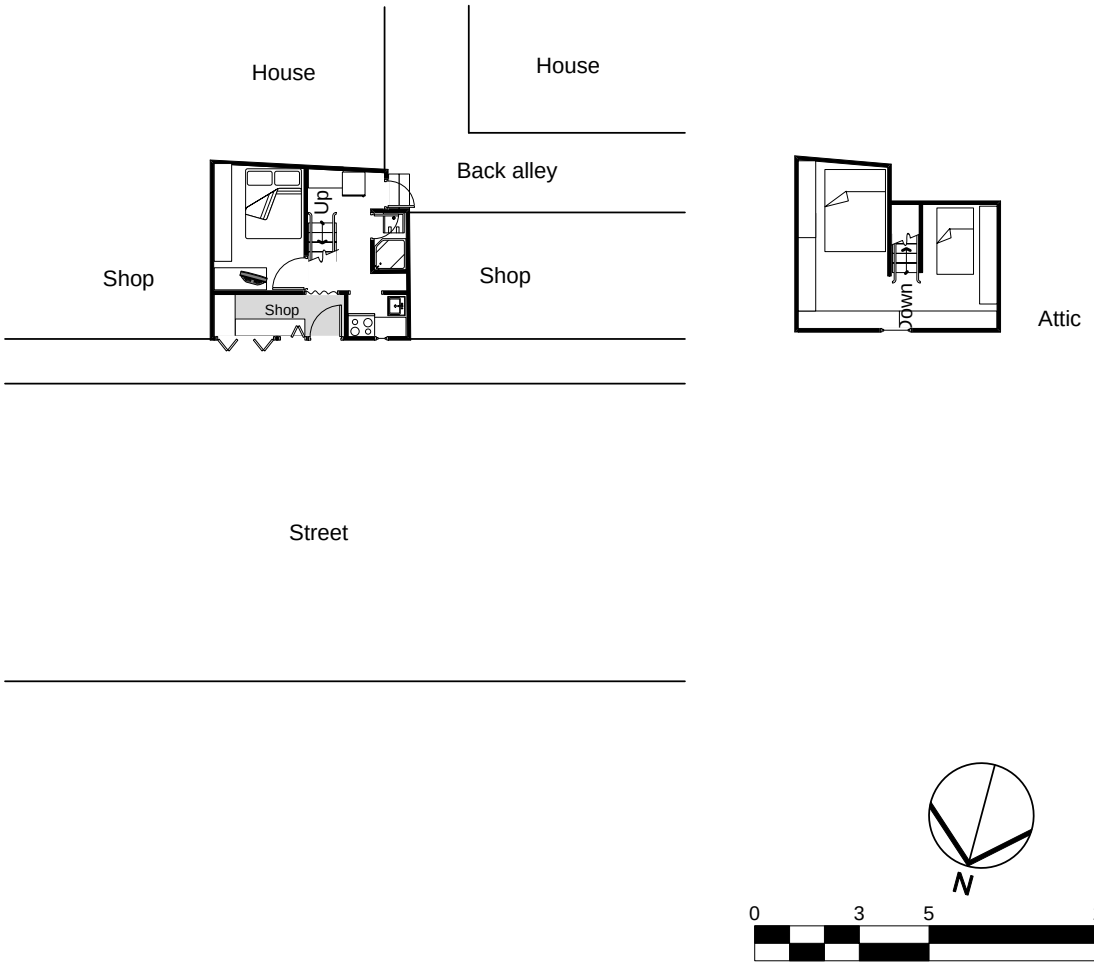
Appendix 1.13



Floor Plan of the Chinese Shop House (C-13)

Household member: 6 (+3 worker stay)	Generation: Second	Code: C-13
Type of family: Nuclear	Location: Facing street	Number of floor: 3
House style: Built as ordinary house	Open hours: 4:00-8:00 &	Total floor area (m²): 328.2
Kind of shop goods: Meat grinding (medium to big scale)	15:00-16:00	Shop area (m²): 31.1 (9.5%)
Kind of customer: Within the town		Front width/total length (m): 11.1/23.05 (prop. 1/2.1)

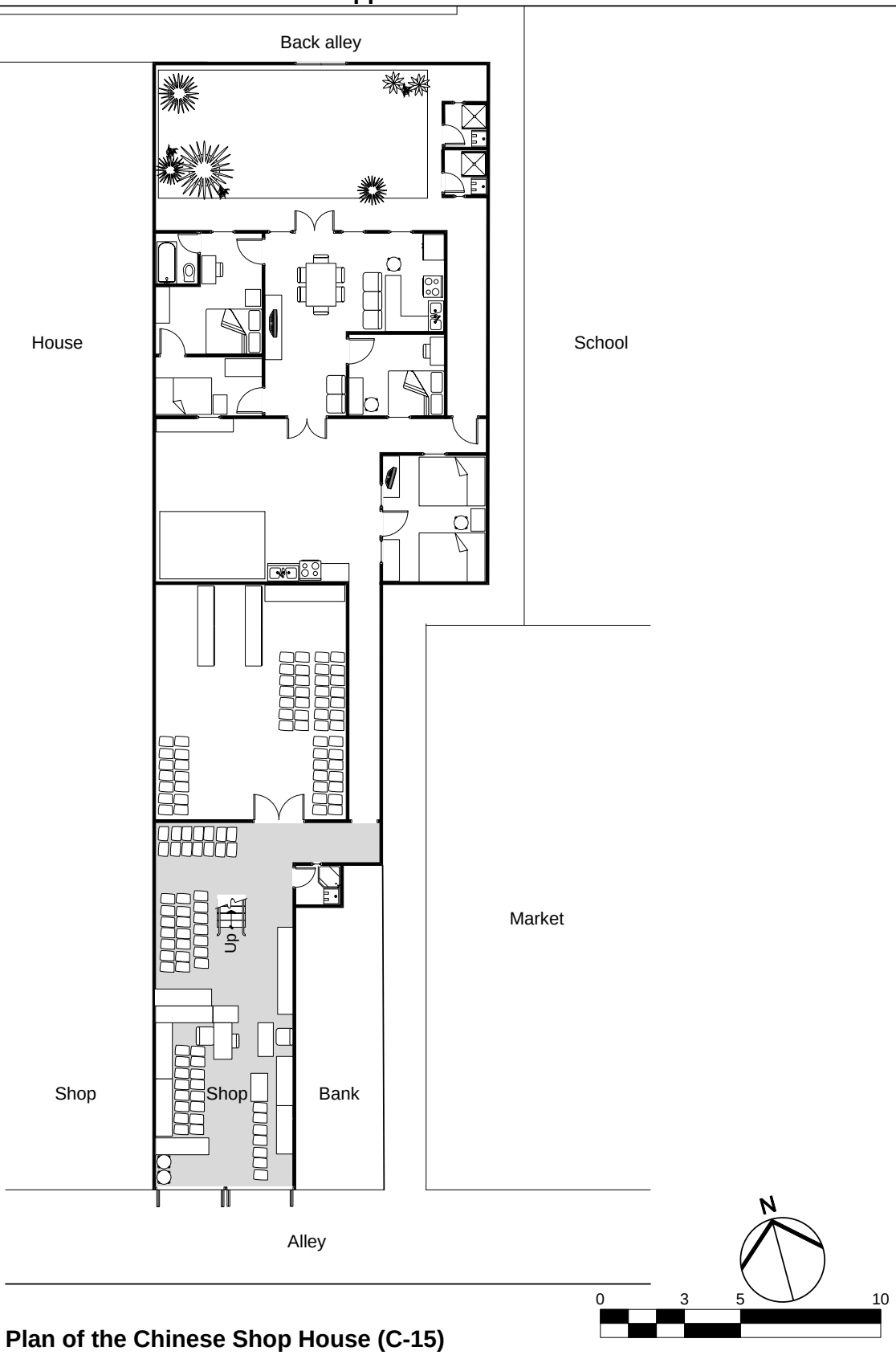
Appendix 1.14



Floor Plan of the Chinese Shop House (C-14)

Household member: 5	Generation: Second	Code: C-14
Type of family: Nuclear	Location: Facing street	Number of floor: 1 (+ attic)
House style: Built as shop house	Open hours: 9:00-20:00	Total floor area (m²): 44.9
Kind of shop goods: Soft-drink, cooked food (small scale)		Shop area (m²): 4.3 (9.5%)
Kind of customer: Passerby, neighbor		Front width/total length (m): 5.8/5.05 (prop. 1.15/1)

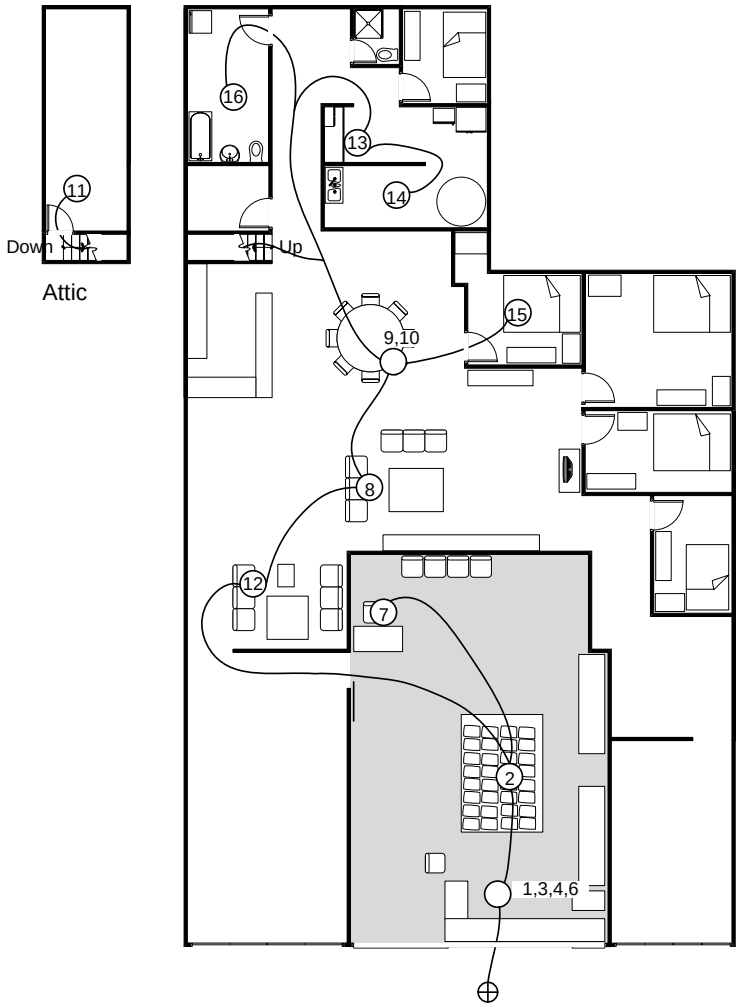
Appendix 1.15

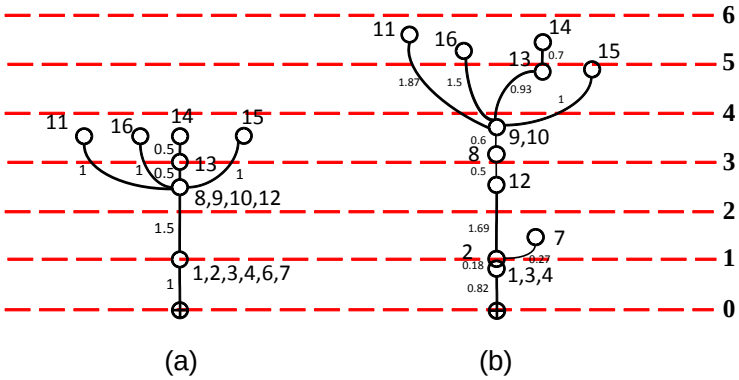


Floor Plan of the Chinese Shop House (C-15)

Number of household member: 3 (+5 worker staying)	Generation: Third	House: C-15
Type of family: Nuclear	Location: Facing alley	Number of floor: 1 (+ attic)
House style: Built as shop house	Open hours: 8:30-16:00	Total floor area (m²): 283.2
Kind of shop goods: Flour, grain (medium to big scale)		Shop area (m²): 70.1 (24.8%)
Kind of customer: Within the town, market people		Front width/total length (m): 5.1/40.15 (prop. 1/7.87)

Appendix 2.1





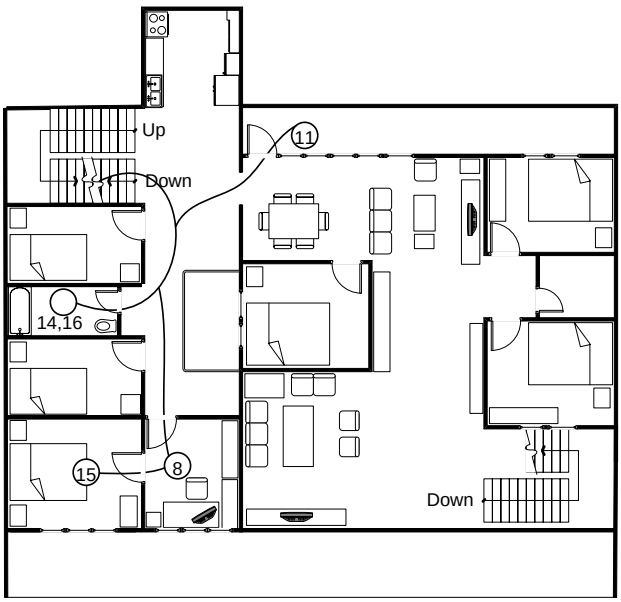
Kind of Activity:

1. Serving customer
2. Storing shop goods
3. Displaying goods
4. Waiting for customer
5. Praying
6. Reading
7. Lunch
8. Watching TV
9. Breakfast
10. Dinner
11. Drying clothes
12. Serving guest
13. Cooking meal
14. Washing clothes
15. Sleeping
16. Bathing

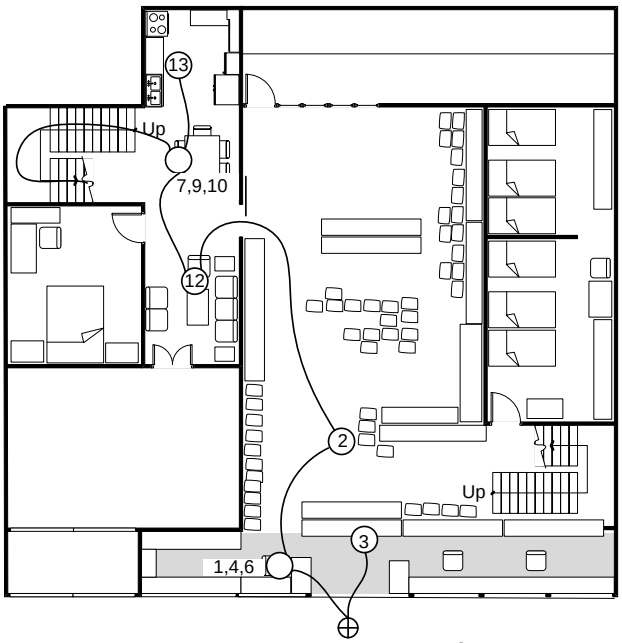
Activity Network of the Chinese Shop House (C-01)

Code: C-01
Gendern of interviewee (age): Male (70)

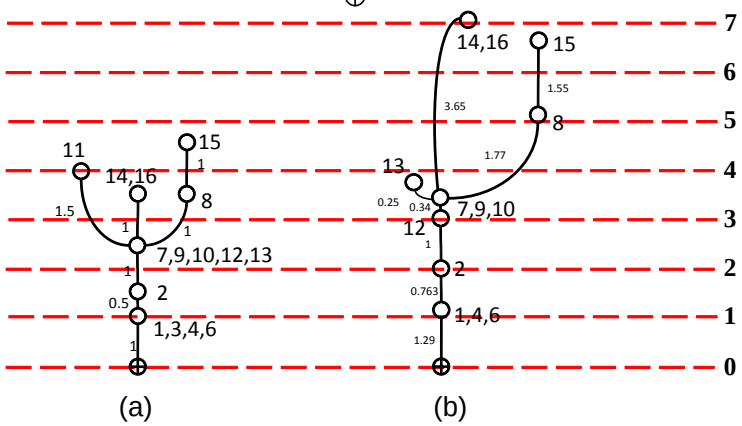
Appendix 2.2



2nd floor



1st floor



(a) (b)

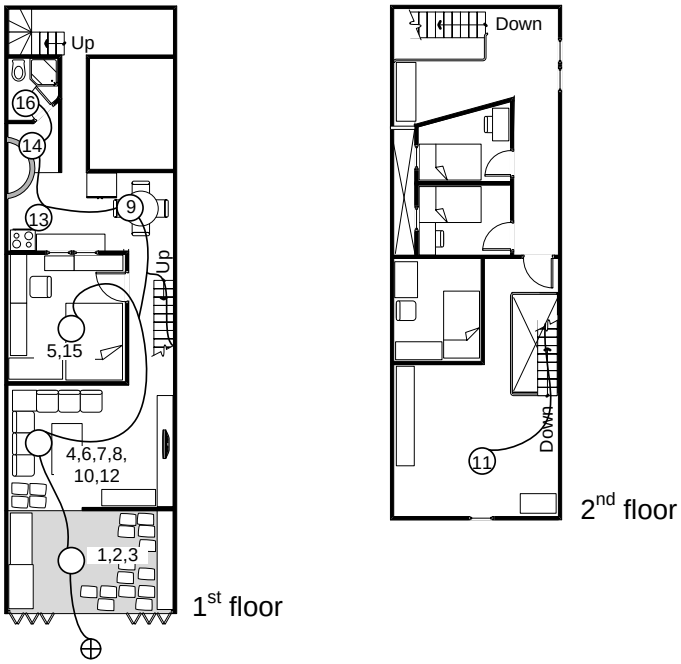
Kind of Activity:

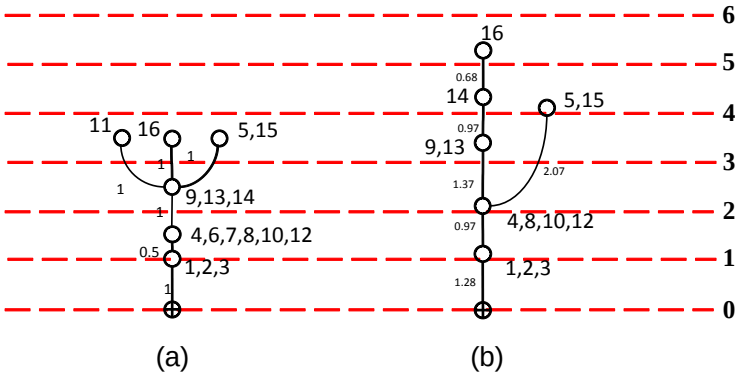
1. Serving customer
2. Storing shop goods
3. Displaying goods
4. Waiting for customer
5. Praying
6. Reading
7. Lunch
8. Watching TV
9. Breakfast
10. Dinner
11. Drying clothes
12. Serving guest
13. Cooking meal
14. Washing clothes
15. Sleeping
16. Bathing

Activity Network of the Chinese Shop House (C-02)

Code: C-02
Gender of interviewee (age): Female (26)

Appendix 2.3





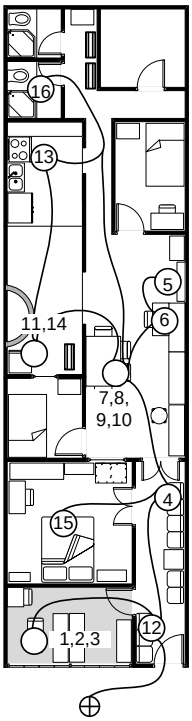
(a) (b)

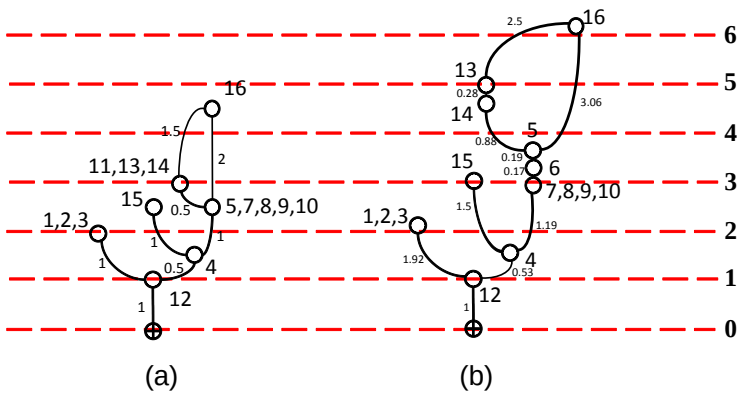
Kind of Activity:
1. Serving customer
2. Storing shop goods
3. Displaying goods
4. Waiting for customer
5. Praying
6. Reading
7. Lunch
8. Watching TV
9. Breakfast
10. Dinner
11. Drying clothes
12. Serving guest
13. Cooking meal
14. Washing clothes
15. Sleeping
16. Bathing

Activity Network of the Chinese Shop House (C-03)

Code: C-03
Gender of interviewee (age): Female (75)

Appendix 2.4





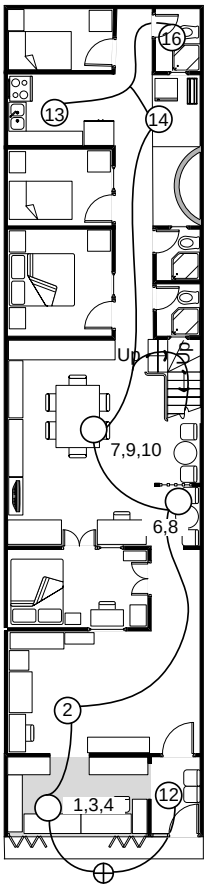
Kind of Activity:

1. Serving customer
2. Storing shop goods
3. Displaying goods
4. Waiting for customer
5. Praying
6. Reading
7. Lunch
8. Watching TV
9. Breakfast
10. Dinner
11. Drying clothes
12. Serving guest
13. Cooking meal
14. Washing clothes
15. Sleeping
16. Bathing

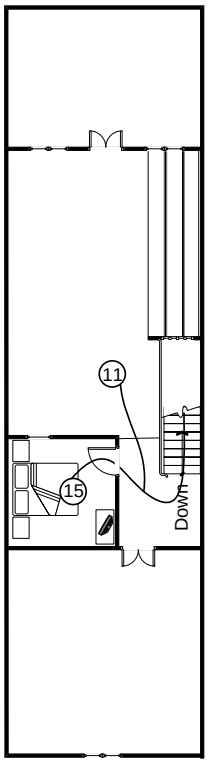
Activity Network of the Chinese Shop House (C-04)

Code: C-04
Gender of interviewee (age): Male (50)

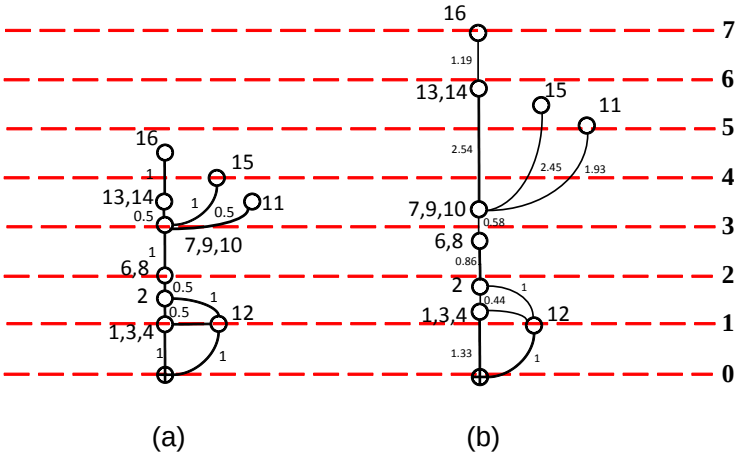
Appendix 2.5



1st floor



2nd floor



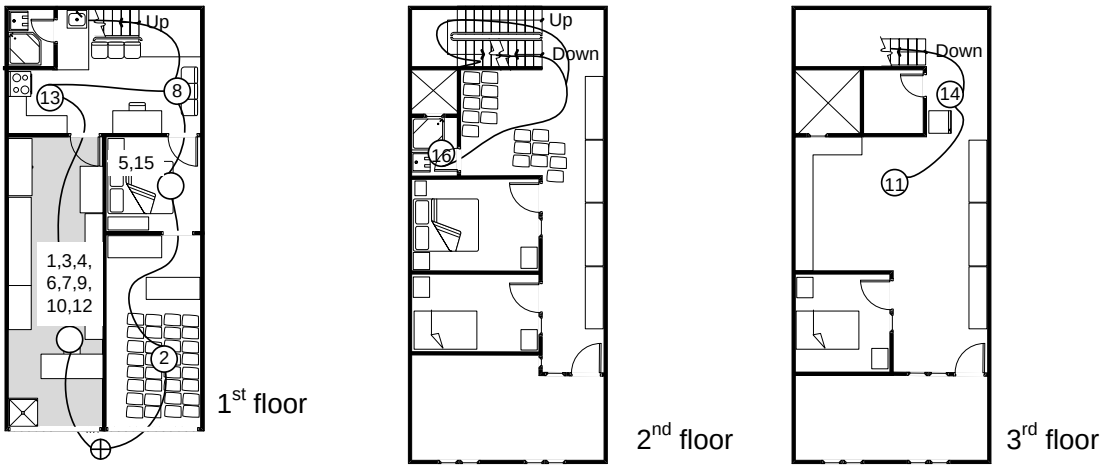
(a) (b)

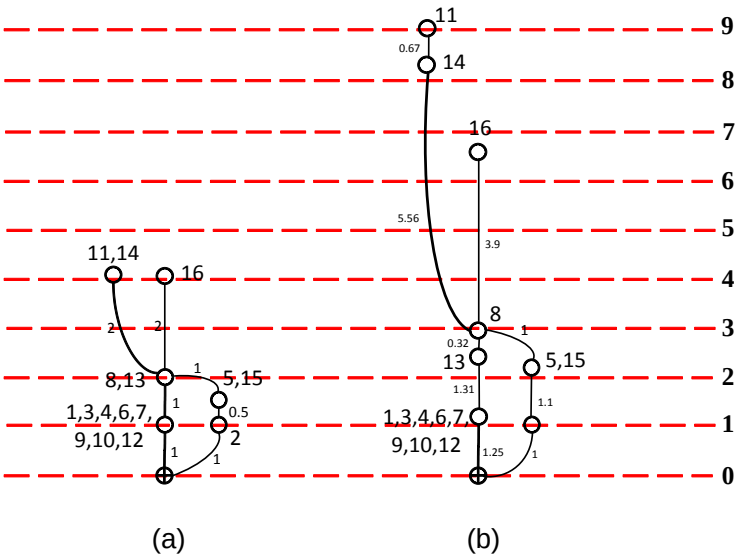
Kind of Activity:
1. Serving customer
2. Storing shop goods
3. Displaying goods
4. Waiting for customer
5. Praying
6. Reading
7. Lunch
8. Watching TV
9. Breakfast
10. Dinner
11. Drying clothes
12. Serving guest
13. Cooking meal
14. Washing clothes
15. Sleeping
16. Bathing

Activity Network of the Chinese Shop House (C-05)

Code: C-05
Gender of interviewee (age): Male (73)

Appendix 2.6



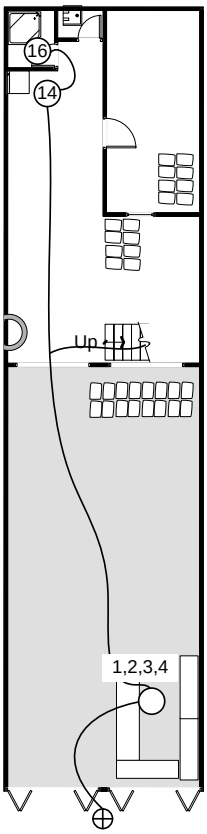


Kind of Activity:
1. Serving customer
2. Storing shop goods
3. Displaying goods
4. Waiting for customer
5. Praying
6. Reading
7. Lunch
8. Watching TV
9. Breakfast
10. Dinner
11. Drying clothes
12. Serving guest
13. Cooking meal
14. Washing clothes
15. Sleeping
16. Bathing

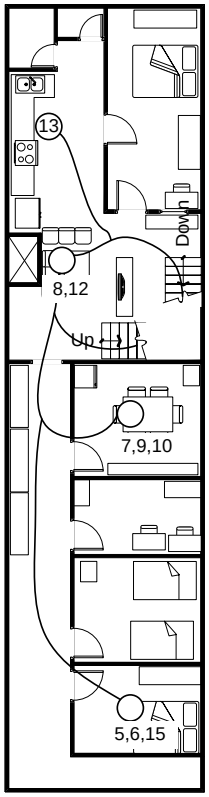
Activity Network of the Chinese Shop House (C-06)

Code: C-06
Gender of interviewee (age): Female (55)

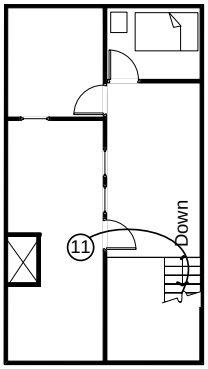
Appendix 2.7



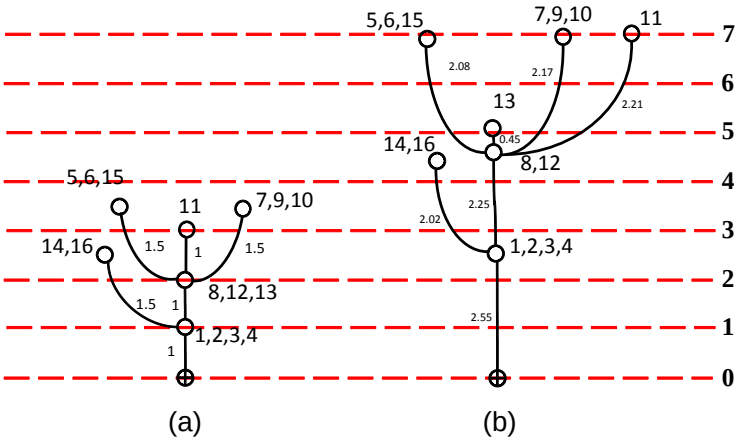
1st floor



2nd floor



3rd floor



(a) (b)

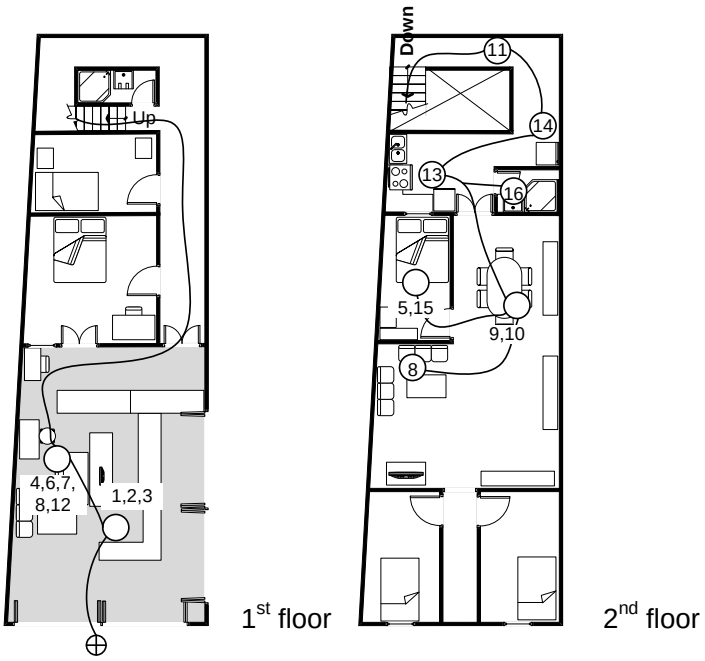
Kind of Activity:

1. Serving customer
2. Storing shop goods
3. Displaying goods
4. Waiting for customer
5. Praying
6. Reading
7. Lunch
8. Watching TV
9. Breakfast
10. Dinner
11. Drying clothes
12. Serving guest
13. Cooking meal
14. Washing clothes
15. Sleeping
16. Bathing

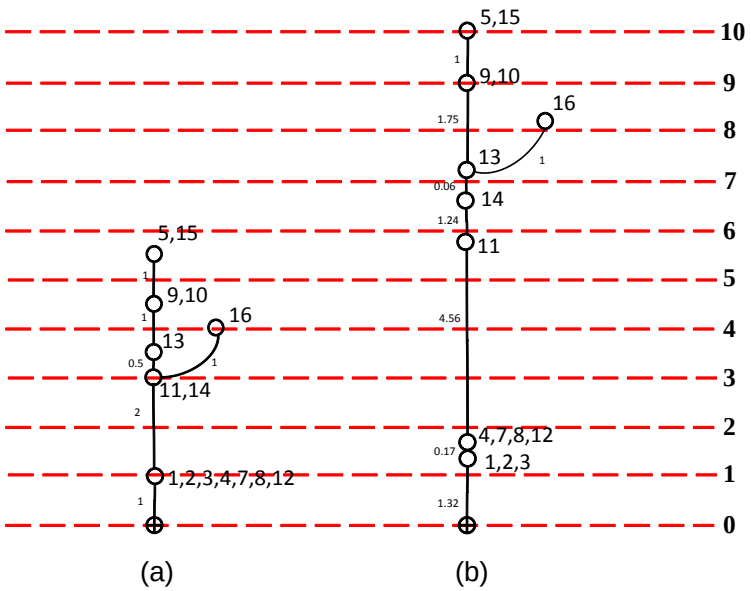
Activity Network of the Chinese Shop House (C-07)

Code: C-07
Gender of interviewee (age): Male (57)

Appendix 2.8



1st floor 2nd floor



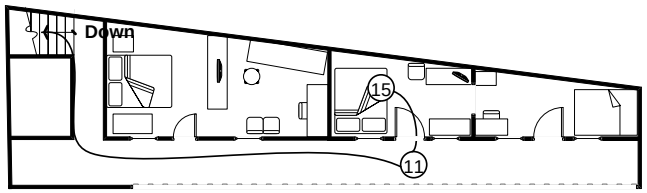
Kind of Activity:
1. Serving customer
2. Storing shop goods
3. Displaying goods
4. Waiting for customer
5. Praying
6. Reading
7. Lunch
8. Watching TV
9. Breakfast
10. Dinner
11. Drying clothes
12. Serving guest
13. Cooking meal
14. Washing clothes
15. Sleeping
16. Bathing

Activity Network of the Chinese Shop House (C-08)

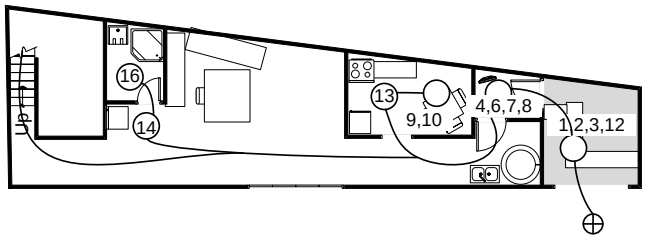
Code: C-08

Gender of interviewee (age): Female (58)

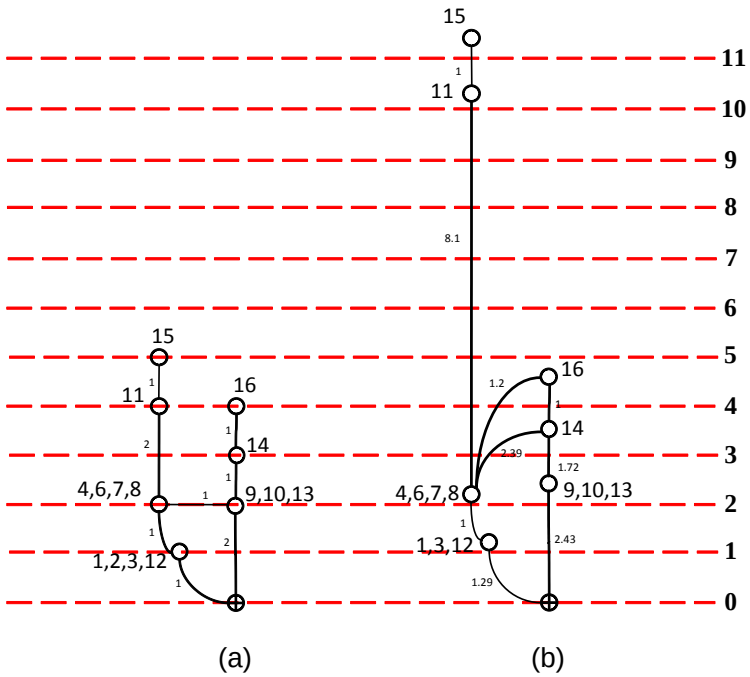
Appendix 2.9



2nd floor



1st floor



(a) (b)

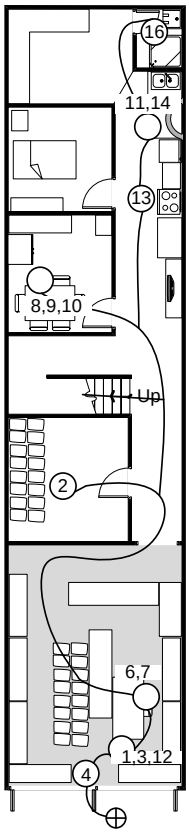
Kind of Activity:

1. Serving customer
2. Storing shop goods
3. Displaying goods
4. Waiting for customer
5. Praying
6. Reading
7. Lunch
8. Watching TV
9. Breakfast
10. Dinner
11. Drying clothes
12. Serving guest
13. Cooking meal
14. Washing clothes
15. Sleeping
16. Bathing

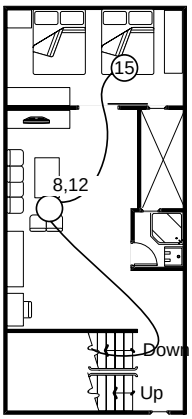
Activity Network of the Chinese Shop House (C-09)

Code: C-09
Gender of interviewee (age): Female (51)

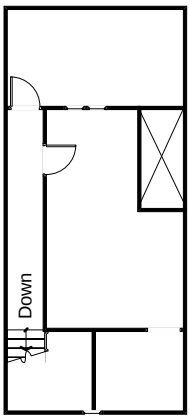
Appendix 2.10



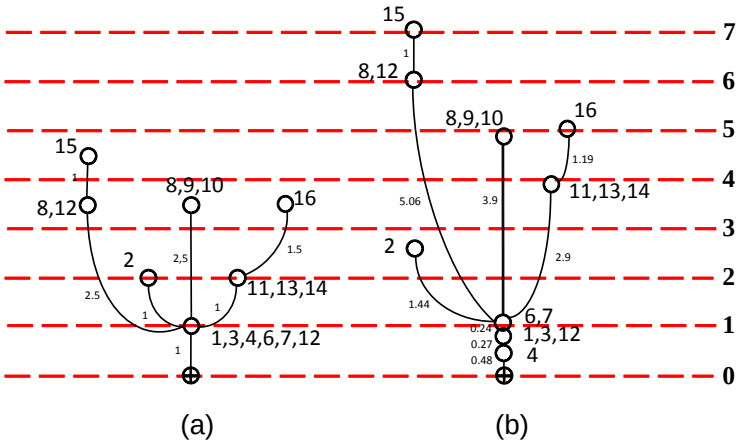
1st floor



2nd floor



3rd floor



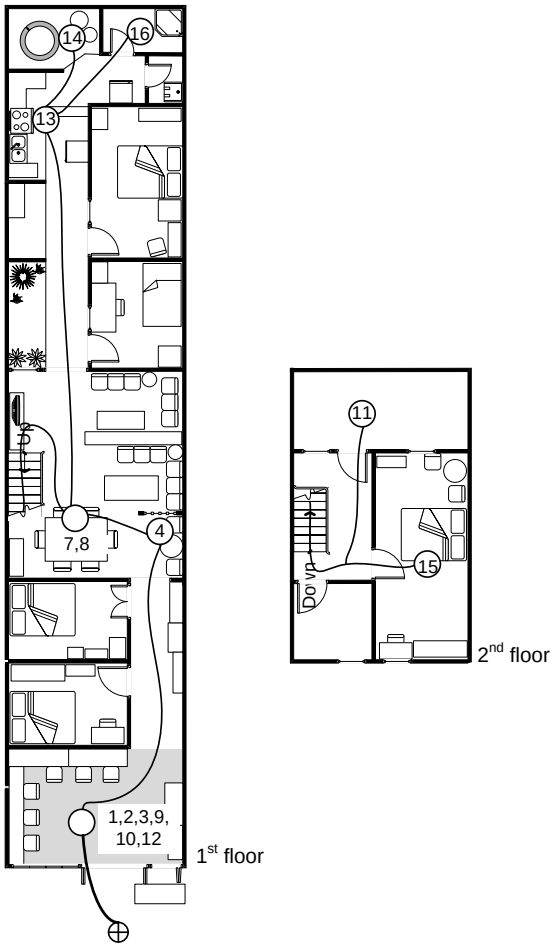
Kind of Activity:

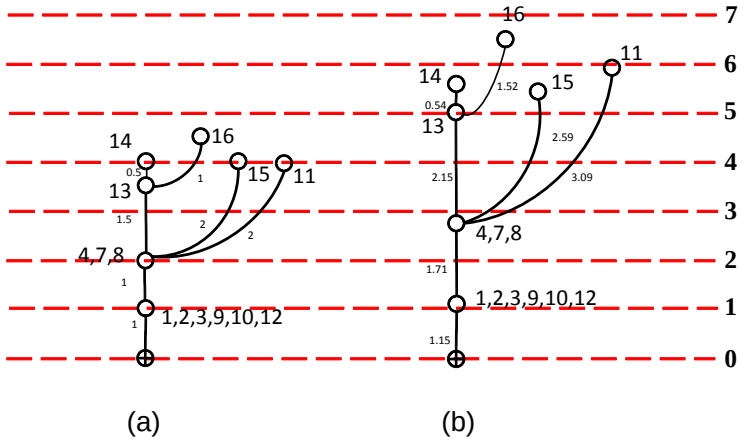
1. Serving customer
2. Storing shop goods
3. Displaying goods
4. Waiting for customer
5. Praying
6. Reading
7. Lunch
8. Watching TV
9. Breakfast
10. Dinner
11. Drying clothes
12. Serving guest
13. Cooking meal
14. Washing clothes
15. Sleeping
16. Bathing

Activity Network of the Chinese Shop House (C-10)

Code: C-10
Gender of interviewee (age): Male (37)

Appendix 2.11





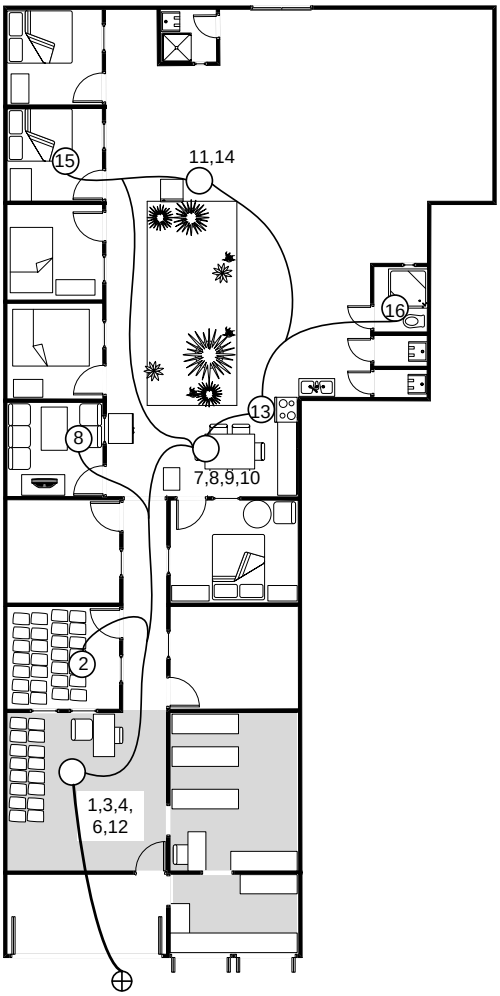
(a) (b)

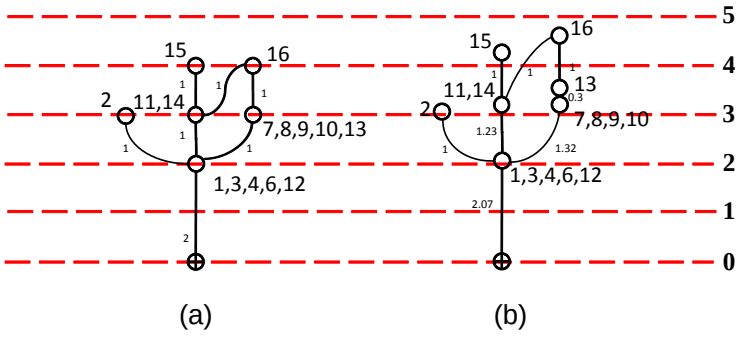
Kind of Activity:
1. Serving customer
2. Storing shop goods
3. Displaying goods
4. Waiting for customer
5. Praying
6. Reading
7. Lunch
8. Watching TV
9. Breakfast
10. Dinner
11. Drying clothes
12. Serving guest
13. Cooking meal
14. Washing clothes
15. Sleeping
16. Bathing

Activity Network of the Chinese Shop House (C-11)

Code: C-11
Gender of interviewee (age): Female (37)

Appendix 2.12



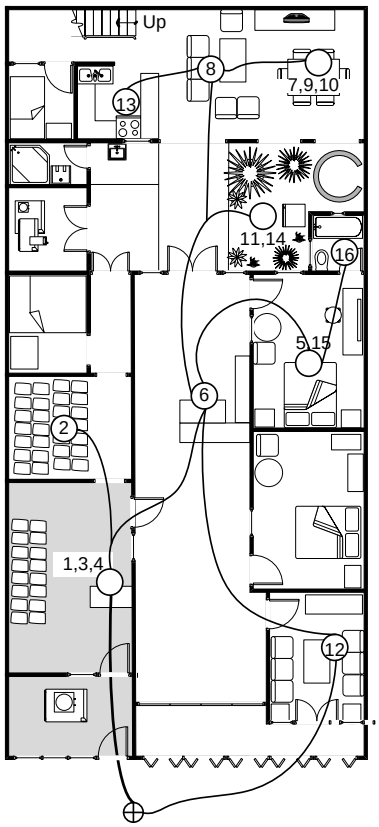


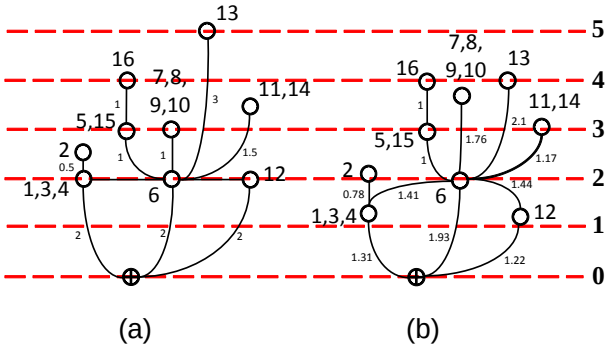
Kind of Activity:
1. Serving customer
2. Storing shop goods
3. Displaying goods
4. Waiting for customer
5. Praying
6. Reading
7. Lunch
8. Watching TV
9. Breakfast
10. Dinner
11. Drying clothes
12. Serving guest
13. Cooking meal
14. Washing clothes
15. Sleeping
16. Bathing

Activity Network of the Chinese Shop House (C-12)

Code: C-12
Gender of interviewee (age): Male (47)

Appendix 2.13



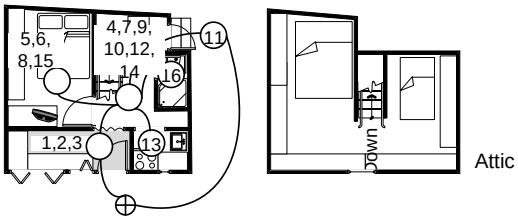


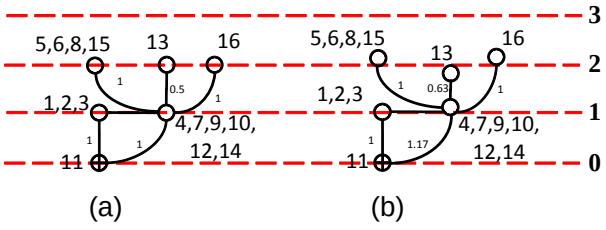
Kind of Activity:
1. Serving customer
2. Storing shop goods
3. Displaying goods
4. Waiting for customer
5. Praying
6. Reading
7. Lunch
8. Watching TV
9. Breakfast
10. Dinner
11. Drying clothes
12. Serving guest
13. Cooking meal
14. Washing clothes
15. Sleeping
16. Bathing

Activity Network of the Chinese Shop House (C-13)

Code: C-13
Gender of interviewee (age): Male (52)

Appendix 2.14





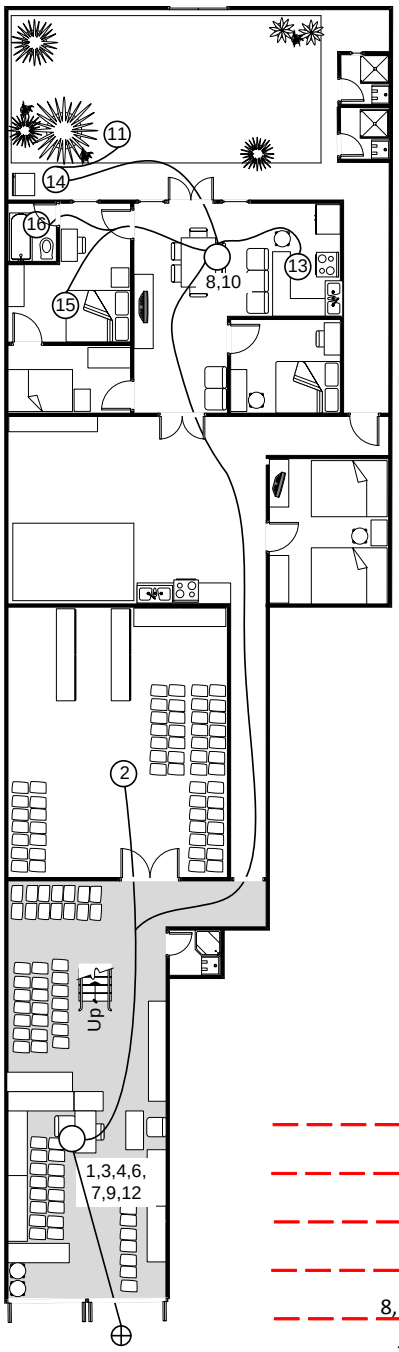
Kind of Activity:
1. Serving customer
2. Storing shop goods
3. Displaying goods
4. Waiting for customer
5. Praying
6. Reading
7. Lunch
8. Watching TV
9. Breakfast
10. Dinner
11. Drying clothes
12. Serving guest
13. Cooking meal
14. Washing clothes
15. Sleeping
16. Bathing

Activity Network of the Chinese Shop House (C-14)

Code: C-14

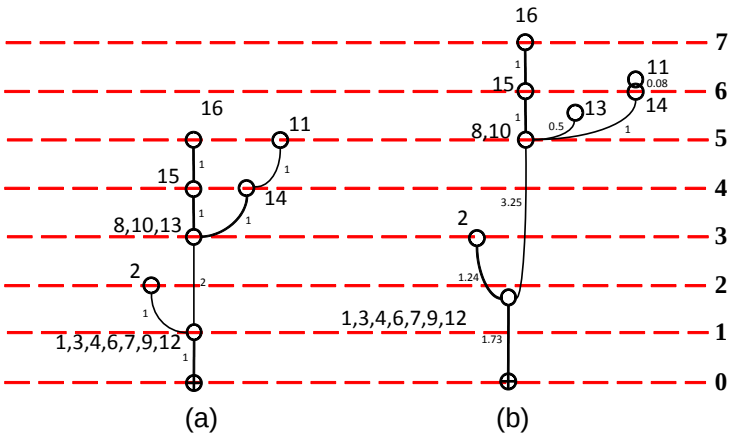
Gender of interviewee (age): Female (45)

Appendix 2.15



Kind of Activity:

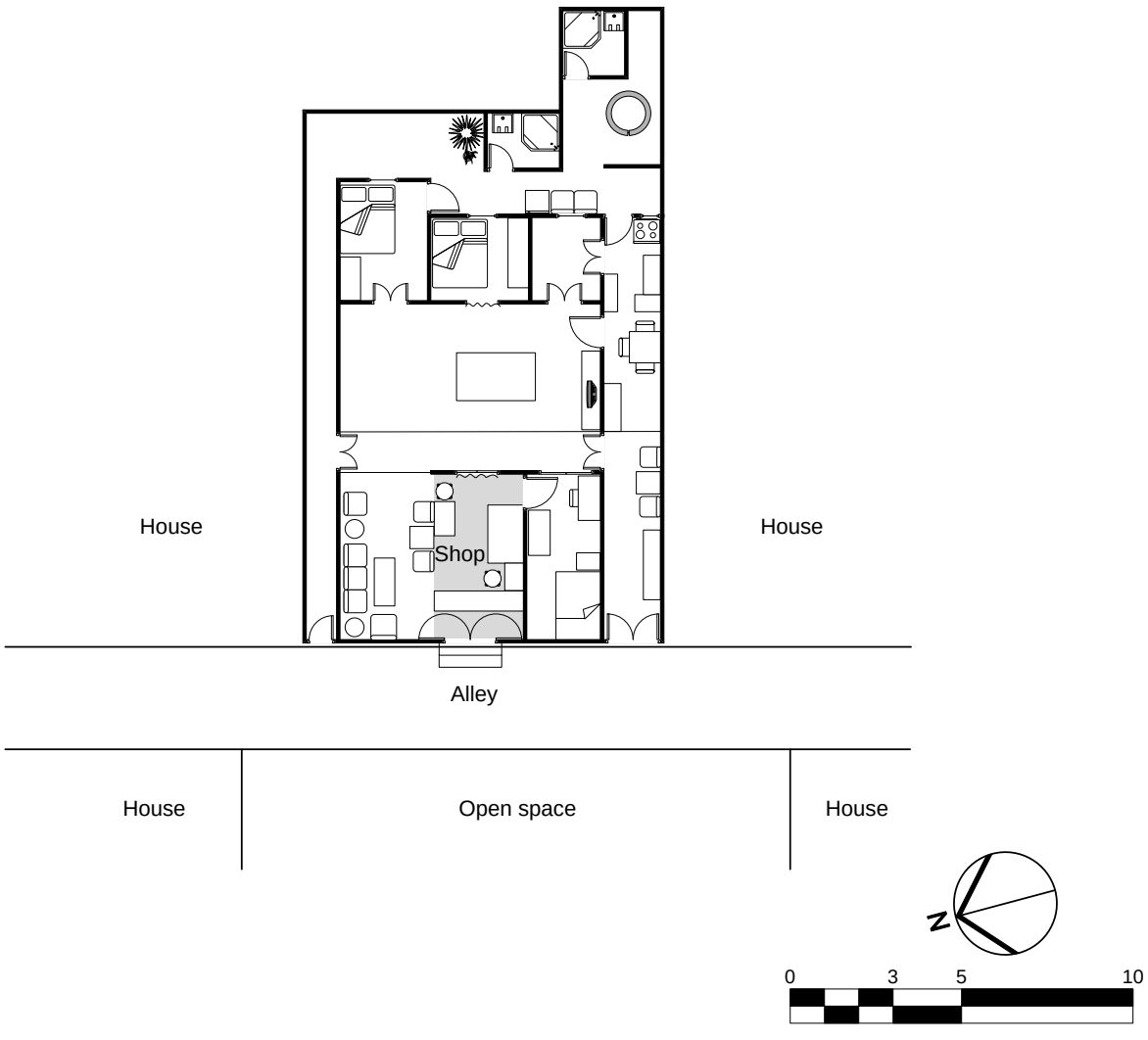
1. Serving customer
2. Storing shop goods
3. Displaying goods
4. Waiting for customer
5. Praying
6. Reading
7. Lunch
8. Watching TV
9. Breakfast
10. Dinner
11. Drying clothes
12. Serving guest
13. Cooking meal
14. Washing clothes
15. Sleeping
16. Bathing



Activity Network of the Chinese Shop House (C-15)

Code: C-15
Gender of interviewee (age): Female (31)

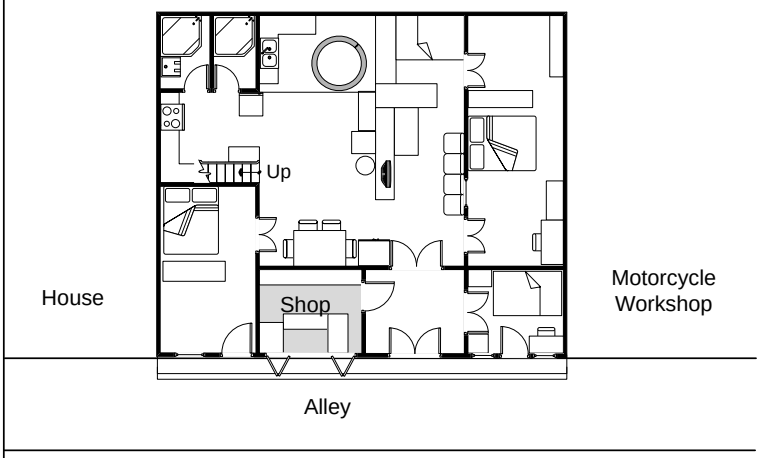
Appendix 3.1

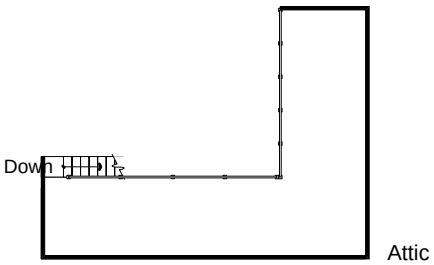


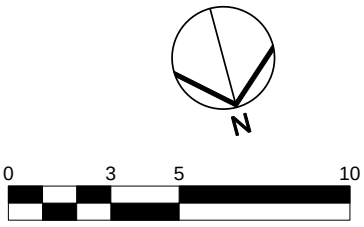
Floor Plan of the Javanese Shop House (J-01)

Household member: 5	Generation: Third	Code: J-01
Type of family: Extended	Location: Facing alley	Number of floor: 1
House style: Built as ordinary house	Open hours: 6:00-20:30	Total floor area (m²): 160.6
Kind of shop goods: Sundry (small scale)		Shop area (m²): 13.1 (8%)
Kind of customer: Passerby, neighbor, within the neighborhood		Front width/total length (m): 10.5/18.6 (prop. 1/1.76)

Appendix 3.2



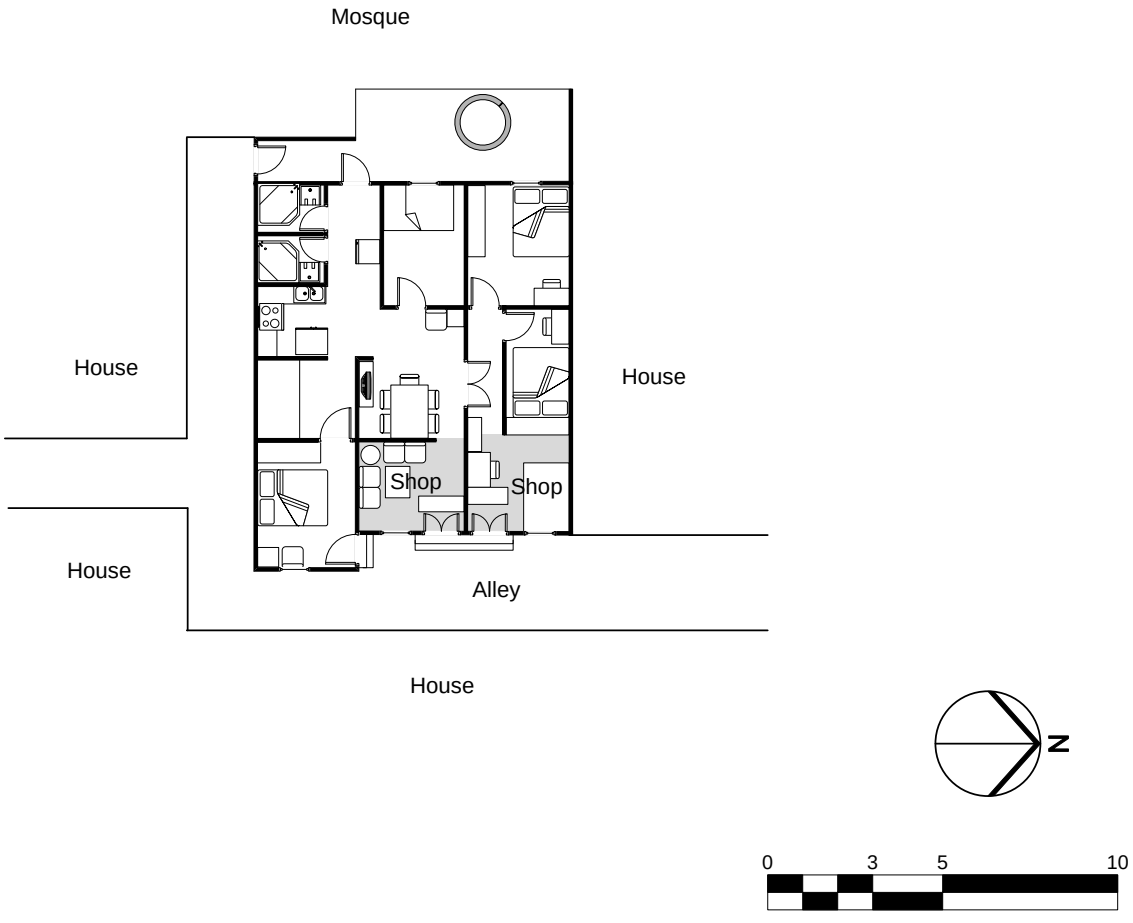




Floor Plan of the Javanese Shop House (J-02)

Household member: 6	Generation: Third	Code: J-02
Type of family: Extended	Location: Facing alley	Number of floor: 1 (+attic)
House style: Built as shop house	Open hours: 6:00-21:00	Total floor area (m²): 147.2
Kind of shop goods: Sundry, phone voucher (small scale)		Shop area (m²): 7.4 (5%)
Kind of customer: Passerby, neighbor, outside neighborhood		Front width/total length (m): 12/10 (prop. 1/0.85)

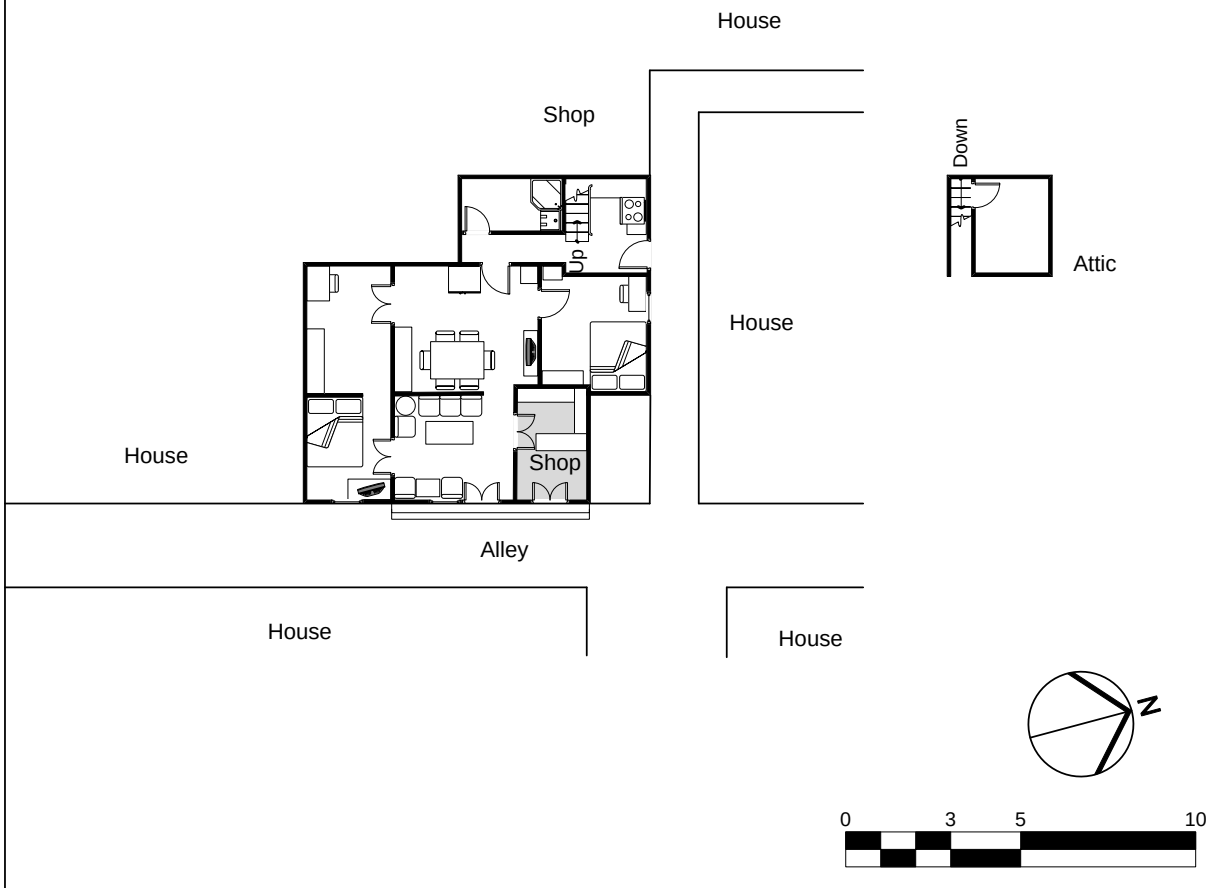
Appendix 3.3



Floor Plan of the Javanese Shop House (J-03)

Household member: 5	Generation: Second	Code: J-03
Type of family: Nuclear	Location: Facing street	Number of floor: 1
House style: Built as shop house	Open hours: 6:00-21:30	Total floor area (m²): 106.7
Kind of shop goods: Soft-drink, cooked food (small scale)		Shop area (m²): 16 (15%)
Kind of customer: Passerby, neighbor		Front width/total length (m): 9/12.4 (prop. 1/1.4)

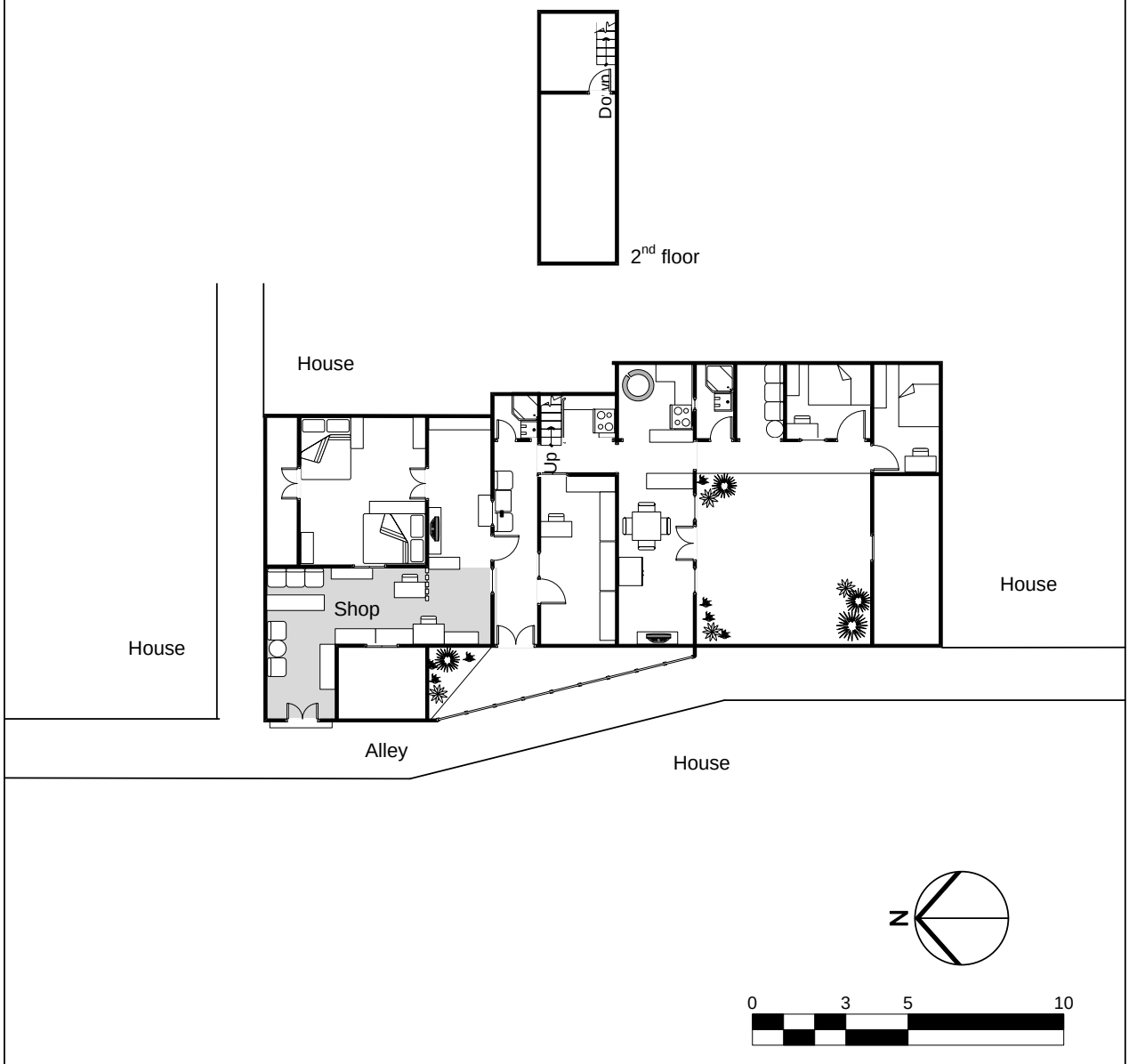
Appendix 3.4



Floor Plan of the Javanese Shop House (J-04)

Household member: 2	Generation: Second	Code: J-04
Type of family: Nuclear	Location: Facing alley	Number of floor: 1 (+attic)
House style: Built as shop house	Open hours: 4:30-19:30	Total floor area (m²): 76.4027
Kind of shop goods: Sundry (small scale)		Shop area (m²): 6.4 (8.3%)
Kind of customer: Passerby, neighbor		Front width/total length (m): 8.2/9.4 (prop. 1/1.15)

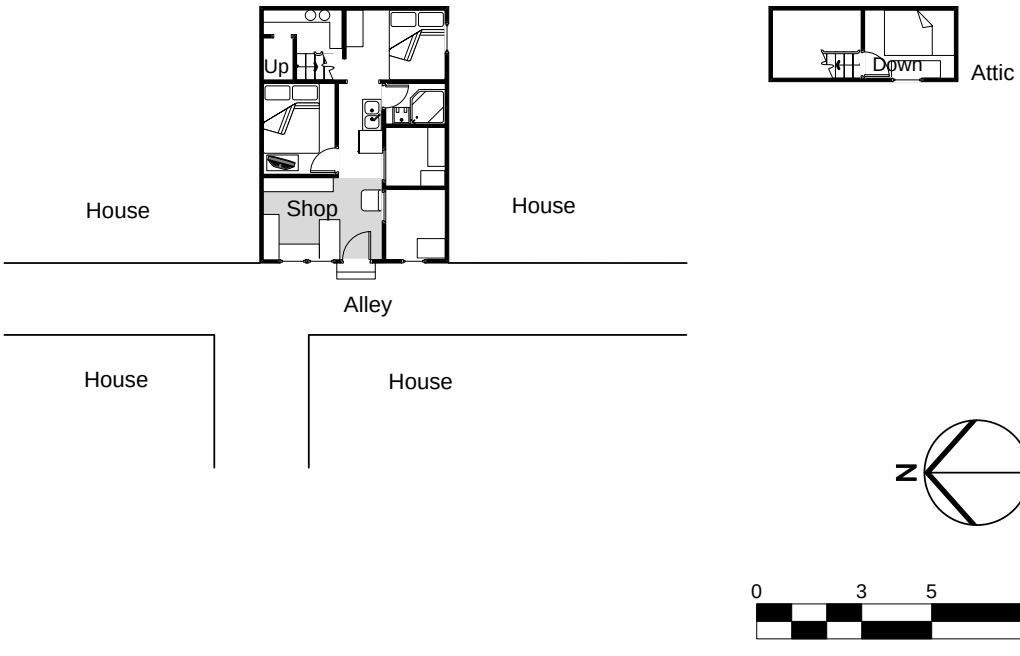
Appendix 3.5



Floor Plan of the Javanese Shop House (J-05)

Household member: 3 (+2 worker no-stay)	Generation: Second	Code: J-05
Type of family: Nuclear	Location: Facing alley	Number of floor: 2
House style: Built as ordinary house	Open hours: 9:00-16:00	Total floor area (m²): 205.4
Kind of shop goods: Boy scout apparel (small scale)		Shop area (m²): 22.9 (11.2%)
Kind of customer: Far-distant patron, outside neighborhood		Front width/total length (m): 21.8/9.9 (prop. 1/0.45)

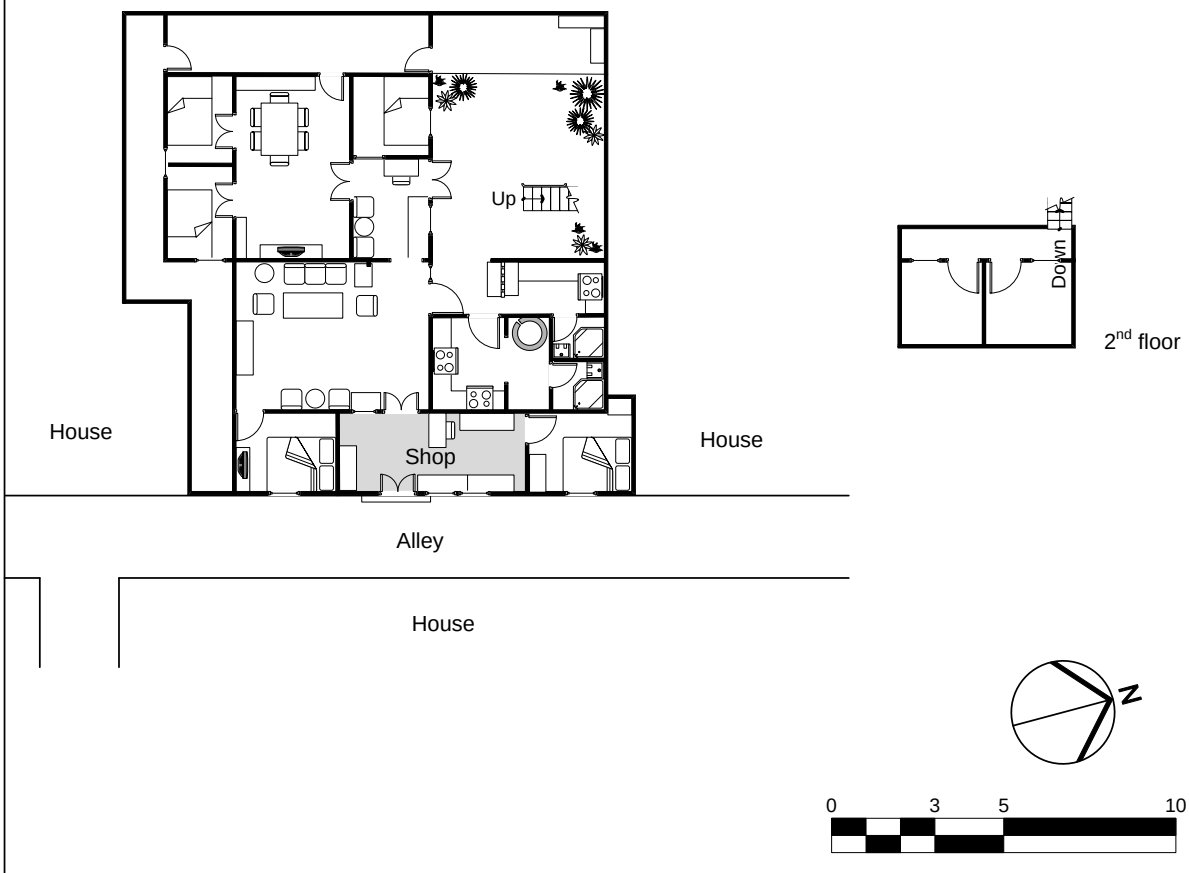
Appendix 3.6



Floor Plan of the Javanese Shop House (J-06)

Household member: 4	Generation: Third	Code: J-06
Type of family: Extended	Location: Facing alley	Number of floor: 1 (+attic)
House style: Built as ordinary house	Open hours: 6:30-21:00	Total floor area (m²): 40.5
Kind of shop goods: Cooked food, TV service (small scale)		Shop area (m²): 7.97 (19.7%)
Kind of customer: Lodger, neighbor, within the neighborhood		Front width/total length (m): 5.4/7.34 (prop. 1/1.36)

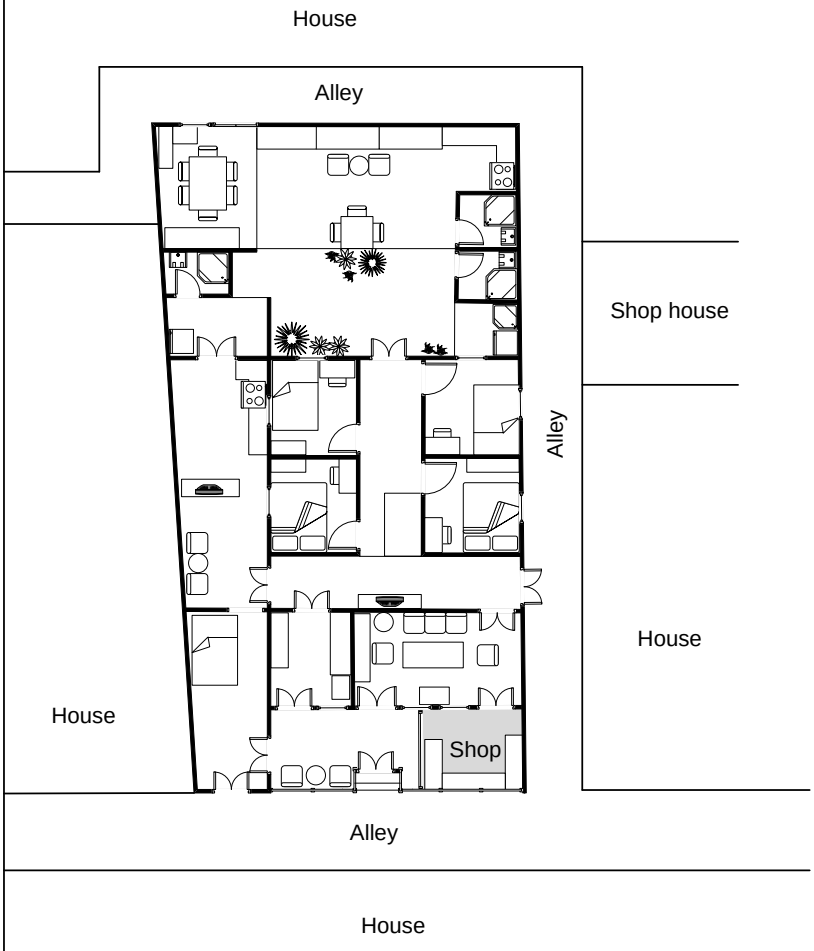
Appendix 3.7

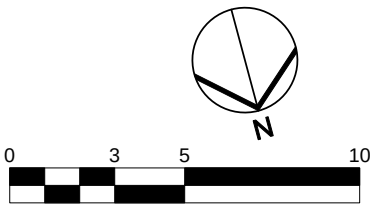


Floor Plan of the Javanese Shop House (J-07)

Household member: 4	Generation: Second	Code: J-07
Type of family: Extended	Location: Facing alley	Number of floor: 2
House style: Built as ordinary house	Open hours: 5:30-18:00	Total floor area (m²): 191.8
Kind of shop goods: Sewing service, gas tube, phone voucher (small to medium scale)		Shop area (m²): 12.3 (6.4%)
Kind of customer: Passerby, neighbor, within the neighborhood		Front width/total length (m): 13/14 (prop. 1/1.08)

Appendix 3.8

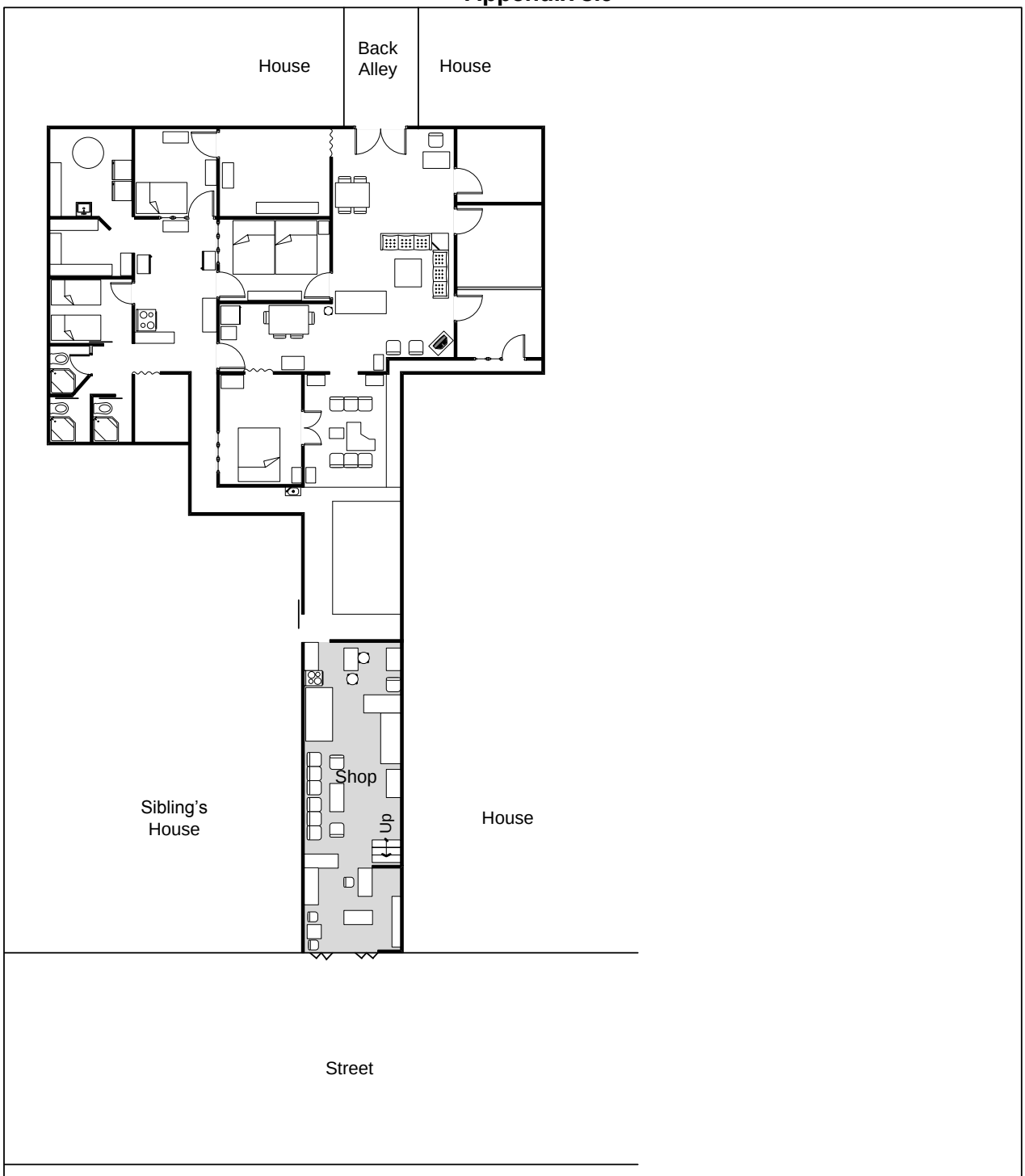




Floor Plan of the Javanese Shop House (J-08)

Household member: 5	Generation: Second	Code: J-08
Type of family: Extended	Location: Facing alley	Number of floor: 1
House style: Built as ordinary house	Open hours: 9:00-18:30	Total floor area (m²): 177.6
Kind of shop goods: Woman's clothing & apparel (small to medium scale)		Shop area (m²): 6.5 (3.6%)
Kind of customer: Lodger, stranger, neighbor		Front width/total length (m): 9.5/19.2 (prop. 1/2)

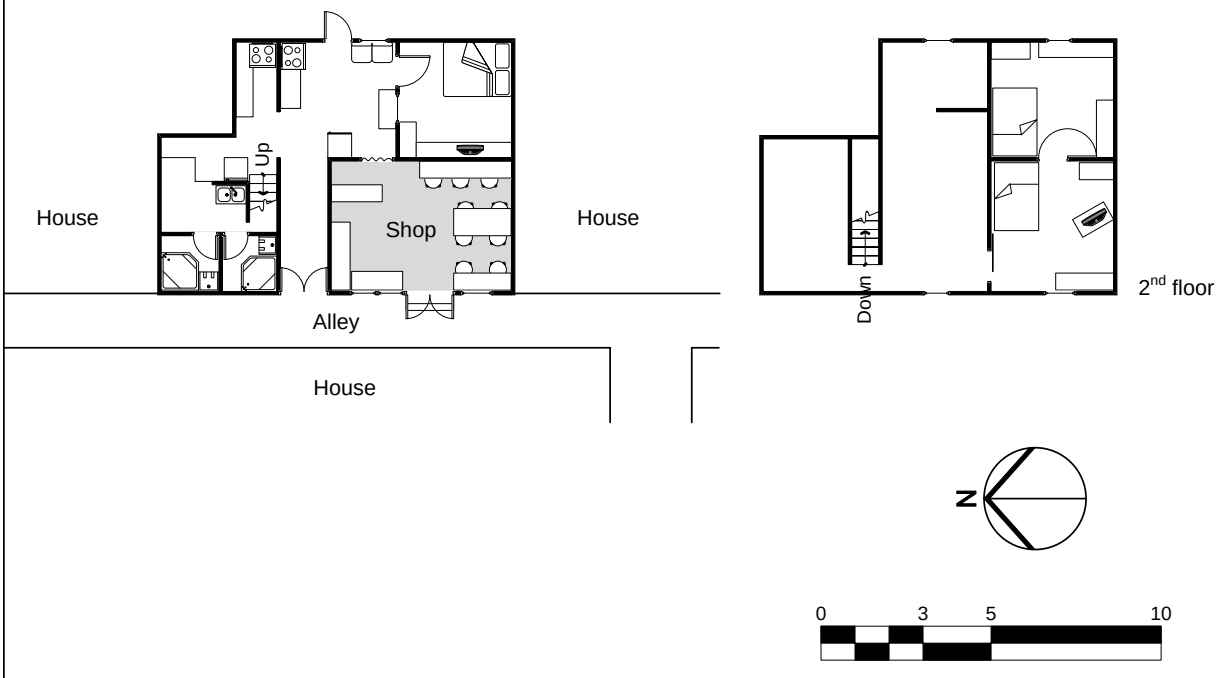
Appendix 3.9



Floor Plan of the Javanese Shop House (J-09)

Household member: 2	Generation: Second	Code: J-09
Type of family: Extended	Location: Facing street	Number of floor: 1 (+ attic)
House style: Built as shop house	Open hours: 9:00-17:00	Total floor area (m²): 243.18
Kind of shop goods: Sundry, sewing service, woman's clothing (small scale)		Shop area (m²): 37.06 (3.6%)
Kind of customer: Neighbor, outside neighborhood, far-distant friend		Front width/total length (m): 3.6/29.3 (prop. 1/8.1)

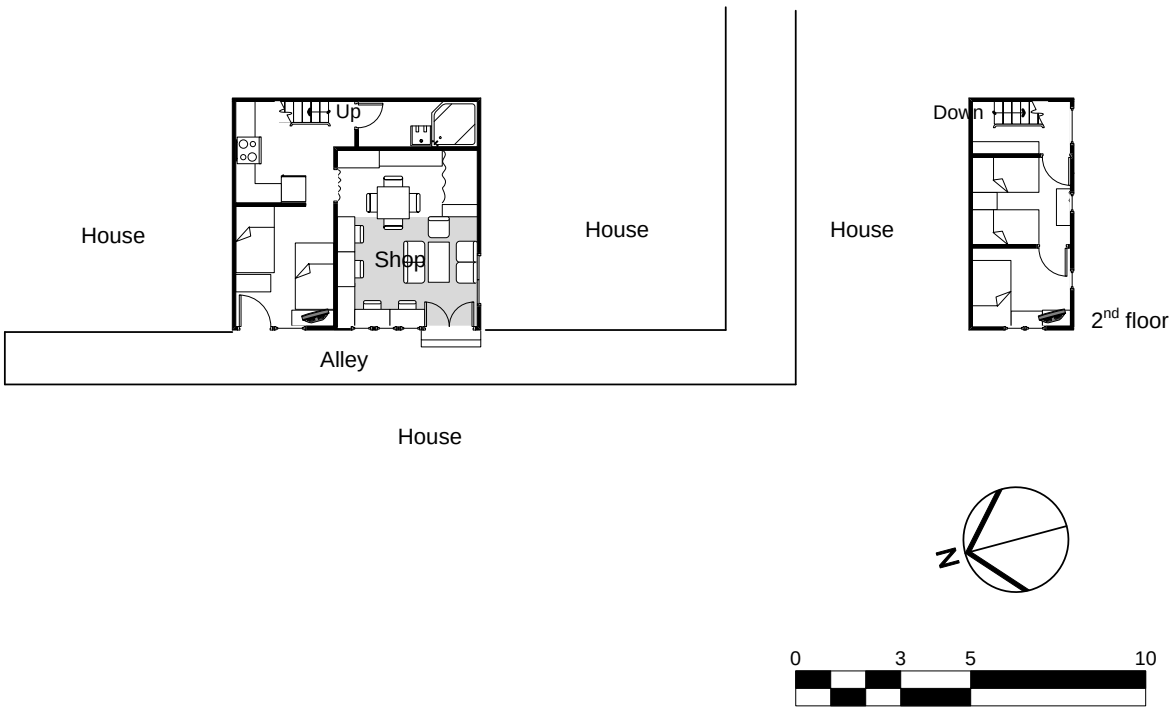
Appendix 3.10



Floor Plan of the Javanese Shop House (J-10)

Household member: 5	Generation: Second	Code: J-10
Type of family: Nuclear	Location: Facing alley	Number of floor: 2
House style: Built as shop house	Open hours: 9:00-20:00	Total floor area (m²): 142.3
Kind of shop goods: Cooked food (small scale)		Shop area (m²): 20.4 (14.3%)
Kind of customer: Outside & within neighborhood		Front width/total length (m): 10.5/7.5 (prop. 1/0.71)

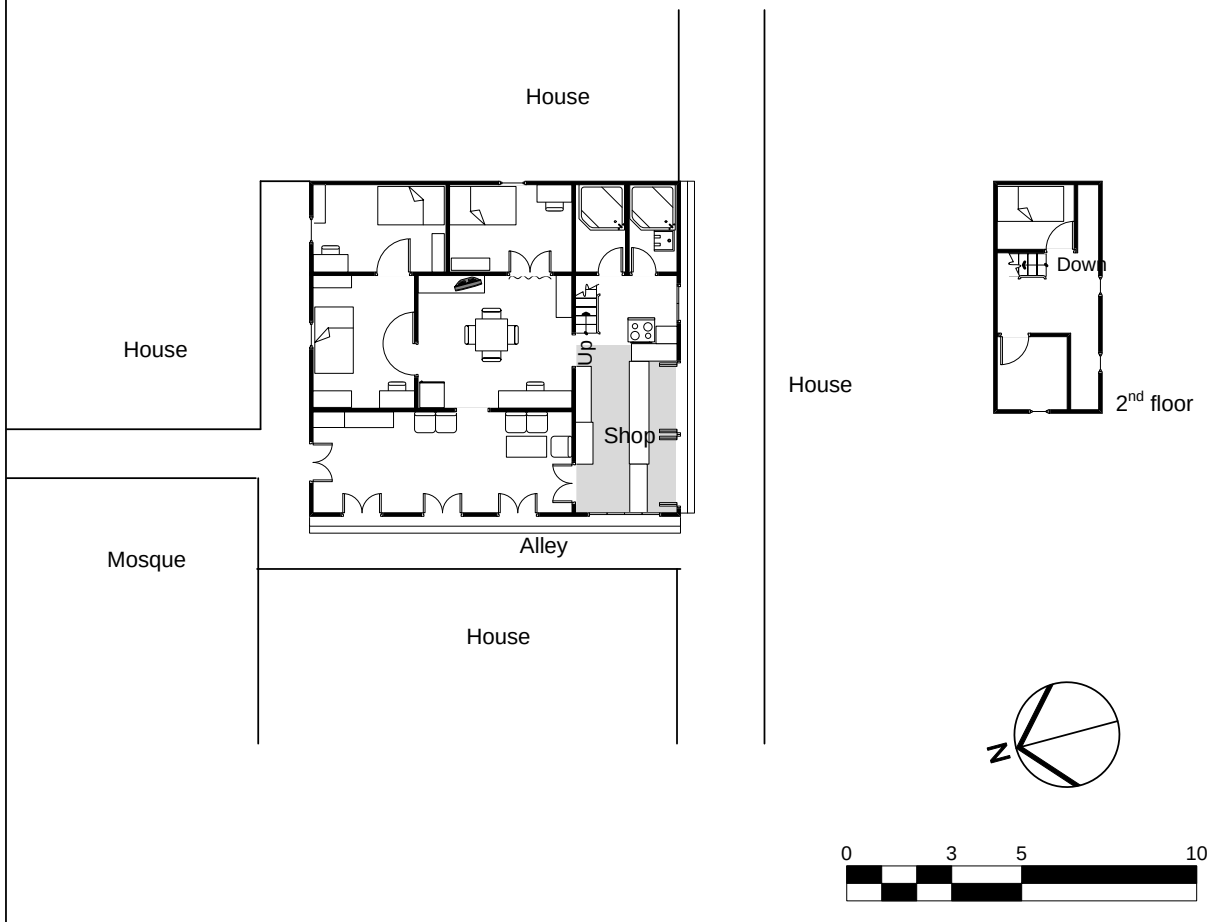
Appendix 3.11



Floor Plan of the Javanese Shop House (J-11)

Household member: 2	Generation: Second	Code: J-11
Type of family: Nuclear	Location: Facing alley	Number of floor: 2
House style: Built as ordinary house	Open hours: 5:30-18:00	Total floor area (m²): 68.8
Kind of shop goods: Typing & printing service (small to medium scale)		Shop area (m²): 12.6 (18.3%)
Kind of customer: Far-distant friend, within the neighborhood		Front width/total length (m): 7.1/6.64 (prop. 1/0.94)

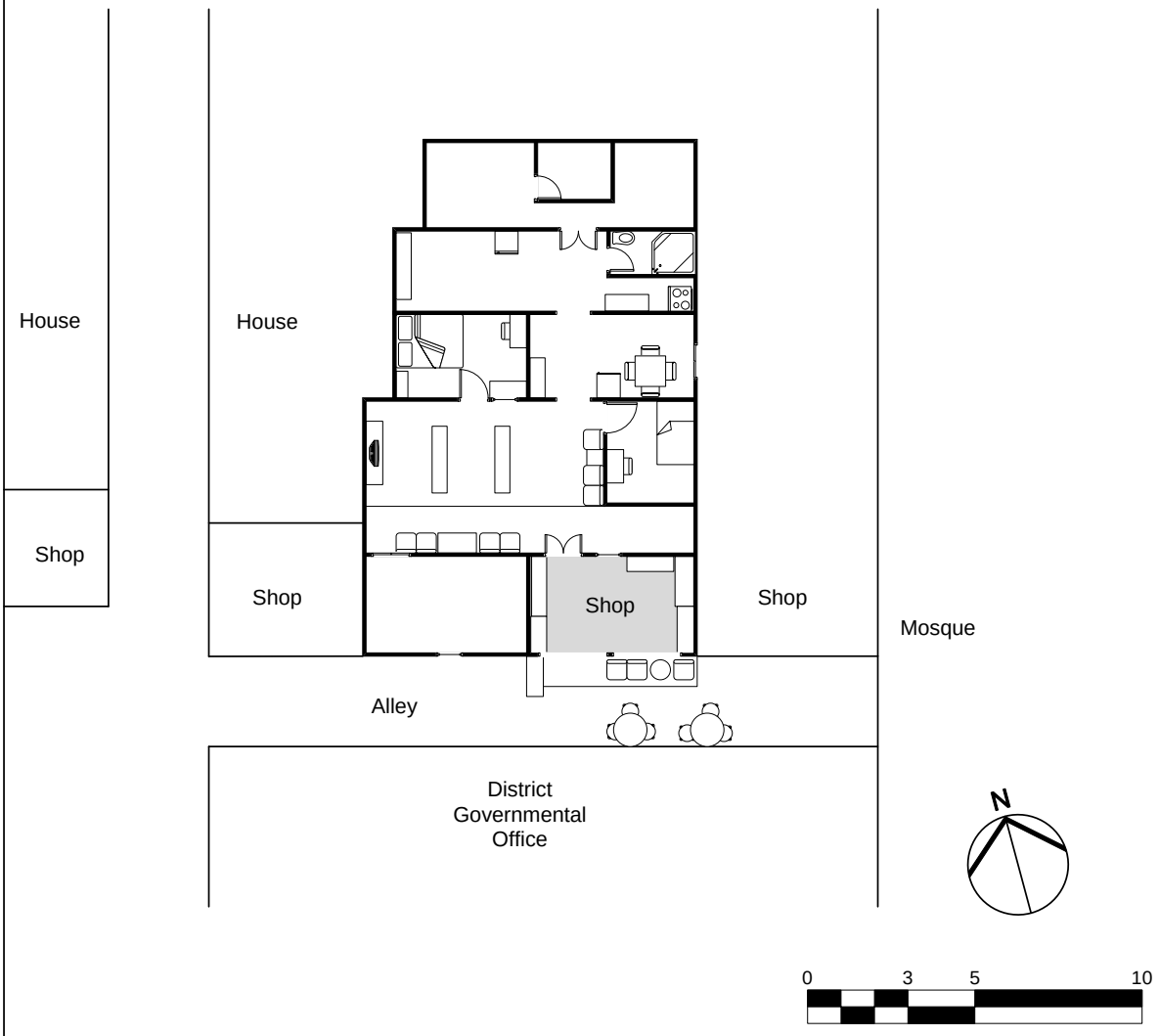
Appendix 3.12



Floor Plan of the Javanese Shop House (J-12)

Household member: 4	Generation: Third	Code: J-12
Type of family: Nuclear	Location: Facing alley	Number of floor: 2
House style: Built as shop house	Open hours: 5:00-21:00	Total floor area (m²): 111.94
Kind of shop goods: Sundry, everyday necessity (small scale)		Shop area (m²): 13.9 (12.4%)
Kind of customer: Passerby, within the neighborhood		Front width/total length (m): 10.6/9.6 (prop. 1/0.91)

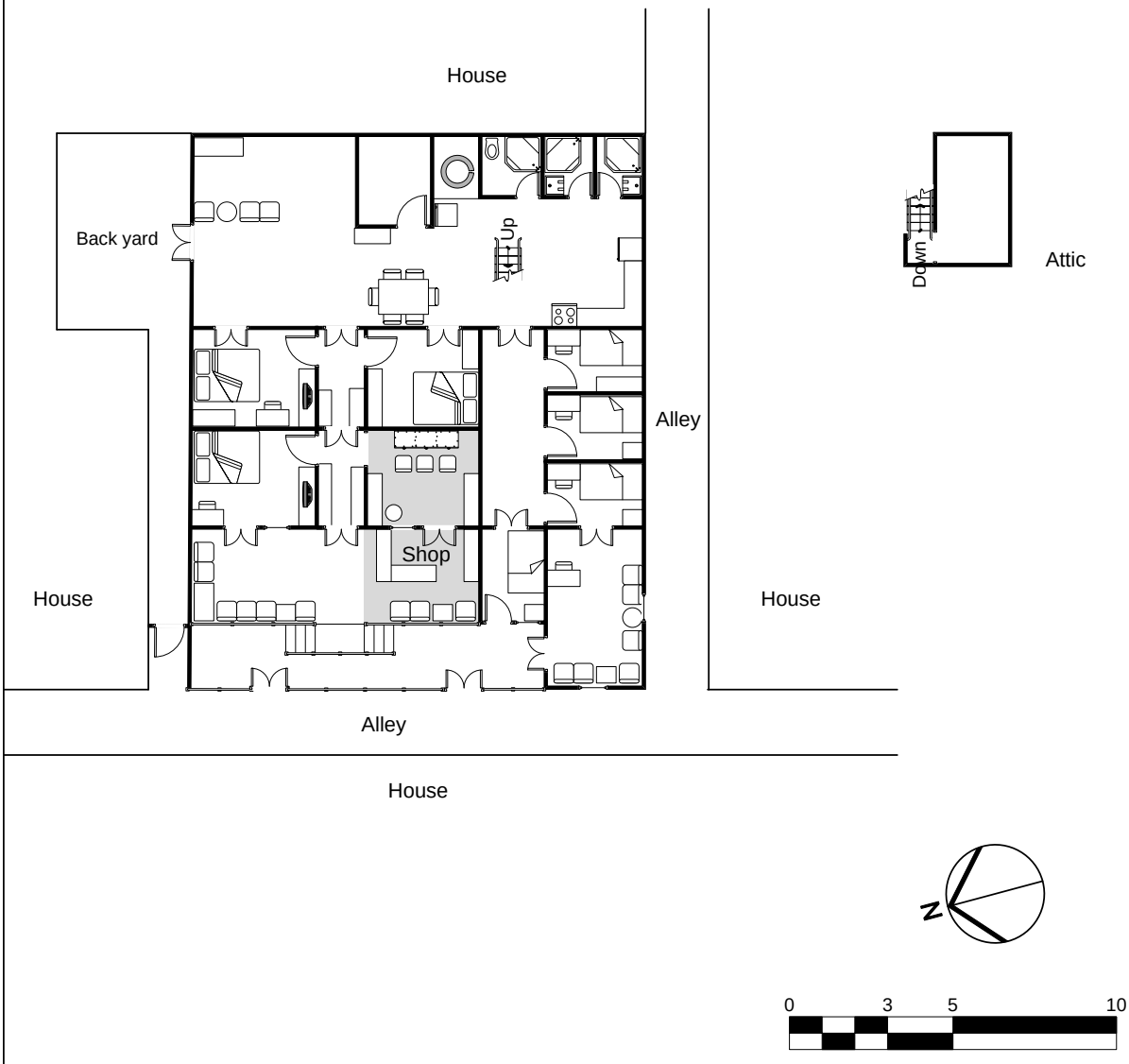
Appendix 3.13



Floor Plan of the Javanese Shop House (J-13)

Household member: 2	Generation: Second	Code: J-13
Type of family: Nuclear	Location: Facing alley	Number of floor: 1
House style: Built as ordinary house	Open hours: 11:00-19:00	Total floor area (m²): 121.4
Kind of shop goods: Cooked food & soft-drink (small scale)		Shop area (m²): 14.2 (11.7%)
Kind of customer: Neighbor, within neighborhood		Front width/total length (m): 10/15.5 (prop. 1/1.55)

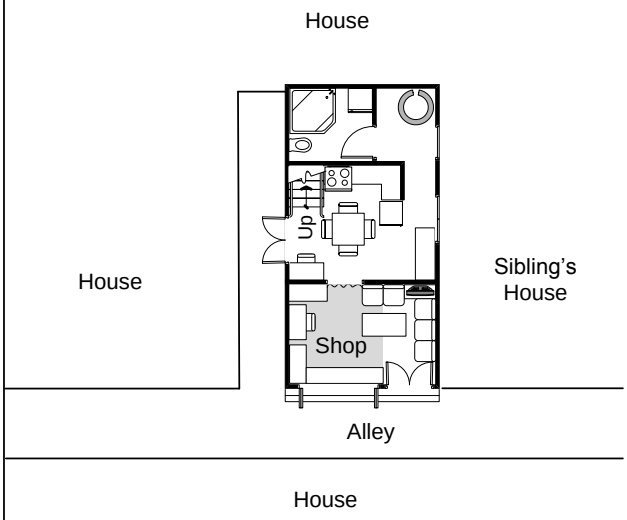
Appendix 3.14

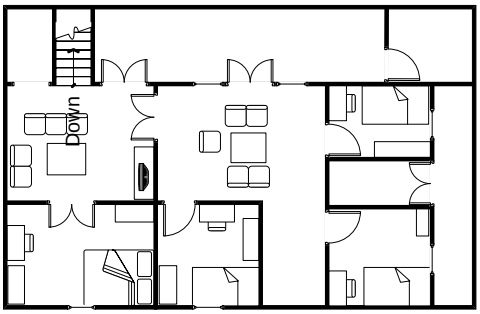


Floor Plan of the Javanese Shop House (J-14)

Household member: 5	Generation: Second	Code: J-14
Type of family: Nuclear	Location: Facing alley	Number of floor: 1 (+attic)
House style: Built as ordinary house	Open hours: 8:00-20:00	Total floor area (m²): 209.4
Kind of shop goods: Woman's clothes, apparel, & beauty salon (small scale)		Shop area (m²): 19.9 (9.5%)
Kind of customer: Far-distant friend, within neighborhood		Front width/total length (m): 14/17 (prop. 1/1.21)

Appendix 3.15



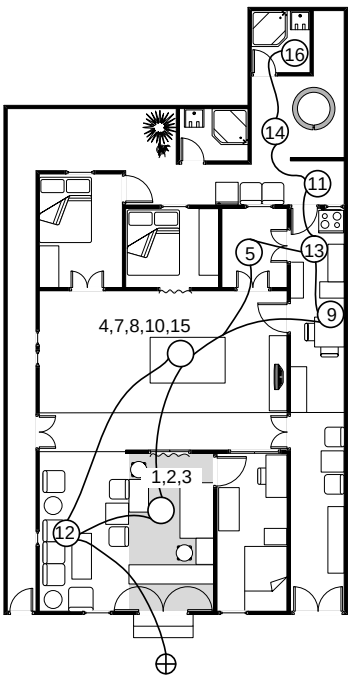


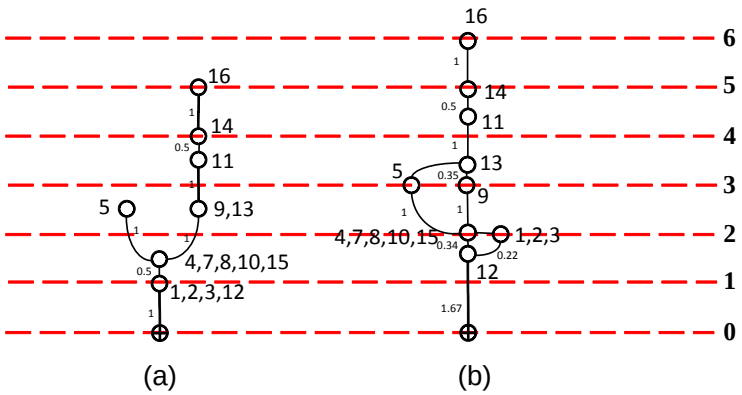
2nd floor

Floor Plan of the Javanese Shop House (J-15)

Household member: 3	Generation: Third	Code: J-15
Type of family: Nuclear	Location: Facing alley	Number of floor: 2
House style: Built as ordinary house	Open hours: 4:00-21:00	Total floor area (m²): 142.1
Kind of shop goods: Sundry & sewing clothes (small scale)		Shop area (m²): 7.8 (5.5%)
Kind of customer: Neighbor		Front width/total length (m): 13.5/8.7 (prop. 1/0.64)

Appendix 4.1





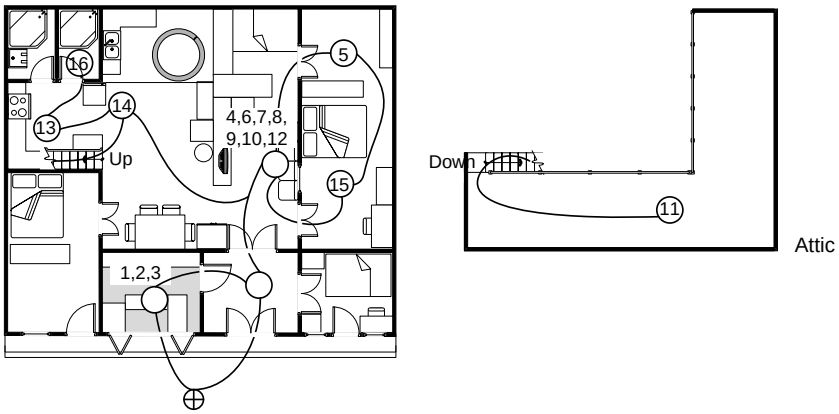
Kind of Activity:

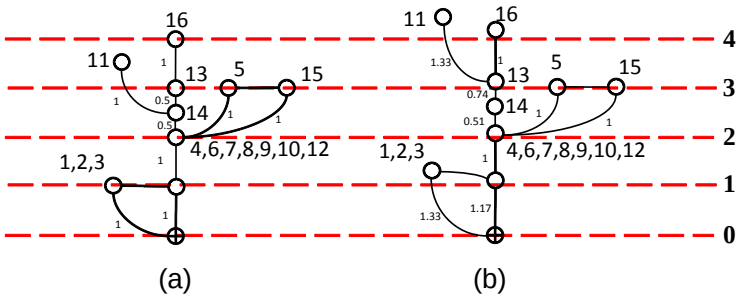
1. Serving customer
2. Storing shop goods
3. Displaying goods
4. Waiting for customer
5. Praying
6. Reading
7. Lunch
8. Watching TV
9. Breakfast
10. Dinner
11. Drying clothes
12. Serving guest
13. Cooking meal
14. Washing clothes
15. Sleeping
16. Bathing

Activity Network of the Javanese Shop House (J-01)

Code: J-01
Gender of interviewee (age): Female (63)

Appendix 4.2





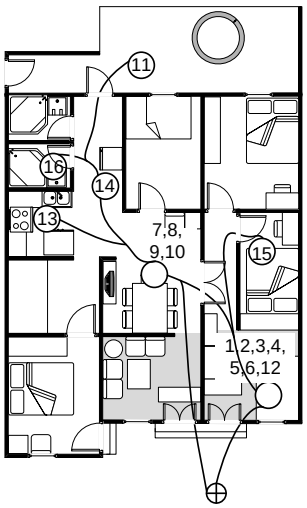
Kind of Activity:

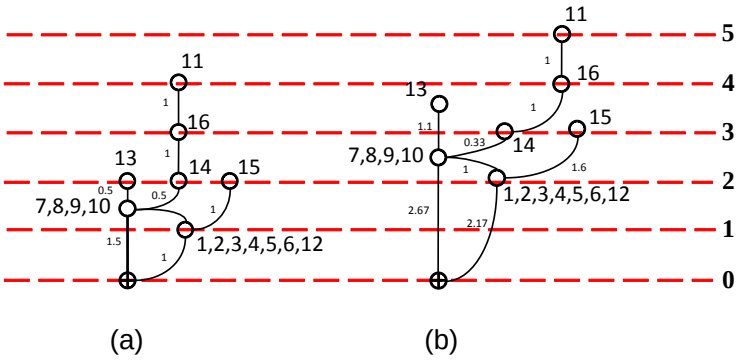
1. Serving customer
2. Storing shop goods
3. Displaying goods
4. Waiting for customer
5. Praying
6. Reading
7. Lunch
8. Watching TV
9. Breakfast
10. Dinner
11. Drying clothes
12. Serving guest
13. Cooking meal
14. Washing clothes
15. Sleeping
16. Bathing

Activity Network of the Javanese Shop House (J-02)

Code: J-02
Gender of interviewee (age): Female (39)

Appendix 4.3



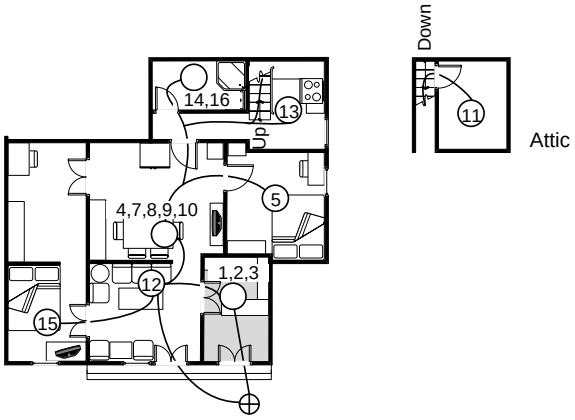


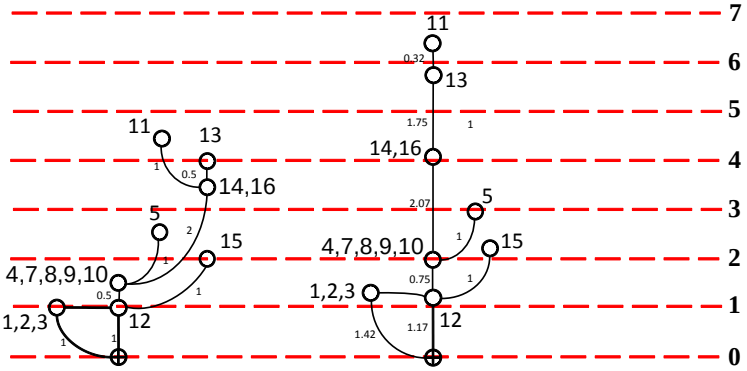
Kind of Activity:
1. Serving customer
2. Storing shop goods
3. Displaying goods
4. Waiting for customer
5. Praying
6. Reading
7. Lunch
8. Watching TV
9. Breakfast
10. Dinner
11. Drying clothes
12. Serving guest
13. Cooking meal
14. Washing clothes
15. Sleeping
16. Bathing

Activity Network of the Javanese Shop House (J-03)

Code: J-03
Gender of interviewee (age): Female (55)

Appendix 4.4



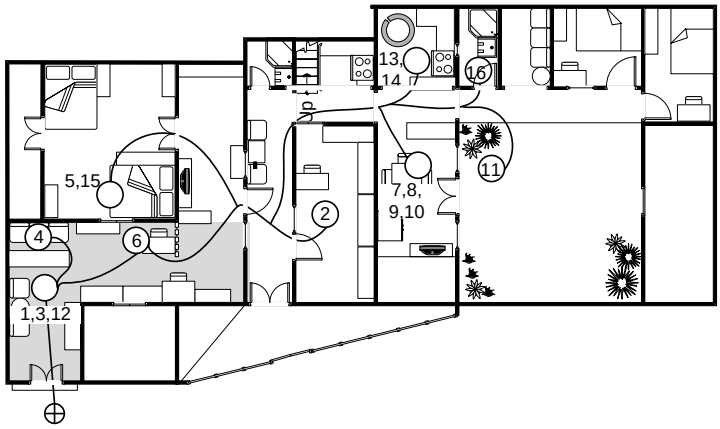


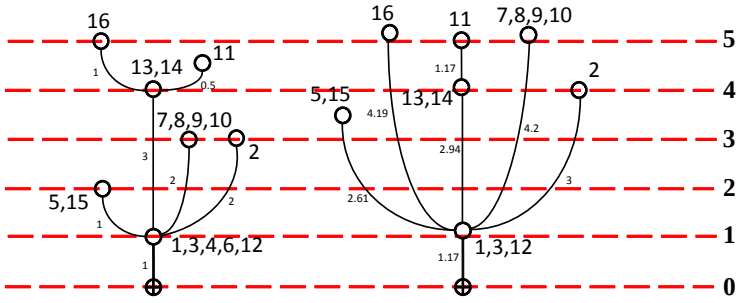
Kind of Activity:
1. Serving customer
2. Storing shop goods
3. Displaying goods
4. Waiting for customer
5. Praying
6. Reading
7. Lunch
8. Watching TV
9. Breakfast
10. Dinner
11. Drying clothes
12. Serving guest
13. Cooking meal
14. Washing clothes
15. Sleeping
16. Bathing

Activity Network of the Javanese Shop House (J-04)

Code: J-04
Gender of interviewee (age): Female (56)

Appendix 4.5



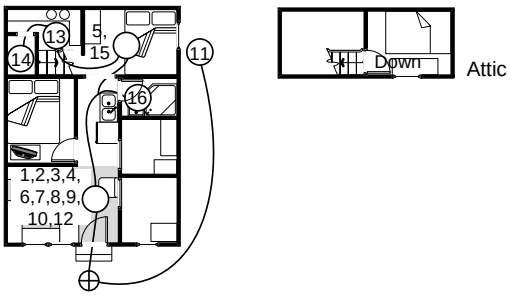


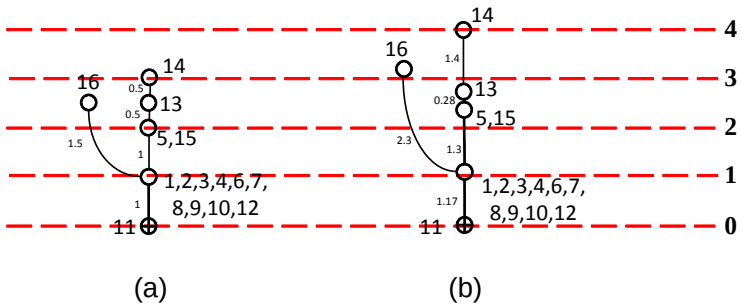
Kind of Activity:
1. Serving customer
2. Storing shop goods
3. Displaying goods
4. Waiting for customer
5. Praying
6. Reading
7. Lunch
8. Watching TV
9. Breakfast
10. Dinner
11. Drying clothes
12. Serving guest
13. Cooking meal
14. Washing clothes
15. Sleeping
16. Bathing

Activity Network of the Javanese Shop House (J-05)

Code: J-05
Gender of interviewee (age): Female (68)

Appendix 4.6





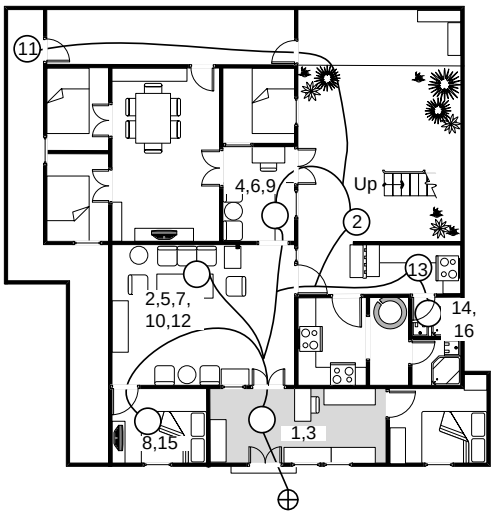
(a) (b)

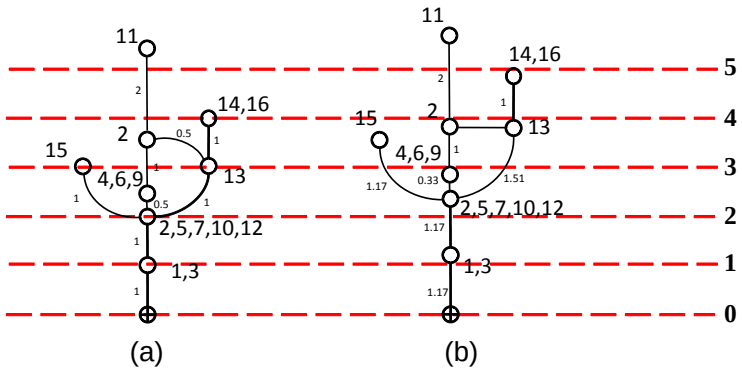
Kind of Activity:
1. Serving customer
2. Storing shop goods
3. Displaying goods
4. Waiting for customer
5. Praying
6. Reading
7. Lunch
8. Watching TV
9. Breakfast
10. Dinner
11. Drying clothes
12. Serving guest
13. Cooking meal
14. Washing clothes
15. Sleeping
16. Bathing

Activity Network of the Javanese Shop House (J-06)

Code: J-06
Gender of interviewee (age): Male (53)

Appendix 4.7



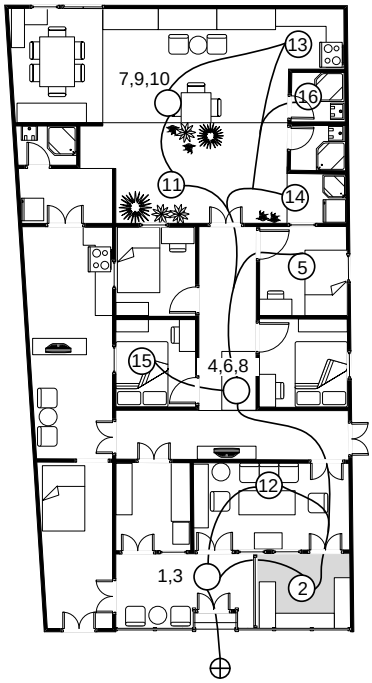


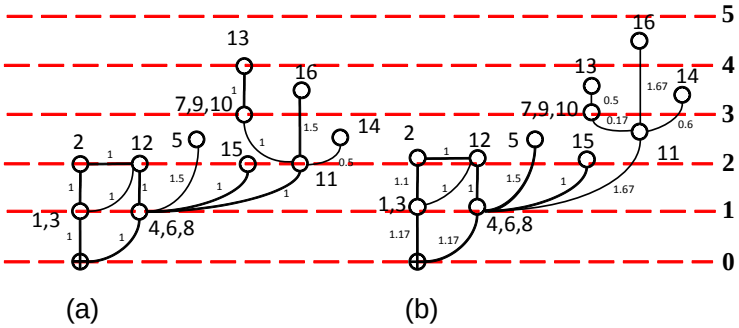
Kind of Activity:
1. Serving customer
2. Storing shop goods
3. Displaying goods
4. Waiting for customer
5. Praying
6. Reading
7. Lunch
8. Watching TV
9. Breakfast
10. Dinner
11. Drying clothes
12. Serving guest
13. Cooking meal
14. Washing clothes
15. Sleeping
16. Bathing

Activity Network of the Javanese Shop House (J-07)

Code: J-07
Gender of interviewee (age): Male (58)

Appendix 4.8





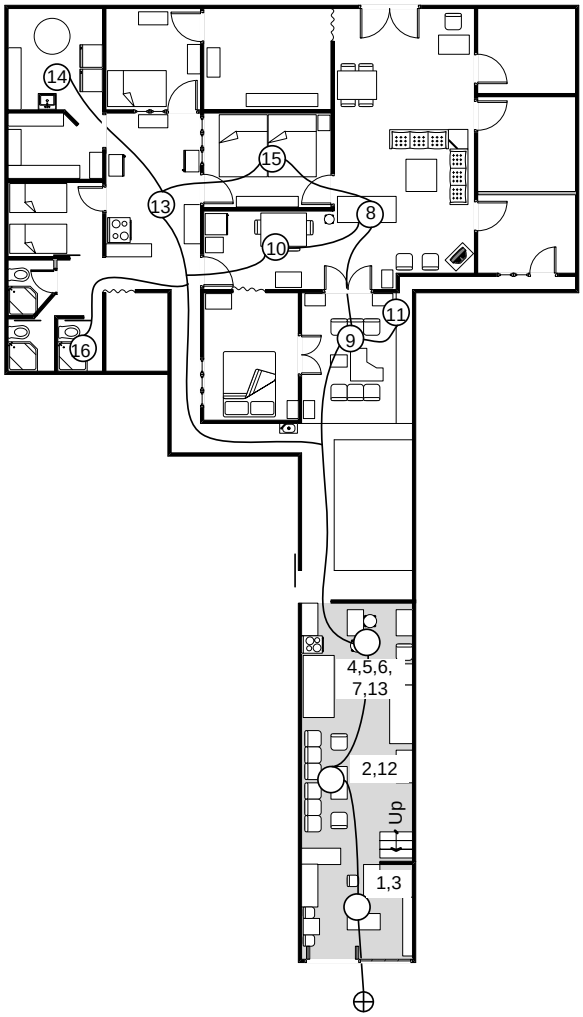
Kind of Activity:

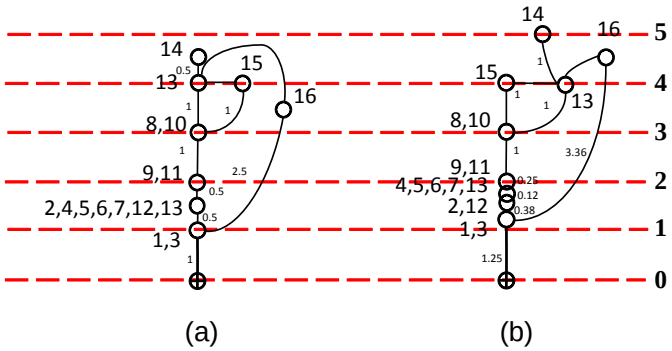
1. Serving customer
2. Storing shop goods
3. Displaying goods
4. Waiting for customer
5. Praying
6. Reading
7. Lunch
8. Watching TV
9. Breakfast
10. Dinner
11. Drying clothes
12. Serving guest
13. Cooking meal
14. Washing clothes
15. Sleeping
16. Bathing

Activity Network of the Javanese Shop House (J-08)

Code: J-08
Gender of interviewee (age): Female (56)

Appendix 4.9





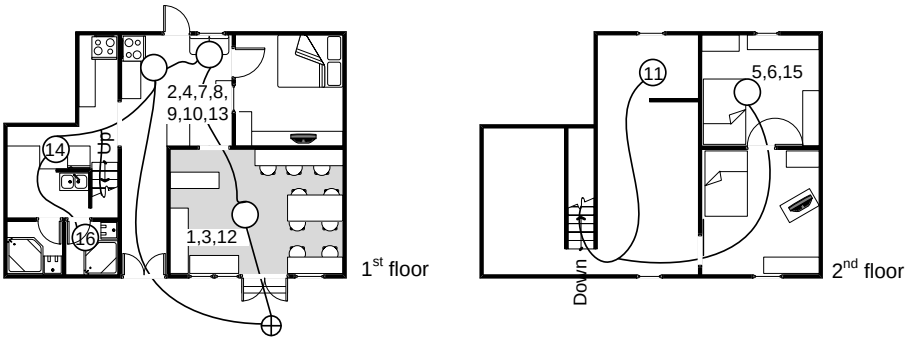
Kind of Activity:

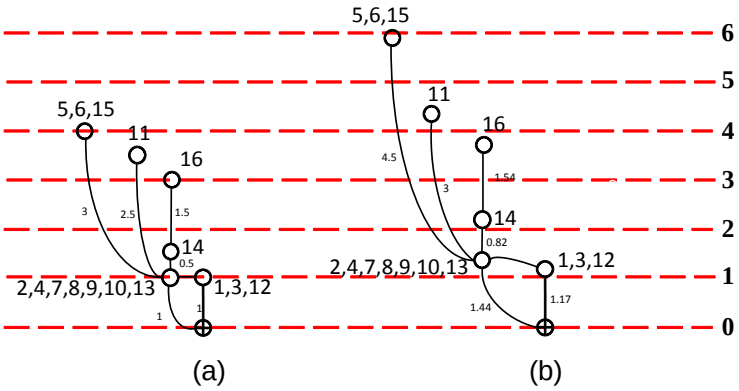
1. Serving customer
2. Storing shop goods
3. Displaying goods
4. Waiting for customer
5. Praying
6. Reading
7. Lunch
8. Watching TV
9. Breakfast
10. Dinner
11. Drying clothes
12. Serving guest
13. Cooking meal
14. Washing clothes
15. Sleeping
16. Bathing

Activity Network of the Javanese Shop House (J-09)

Code: J-09
Gender of interviewee (age): Female (66)

Appendix 4.10





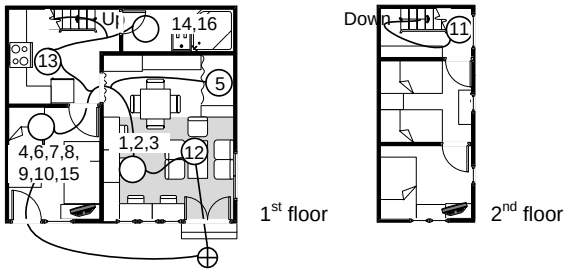
Kind of Activity:

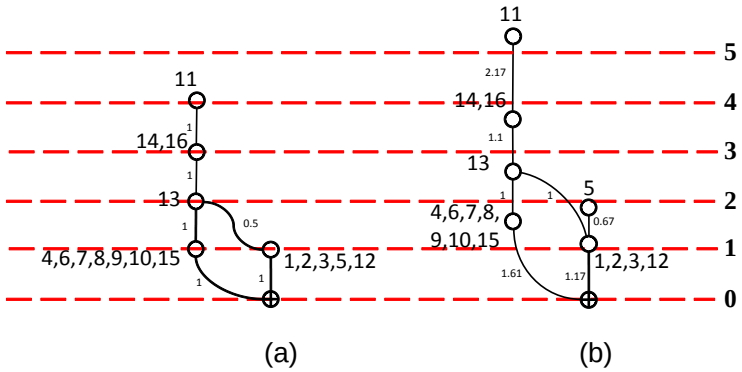
1. Serving customer
2. Storing shop goods
3. Displaying goods
4. Waiting for customer
5. Praying
6. Reading
7. Lunch
8. Watching TV
9. Breakfast
10. Dinner
11. Drying clothes
12. Serving guest
13. Cooking meal
14. Washing clothes
15. Sleeping
16. Bathing

Activity Network of the Javanese Shop House (J-10)

Code: J-10
Gender of interviewee (age): Male (47)

Appendix 4.11



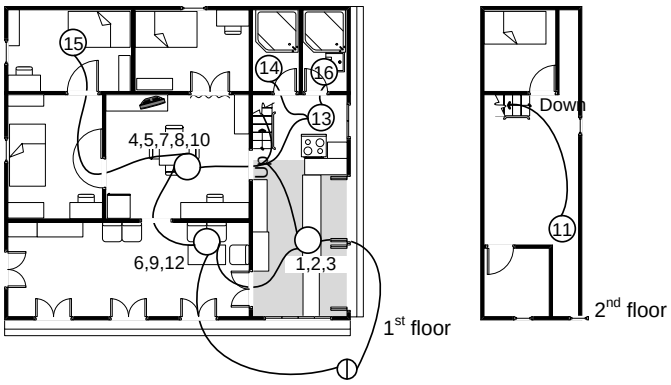


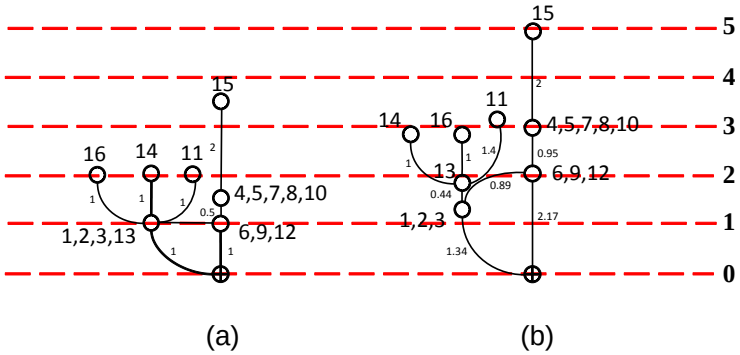
Kind of Activity:
1. Serving customer
2. Storing shop goods
3. Displaying goods
4. Waiting for customer
5. Praying
6. Reading
7. Lunch
8. Watching TV
9. Breakfast
10. Dinner
11. Drying clothes
12. Serving guest
13. Cooking meal
14. Washing clothes
15. Sleeping
16. Bathing

Activity Network of the Javanese Shop House (J-11)

Code: J-11
Gender of interviewee (age): Female (38)

Appendix 4.12





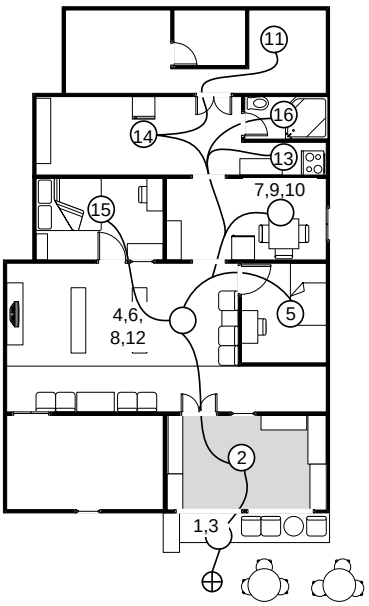
Kind of Activity:

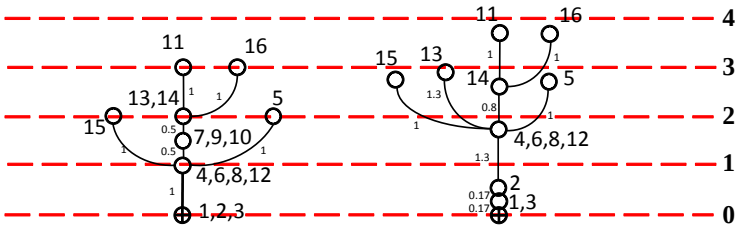
1. Serving customer
2. Storing shop goods
3. Displaying goods
4. Waiting for customer
5. Praying
6. Reading
7. Lunch
8. Watching TV
9. Breakfast
10. Dinner
11. Drying clothes
12. Serving guest
13. Cooking meal
14. Washing clothes
15. Sleeping
16. Bathing

Activity Network of the Javanese Shop House (J-12)

Code: J-12
Gender of interviewee (age): Female (34)

Appendix 4.13



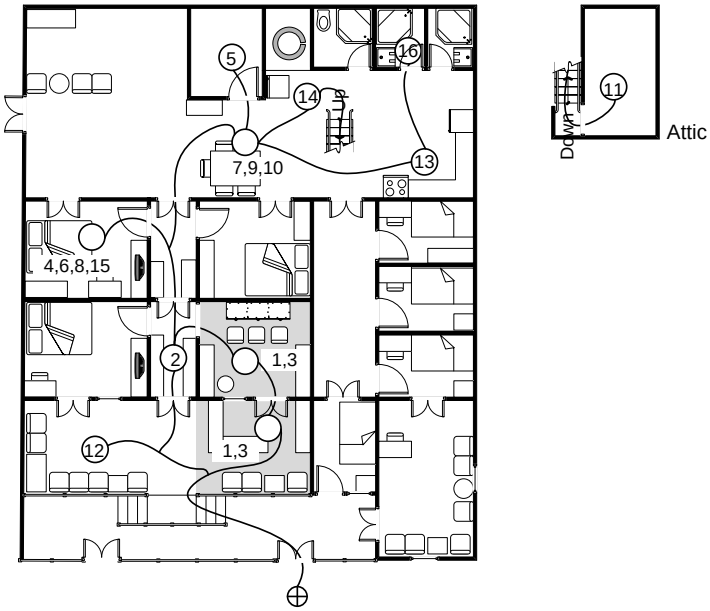


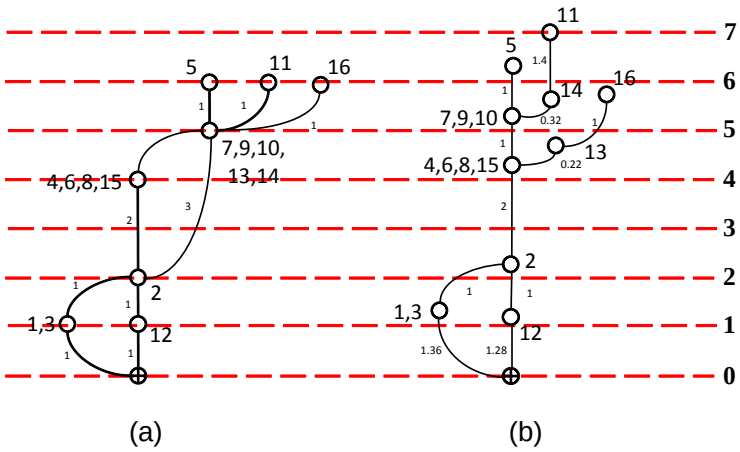
Kind of Activity:
1. Serving customer
2. Storing shop goods
3. Displaying goods
4. Waiting for customer
5. Praying
6. Reading
7. Lunch
8. Watching TV
9. Breakfast
10. Dinner
11. Drying clothes
12. Serving guest
13. Cooking meal
14. Washing clothes
15. Sleeping
16. Bathing

Activity Network of the Javanese Shop House (J-13)

Code: J-13
Gender of interviewee (age): Female (48)

Appendix 4.14





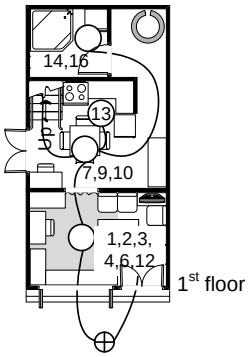
(a) (b)

Kind of Activity:
1. Serving customer
2. Storing shop goods
3. Displaying goods
4. Waiting for customer
5. Praying
6. Reading
7. Lunch
8. Watching TV
9. Breakfast
10. Dinner
11. Drying clothes
12. Serving guest
13. Cooking meal
14. Washing clothes
15. Sleeping
16. Bathing

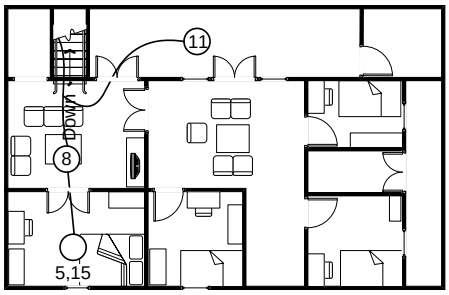
Activity Network of the Javanese Shop House (J-14)

Code: J-14
Gender of interviewee (age): Female (51)

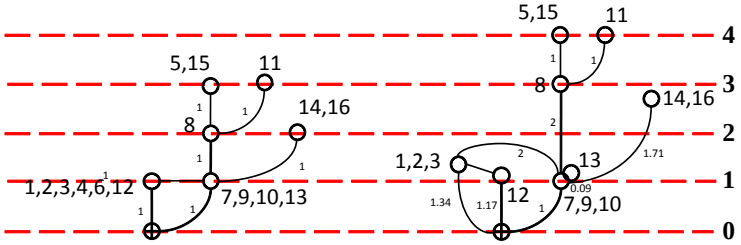
Appendix 4.15



1st floor



2nd floor



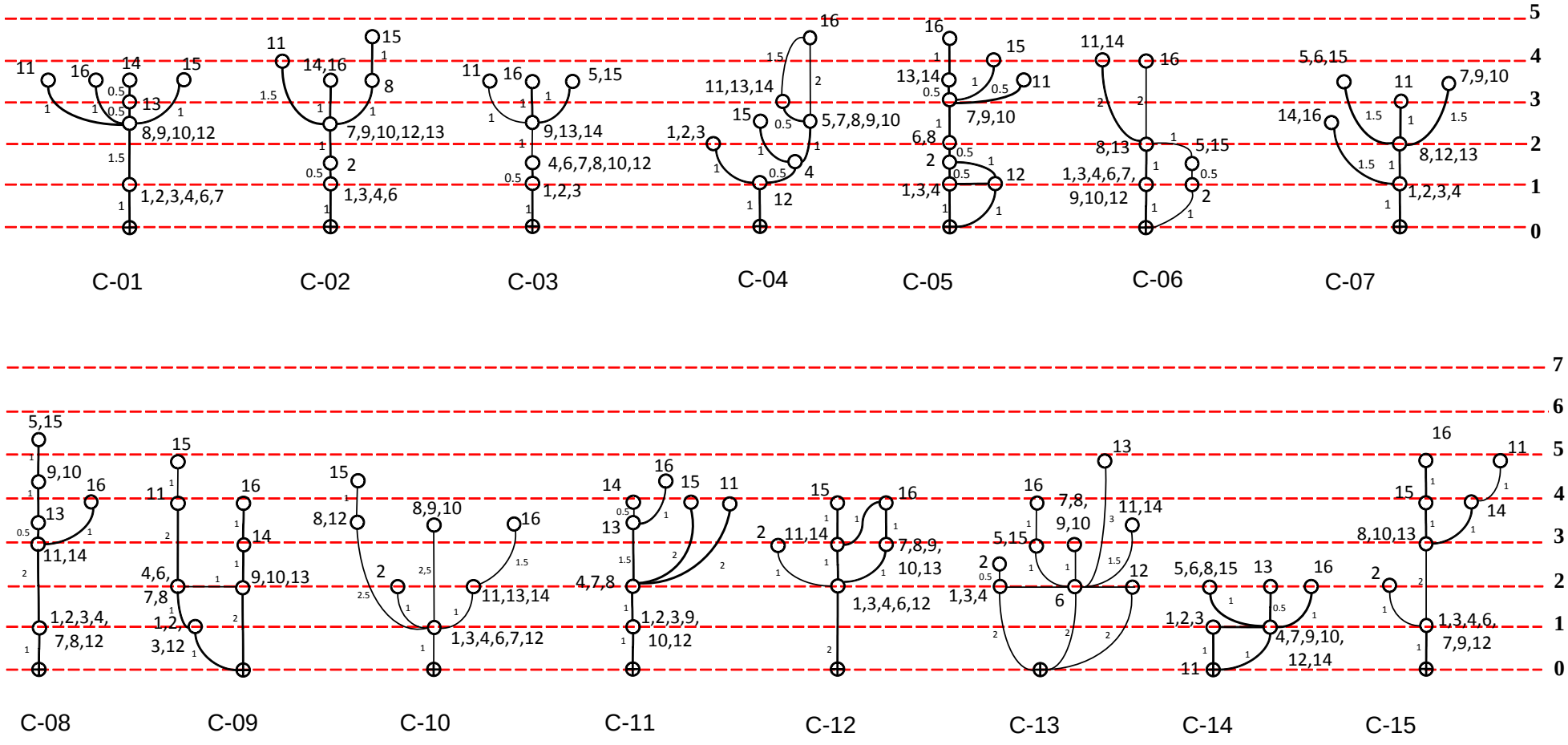
(a) (b)

Kind of Activity:
1. Serving customer
2. Storing shop goods
3. Displaying goods
4. Waiting for customer
5. Praying
6. Reading
7. Lunch
8. Watching TV
9. Breakfast
10. Dinner
11. Drying clothes
12. Serving guest
13. Cooking meal
14. Washing clothes
15. Sleeping
16. Bathing

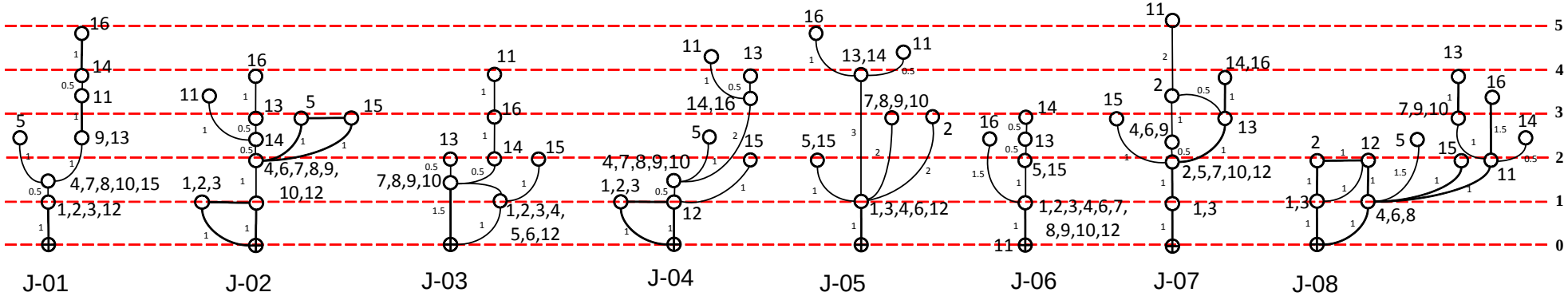
Activity Network of the Javanese Shop House (J-15)

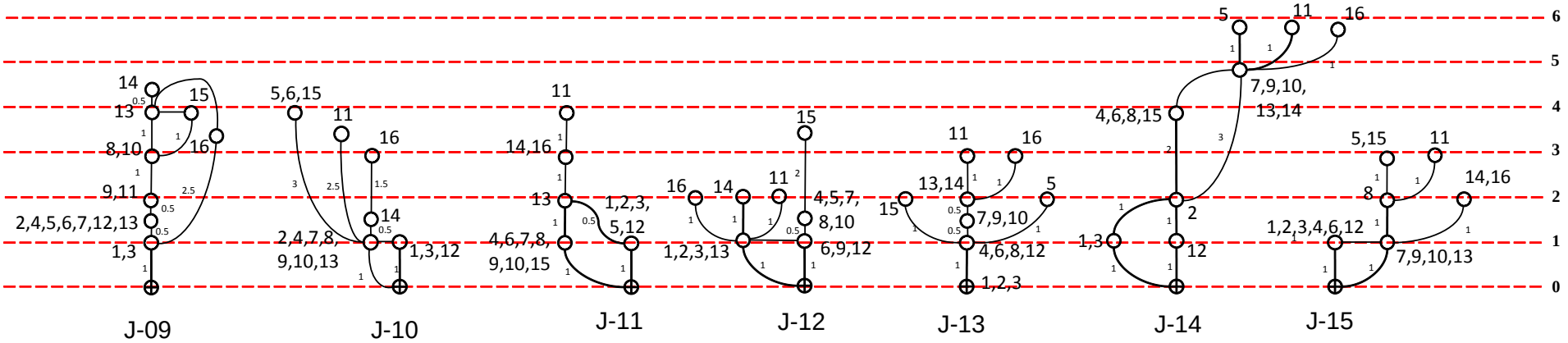
Code: J-15
Gender of interviewee (age): Female (64)

Appendix 5. Spatial Depth Analysis Justified Network of 1st Modification (Chinese)

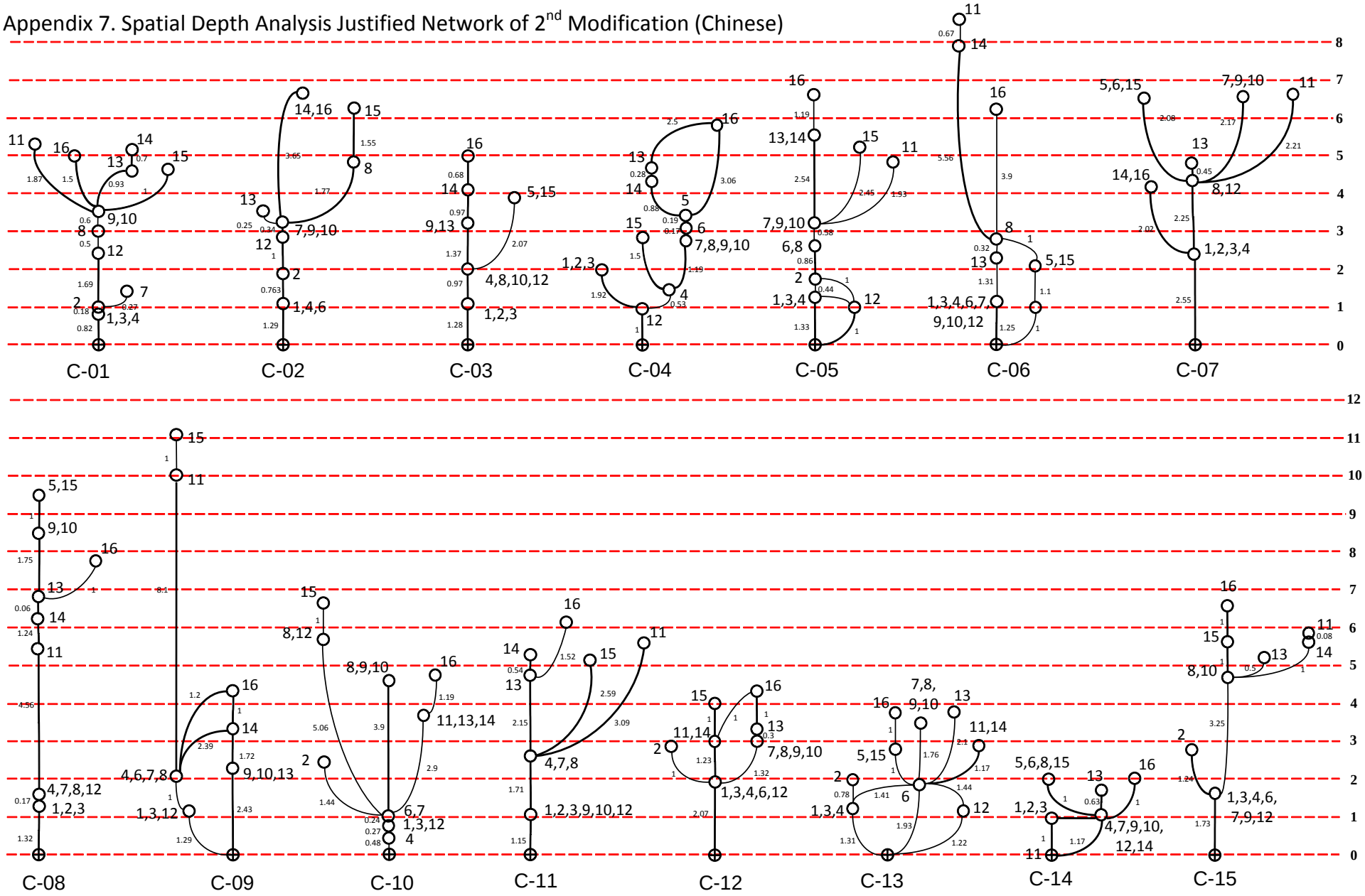


Appendix 6. Spatial Depth Analysis Justified Network 1st Modification (Javanese)

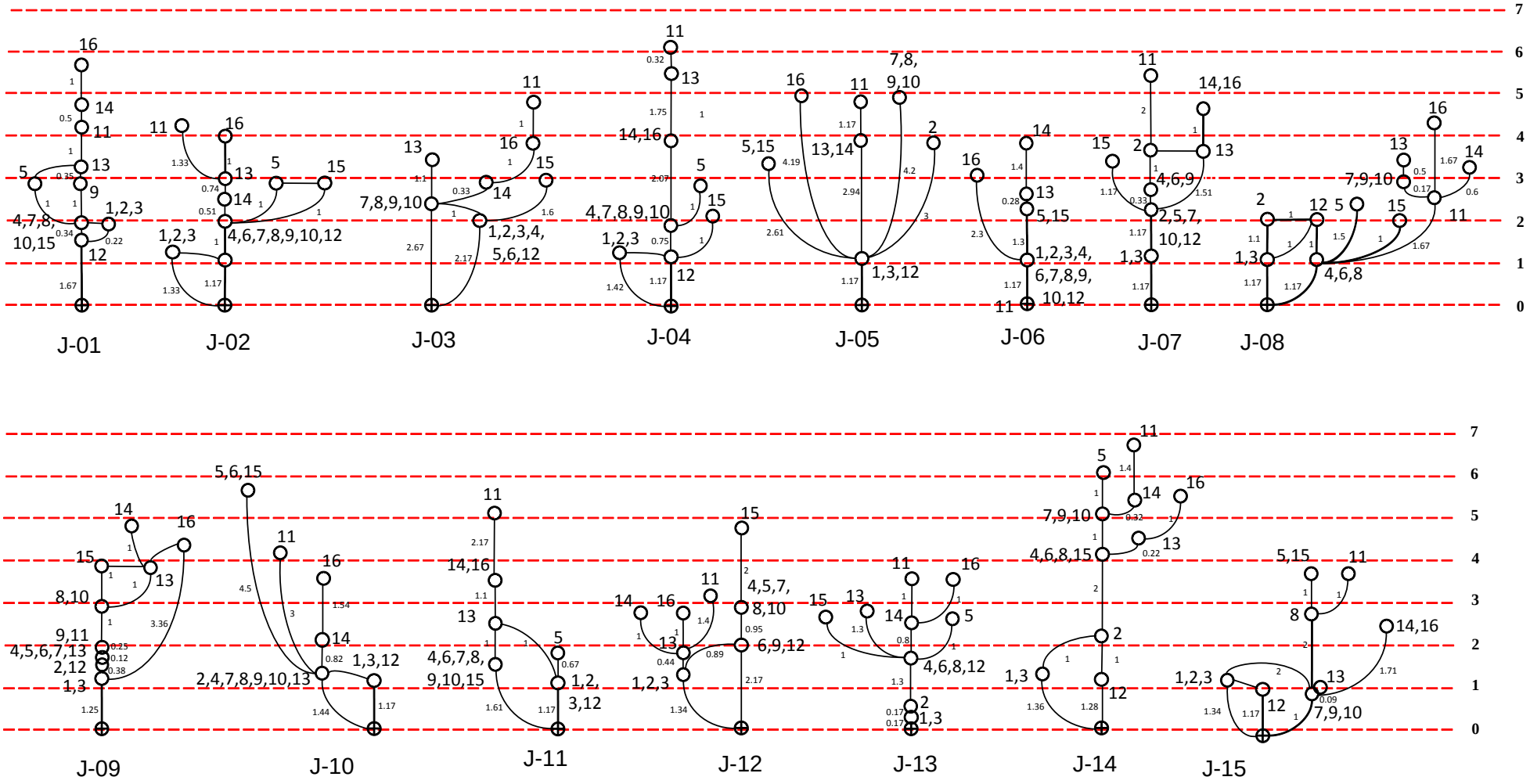




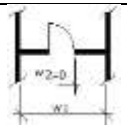
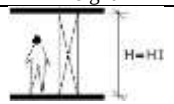
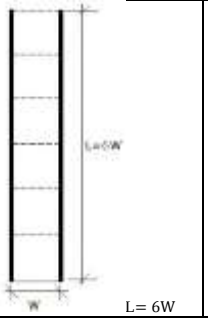
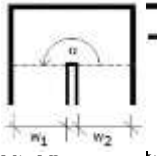
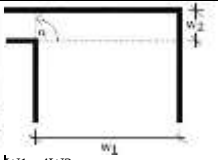
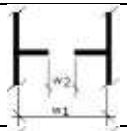
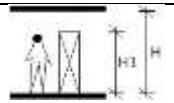
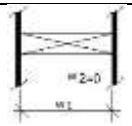
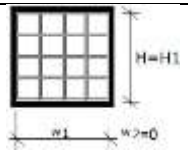
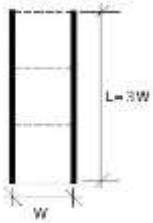
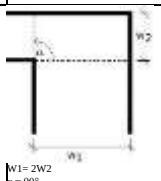
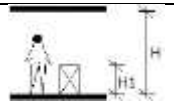
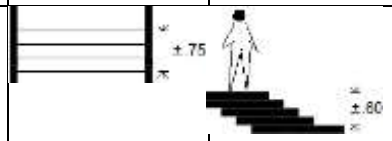
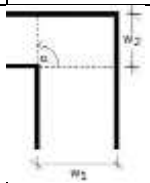
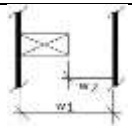
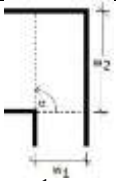
Appendix 7. Spatial Depth Analysis Justified Network of 2nd Modification (Chinese)

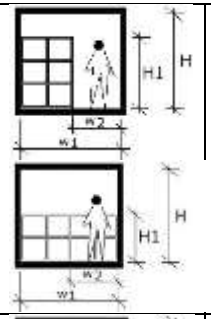
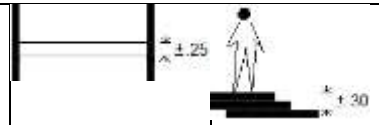
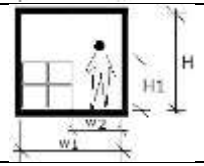
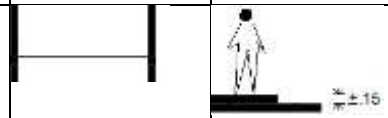
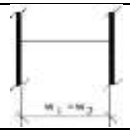


Appendix 8. Spatial Depth Analysis Justified Network 2nd Modification (Javanese)



Appendix 9. Values of Fixed and Semi-fixed Features

Value	Massive wall/ solid partition/ solid furniture		Look-through wall/ partition/ furniture		Door panel	Blind/ curtain	Steps		Corridors/ stairs		
	Width	Height	Width	Height			Width	Height	Length & width	Turning angle	W1>W2
1					solid	solid			 L= 6W	 W1= W2 α = 180°	 W1= 4W2 α = 90°
$^{2}/_{3}$					dense	dense					
$^{1}/_{2}$					sparse	sparse				 W1= W2 α = 90°	 W1= 2W2 α = 90°
$^{1}/_{3}$											 W1= $^{4}/_{3}$W2 α = 90°
$^{1}/_{4}$										 W1= $^{1}/_{2}$W2 α = 90°	

$^1/_6$										
$^1/_{12}$										
0										
For-mula	$\frac{W1-W2}{W1}$	$\frac{W1-W2}{W1} \times \frac{H1}{H}$	Vague/hard to look-through Material: Glass/frame material:	$\frac{W1-W2}{W1} \times \frac{H1}{H} \times \frac{2}{3}$ $\frac{W1-W2}{W1} \times \frac{H1}{H} \times \frac{1}{2}$	Solid : 1 Dense: $^2/_3$ Sparse: $^1/_2$		$\frac{1}{12} \times n$ n = number of steps		$\frac{L}{6W}$	$W1 \leq W2$: $\frac{W1}{W2} \times \frac{\lvert\alpha\rvert}{180°}$	$W1 > W2$: $\frac{W1}{2W2} \times \frac{\lvert\alpha\rvert}{180°}$

Appendix 10

Detail of Fixed and Semi-fixed Features Used in Every House

	Chinese																		Javanese																	
	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	Tot	Av		J1	J2	J3	J4	J5	J6	J7	J8	J9	J10	J11	J12	J13	J14	J15	Tot	Av	
Massive wall/ solid partition/ solid furniture	8	6	5	7	5	4	7	4	6	9	7	5	9	6	8	**96**	**6.4**		4	6	7	9	8	4	7	7	3	8	4	9	7	7	7	**97**	6.5	
Look-through wall/ partition/ furniture/ window	3	2	0	0	1	0	0	3	0	1	3	0	2	0	1	**16**	**1.1**		4	3	2	1	3	1	4	3	4	1	2	1	1	2	1	**33**	2.2	
Door panel	5	6	4	5	5	4	5	6	6	4	4	4	8	4	6	**76**	**5.1**		7	7	5	8	7	2	8	9	5	5	4	7	5	8	7	**94**	6.3	
Blind/ curtain	0	0	0	1	0	0	0	0	0	0	1	0	1	1	0	**4**	**0.3**		1	1	1	0	1	0	0	0	0	1	2	2	0	0	1	**10**	0.7	
Steps	0	0	1	1	0	1	0	1	0	1	0	1	2	2	0	**10**	**0.7**		1	1	1	3	1	1	2	3	1	1	2	1	5	2	1	**26**	1.7	
Corridor	2	4	6	4	5	3	2	5	5	4	5	3	3	0	2	**53**	**3.5**		0	0	0	1	2	1	0	1	4	1	0	0	0	2	1	**13**	0.9	
Stairs	1	1	1	0	1	2	1	1	1	2	1	0	0	1	0	**13**	**0.9**		0	1	0	1	1	0	0	0	0	1	1	1	0	0	1	**7**	0.5	
Total	19	19	17	18	17	14	15	20	18	21	21	13	25	14	17	**268**			17	19	16	23	23	9	21	23	17	18	15	21	18	21	19	**280**		
Deepest value	7.04	8.98	5.27	6.14	6.94	8.13	6.97	10.1	11.48	7.05	6.53	4.69	4.03	2.17	4.17	**99.69**			5.44	4.42	5.7	2.92	5.98	4.15	4.85	4.51	5.18	5.45	3.17	4.23	4.04	7.5	4	**71.54**		
															Av	**6.65**																Av	**4.77**		
Second deepest value	6.34	7.43	4.59	3.96	5.75	6.47	6.8	9.29	4.68	6.05	5.55	4.3	3.93	1.8	3.17	**80.11**			3.01	3.42	4.37	2.17	5.15	2.75	3.85	3.51	4.86	3.82	2.17	2.78	3.74	7.28	1.71	**54.59**		
Activity at deepest value	14	15	16	16	16	14	10	5,15	15	15	16	16	13	15,16	16	**Tot**			16	16	16	5	16	16	16	16	15	5,15	16	15	13	16	5,15	**Tot**		
Bathing			1	1	1						1	1		1	1	**7**			1	1	1		1	1	1	1			1			1		**9**		
Sleeping		1							1	1	1				1	**5**												1	1		1			1	**4**		
Washing clothes	1						1									**2**																			**0**		
Cooking meal													1			**1**																1			**1**		
Praying								1								**1**						1							1				1		**3**		
Activity at second deepest value	13	8	14	14	13,14	16	5,15	16	10,13	12	14	15	16	13	15	**Tot**			5,13	13	13	15	5	13	13	13	16	16	5,13	16	16	5	16	**Tot**		