TRADITIONAL PATTERNS and WALK-UP APARTMENTS in THE TAIWAN AREA

by

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Submitted to the Department of Architecture on May 11, 1984 in partial fulfillment of the requirements for the Degree of Master of Science in Architecture Studies.

ABSTRACT

This thesis presents an explicit model for the study of the Chinese house, In the past, most research on the traditional Chinese architecture did not deal with the morphology of buildings, so that we often had to rely on the creative leap , once we applied those spatial characteristics of Chinese architecture to the contemporary context.

Thus, this study attempts to make use of the morphological approach to analyze the traditional courtyard houses in Taiwan, derive a thematic system for such buildings and its rules to generate contemporary Chinese dwellings.

The study begins with an analysis of physical forms starting from the dwelling level to the furniture level, through which a series of rules will be abstracted. On the dwelling level, the issues of spatial organization, spatial sequence and relationship will be addressed. On the room level and the furniture level, this study will further explore the individual spatial properties and the arrangements of furniture.

In addition, two dwelling types of the contemporary walk-up apartments will be proposed for further reference, based on the selected rules. A design method is also adopted to illustrate the way in which traditional patterns can be applied to the physical design.

Finally, five immediate issues are raised for further research:

1. Adaptation of Traditional Patterns
2. The Support Model
3. Surrounding Context
4. Evaluation of Design Process and Environmental Quality
5. Research model

Thesis Supervisor: N. John Habraken
Title: Professor of Architecture

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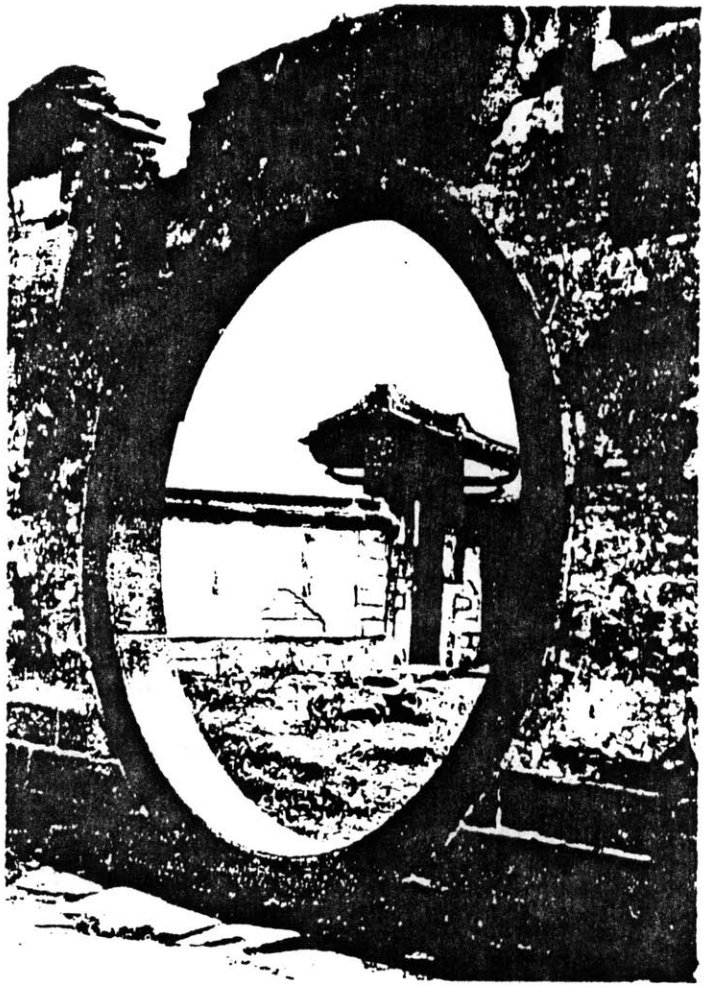
Finally, I have to express my heart-felt gratitude to my parents for their constant encouragement and support throughout my education career.

PREFACE

During the later years of my undergraduate study, I was always bothered by the question of how we can continue traditional Chinese architecture. Several new books and research papers published during those days provided us with background information and elaborate historical accounts, but they did not address the issue of my concern. At the same time, a return to the vernacular architectural expression was also popular among academics as well as practicing professionals. Traditional architecture became the topic of those days. But the question of how to continue the spirit of traditional Chinese architecture, rather than merely copy some vernacular images, was inadequately addressed and discussed. What has caused this tendency? Most of the books and publications were concerned with the historical development, analysis and classification of building types. Such research, whether analyzing political influences, social and cultural impacts, or custom and traditional influences, helped us to understand the context of the traditional architecture but did not enlighten us to understand and design today's physical form. We often relied on the creative leap or "the strokes of God's brushes" (literal translation of a Chinese idiom: 神來之筆).

We need a different approach or method. Such a method should enable us to discuss traditional achitecture explicitly and make the continuation of the spirit of traditional architecture possible. I believe that a morphological study is an appropriate approach.



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CHAPTER 1: INTRODUCTION

1 - 1: MOTIVATIONS and OBJECTIVES

In the latter part of the eighteenth century, Western architecture was transplanted to China. Traditional Chinese architecture has been struggling for survival since then.Today, with the national awareness movement and the revival of traditional culture, the question of how to inherit certain characteristics of traditional architecture and how to continue its spirit in the contemporary context becomes one of the key issues of discussion.

At present, most of the publications and research on traditional Chinese architecture can help us to understand the social, economical and political context, the development and classification of building types, abstract or conceptual design principles, etc., but do not deal with the spatial chacteristics and morphology of Chinese buildings. Such information can not be used directly for the purpose of physical design to reflect the spirit of traditional architecture. There is a gap between the analysis and the reality of physical world.

The conventional approach relies mainly on the designer's creative leap to bridge the

gap. The results are often an intuitive and random choice of images. We need an explicit approach and method to continue the spirit of traditional Chinese architecture. I believe the analysis of the physical aspect of the built environment could reflect all the abstract influences in the making of traditional architecture.

We need a clear and rational framework for analysis in order to make explicit the spirit of traditional buildings, and for addressing the following issues:

1) What do we want to preserve?

2) How to reflect them in the design?

The emphasis of this study is on the second issue. The value judgement behind the selection of the answers for the first issue will not be discussed in this study.

The conventional approach is inadequate. We must futher concretize these abstract concepts and design principles to the physical spatial form by means of a morphological descriptive model. With such a descriptive model, we can explicitly define what we really want and how we can apply it to physical design.

In this study, however, I will only illustrate how we could make use of the morphological approach to analyze the traditional Courtyard Houses in Taiwan, derive a thematic system for such buildings and use its rules to generate contemporary Chinese houses.

OBJECTIVES:

1) This study intends to develop an explicit model for the study of traditional Chinese architecture, which could be used to evaluate in the analysis and design process. The purpose of this study is not to come up with a perfect answer to the question of how the spirit of traditional Chinese architecture could be continued, but rather to propose a possible approach. This thesis consists of an explicit process.

2) The second objective of this study is to show an analysis of building morphology based on empirical observations, through which explicit rules or patterns could be abstracted.

3) The third objective of this study is to develop a dwelling type for the contemporary context.

1 - 2: HYPOTHESES

A) The man-made environment is not built by chance, and certain rules must always have existed, such rules might be related to time, space and people, and also govern the construction behavior of human beings. (* 1)

****** ****** ***** ***** ***** ***** *****

The man-made environment always reveals to us certain consistent rules, principles or expressions shared among a group of people. Individual actors who intervene in the built environment always created similar images in the physical form; they adopt certain rules and make their products conform to a hidden structure. In other words, as long as it is a man-made structure, rules exist and we

recongize such common expressions as a "theme". These rules act as a guideline for building. We call such a rule system the representation of a thematic system. It reveals to us a theme in the built environment. Those who share an image of physical form share a theme and give it their own interpretation. Our living environment is always built this way. The theme might vary from culture to culture. One culture might think a house should be lifted away from the ground by a few pillars, some might adopt the idea of rooting the house on the ground. Different cultures with different contexts might explicitly or implicitly develop and adopt different rules.

Some basic assumptions are drawn and as follows:

1) It is assumed that the process of built form making can be conceived as the interaction of two parts: The rule system and the interpretation of the rule system. Sometimes, these rules can be made explicit and can be exposed through the histroical or cultural investigation, and sometimes they are implicit and can only be guested by testing them. They might be discussed through extensive surveys and studies.

2) The built environment is not the product of an individual endeavor, but is the consequence of a large number of anonymous efforts through a long period of time of transformations and adaptations. The rule system is not necessarily a set of explicit

regulations or laws. It could consist of implicit rules or habits,or commonly shared symbols which are deeply rooted in the collective memories. If there are latent consistencies in our physical environment, it is assumed that they are not built by chance, but because a rule system is generally applied within a certain cultural context.

B) The physical form always reveals the users' cultural values either consciously or subconsciously. In other words, the users' cultural values, including social, political and religious conventions, can be understood through our observations of the physical environment. (* 2)

***** ***** ***** ***** ***** ***** *****

Human beings always subconsciously transform their cultural values, such as their requirements, values, desires, dreams and emotions, etc., in the physical form. Therefore, these man-made environments somehow can be considered as the representation of users' world view. They also express the relationships between people, groups of people and their man-made environment. At the same time the environment also articulates the users' life-style.

Through the understanding of culturally based physical form, we assume that we might be able to build an appropriate physical environment for people on the basis of the commonly agreed rules.

1 - 3: TASKS and SCOPES

SCOPES

I limit the scope of this study to assure its focus:

1) Firstly, I must say that this is not a historical study,but a morphological study of the essential elements of form and space and those principles that govern the spatial organization in traditional Chinese Courtyard Houses. I am not trying to seek reasons, nor the ways in which Chinese Courtyard Houses have evolved, although it is certain that historical and cultural studies have their merits in helping us to understand the rules of physical form. This study. however, essentially focuses on the morphology as follows:

a) Spatial properties

I am not going to pay attention to the issue of the decorative elements in reflecting Chinese architectural style ,unless they are indispensable and common, although I notice that the decorative elements have their own importance in expressing the architectural style.

b) Space transition --- The interrelation between spaces.

c) Spatial sequence --- Visually and physically experiencing the whole dwelling. Regarding the physical environment, we can generally divide it into six levels in terms of the order of enclosure on the basis of the thematic system theory. (see figure a)

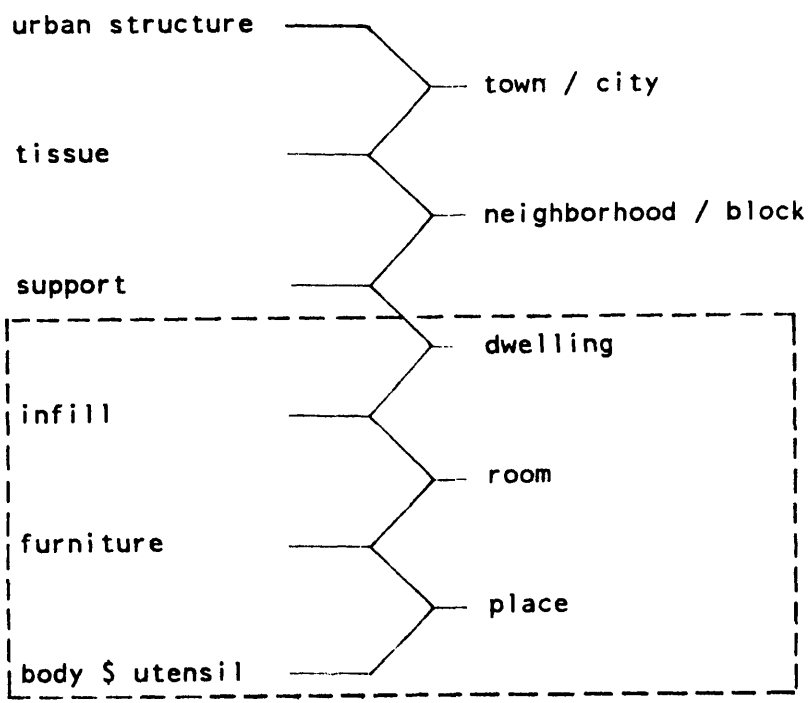


Figure a:

In this study, I am planning to deal with the levels from the " furniture level" to the " support level " circled by a dotted line.

2) Secondly, I must make it clear that this is also not a normative study which intends to build a set of criteria or guidelines towards a so-called "good" environment. I have no intention of evaluating the qualities of the rule system with regard to certain groups of people or specific people under specific circumstances. I know, however, that this would be inevitable, if we would use the rule system as a design tool in practice.

3) Thirdly, I am also not trying to seek an appropriate model resulting from the study of connecting the traditional rules with the contemporary ones in order to fit them into the contemporary context, (although this is actually my ultimate objective in the future). Such a model requires extensive studies and resources which are simply too broad to expect for this study.

4) Finally, I will try to consider the formulated rule system in this study as a base to relate it to a selected program under the given requirements. I simply try to design following the rule system within the given requirements. The purpose of this part is to arrive at a tentative dwelling model for further reference. I noticed that it can be questioned whether the rule system is appropriate (in terms of context) or not? As I said previously, such a model definitively requires entensive studies and enormous resources. Here, I would like to make an assumption that this model is acceptable as long as its inference process is logical. I want to demonstrate a design process that can lead to new method. It will be demonstrated following a step-by-step operation so that anybody can follow and criticize the work.

TASKS

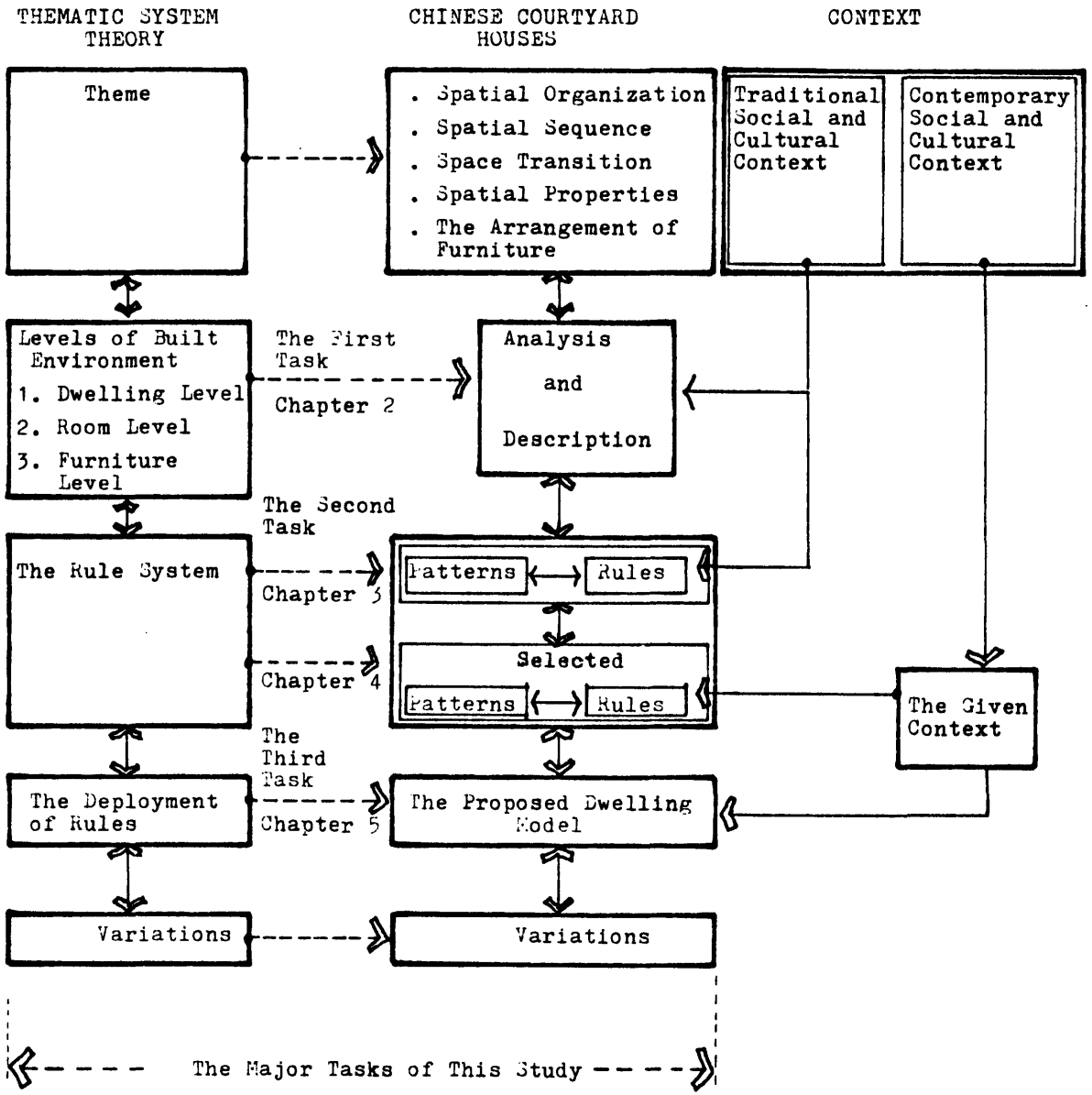
In short, this study will be composed of three tasks:

1) The first task: The analysis of physical form concerning the said issues. The range of this study will focus on the Chinese Courtyard Houses and the Merchant Houses, which are typical in the Taiwan area from the middle of the seventeenth century to the present and from about five hundred years earlier to the present on the Penghu and Jinmen islands.

2) The second task: To formulate the rule system.

3) The third task: To develop a tentative dwelling model for the contemporary context.

1 - 4: CONCEPTUAL STUDY FRAME



1 - 5: TRADITIONAL CHINESE COURTYARD HOUSES and VARIANTS in THE TAIWAN AREA

1-5-1: Historical Context

The Chinese influence in Taiwan started approximately three hundred years ago (during the Dutch occupation in the Ming dynasty). People from the montainous Fukien and Canton provinces came here in search of more fertile and better farming ground. Towards the end of the Ming Dynasty, civil upheaval and hardship in these people's home-towns made them decide to stay permanently in Taiwan. Together with these migrants came the whole of Chinese culture, including architecture. By the end of the seventeenth century, many migrants' settlements were built on the Eastern Coast plain. As population and trade increased, more complex social relationships, administration or government etc. developed. The implications of such development was that the physical fabric took the migrants familiar Chinese patterns. Some of these forms included the street layout and development of the gentry house, the officer house, the merchant house and so on. The styles of the architecture were basically of Fukein and Canton where most of the migrants came from. But it was also somewhat influenced by the native Taiwanese style and by the Spanish, Dutch and Japanese which came with the respective occupation periods.

1-5-2: Spatial Context

In this study, two types of courtyard houses are discussed.

1) " The Syh-Ho Yuan and San-Ho Yuan " with the Fukein and Canton styles:

San-Ho Yuan: This type of house is mostly used for the farm house. Most of the farmers need larger houses to accommodate large family structures. They also need an open ground to dry their crops (Figure 1).

Syh-Ho Yuan: This type of house is mostly used for the gentry house and other larger houses. It symbolizes the social status and wealth of the family. Also, such families often demanded higher degrees of privacy between the private territory and the outside world (Figure 2).

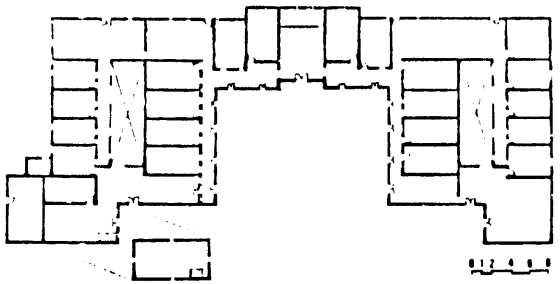


FIGURE 1

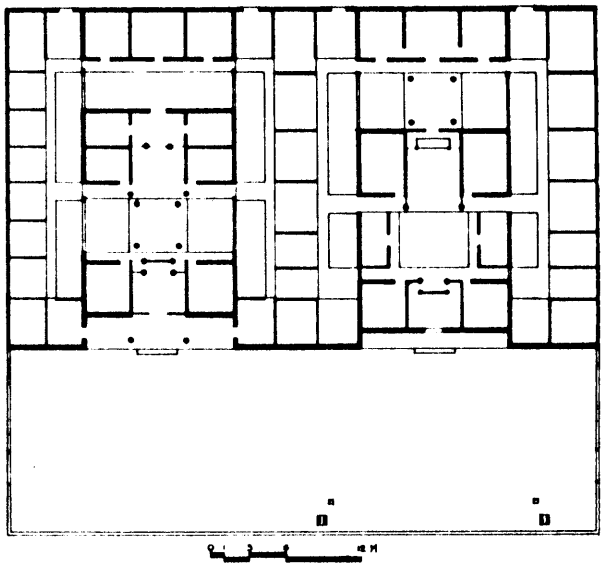


FIGURE 2

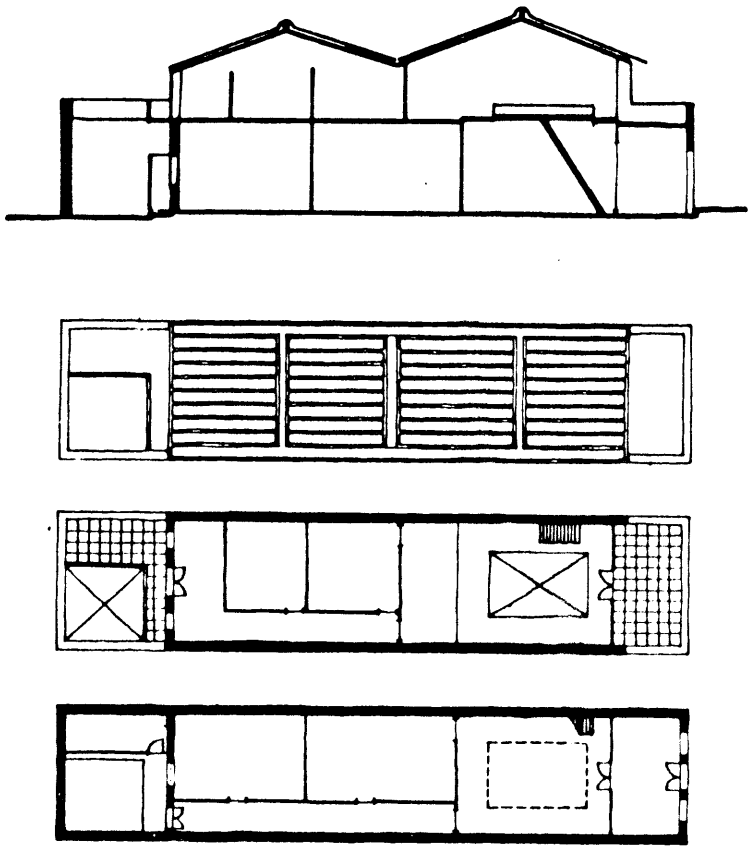


FIGURE 3

2) Row House (Merchant House)

This type of house is mostly for the merchant in the urban areas. They are more compact due to high land prices and crowding in such areas. They generally have a narrower frontage than the courtyard house and are often tightly arranged along commercial streets. If we examine the layout carefully, we can recongize that it is actually a compressed form of courtyard house. However, it tended to grow upwards to two or three stories (Figure 3).

(1) (" The transformations of the site " writen by N. J. Habraken)

(2) (referrence for " House Form and Culture " written by Amos Rapoport)

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2 - 1: INTRODUCTION

There is no way we can describe a form without having a form in mind in the first place. The properities of an architectual object, be it spatial or material, cannot be understood separately from its formal image. Similarily, we cannot describe the sense of architectural space without identifying the relationship among the relative elements which formed that space.

For those who have never seen the form called " circle " before, it is impossibile that they can possibly understand a description such as "a circle" is a geometrical configuration in which we can find a point that has an equal distance from any point on this configuration to that point. To describe an object is, in fact, to identify the elements and the relationship among the elements. Two issues need to be addressed in order to describe an architectural object. These issues are the selection of elements and the distribution of elements. Based on these, we start to set the preliminarily overall image about the built form.

In the following sections, I will describe the physical form according to the following:

1) Observation 1:
The general introduction concerning the physical form itself and its variants.

2) Observation 2:
To make a detailed observation and identify the relevant physical elements.

In no way can a model be inclusively built to describe a built form. Any kind of man-made descriptive model is an incomplete model which only covers a selection of issues. Environmental phenomena can be studied through many different ways for various purposes in our minds. We might observe it by specifically focusing on its sociological behavior, human behavior or cultural theme, etc.. But, we don't have to, nor could we, study everything about it at the one time.

The aspects investigated in this study are the morphological characteristics of the physical environment, particularly the properties of space, spatial and space transition.

2 - 2: GENERAL DESCRIPTIONS on THE DWELLING LEVEL

2-2-1: Introduction --- Observation 1

a) The Growth of the House: (* 1)

The basic unit:

In general, the basic unit of a traditional Chinese House in Taiwan was the three-room structure with a two-way sloping roof. The main entrance was always located at the middle of the main house which was usually composed of one hall-room in the middle and a bedroom on each side. This type of house was called " three-bay " house (Figure 4).

The second phase of growth:

A additional room was attached to each end of the main house. It became the so-called five-bay house. Sometimes the three-bay house or five-bay house was independent of or used as the main house of a "U"-shaped or "□"-shaped courtyard house (Figure 5).

The third phase of growth:

When the number of households in a family gradually increased and necessitated the expansion of the house, the typical approach was to add one house perpendicularly to the main house, which generated a "L"-shaped composition. This type of growth in the Chinese house could be considered as an incompleteed "San-Ho Yuan" (Figure 6).

The other type of approach to expansion was to add two houses, one on each end in front of the main house, and created the form of "San-Ho Yuan".The two wings of the main house were named " Hu-Long " (* 2), which distinguished the main house from the "Hu-Long" from the outside, and formed an inner front-yard with the main house (Figure 7).

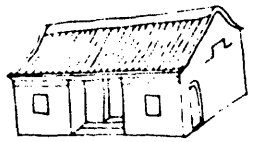
Growth beyond the third phase.

Further expansion of the house could either be horizontal or vertical. But, regardless of the type of expansion, the symmetrical form of the Chinese house should be kept (Figure 8).

The opening in the front of San-Ho Yuan could be blocked by territorial elements, such as

fences or walls. This kind of San-Ho Yuan with a closed courtyard was called a " Syh-Ho Yuan ", and the enclosed yard in front of the main house was called "courtyard".

Generally speaking, the San-Ho Yuan was usually adopted in agricultural area. The front yard was used to dry harvest. The richer families or officers usually preferred Syh-Ho Yuan, because they prefered more privacy. The San-Ho Yuan and Syh-Ho Yuan were considered as the basic form of dwellings in the Taiwan area. Certainly,there still was another type of house called the "merchant house" which usually took place in the urban area.



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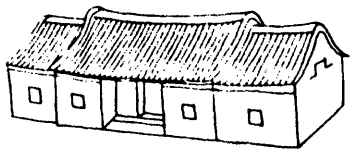

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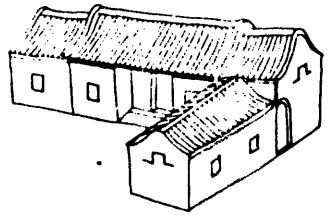

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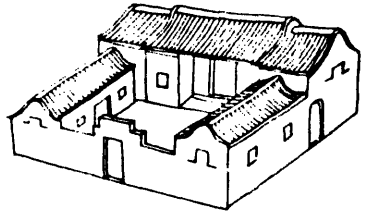
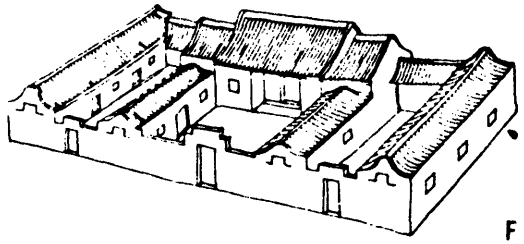


FIGURE 7



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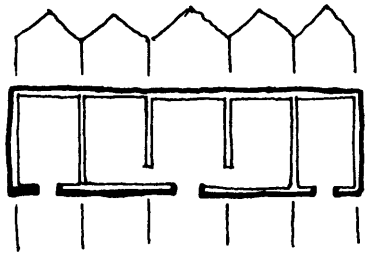


FIGURE 9

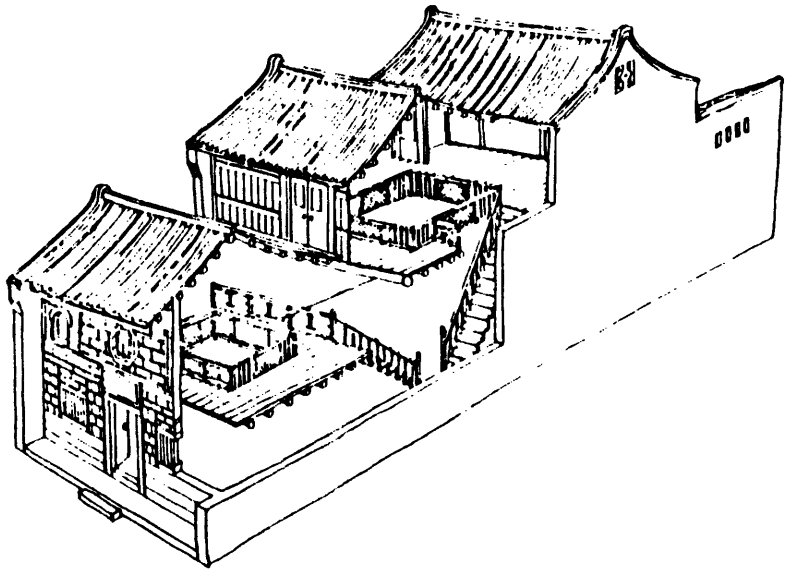


FIGURE 10

b) The Distribution of Space function:

The innermost house in a compound was the main house which was usually divided into three or five rooms (Figure 9). The main hall was in the center (or ancestor hall or reception room), where the family altar table was kept. It was flanked on either side with a smaller room where the parents and grandparents occupied. The children usually lived in the wings on each side; the boys in the rooms on the left side and the girls in the rooms on the right side (if we faced the south). Other elements in the Chinese house were treated casually, and sometimes did not appear on plans at all. One of them was the kitchen, which was sometimes in the open air, or on a veranda or in a far endff room of the main house or in the wings. The other was the

privy, often built as a separate little shed in a convenient corner. Another familiar element was the bathroom which also did not usually appear in the plan.

Concerning the merchant house (Figure 10), the first layer of the merchant house facing the street was used for commercial functions. There were always arcades attached to the house in order to protect the shopper from rains and hot sun. The merchant house was usually developed along the transverse axis, sometimes expanding vertically into a two, or more than two, story building. There might also be several layers to a house, which was the typical way of expanding a dwelling. The main hall was usually located in the middle layer of the merchant house.

2-2-2: The Selection of Elements

The term " building elements " could be used generally to encompass anything that goes into the making of a building. What we want to indicate here are those elements that determine the general image.

In general, the Chinese house, both the courtyard house and the merchant house, are composed of several layers of buildings, while all buildings are made up of several rooms. Any single building could be described as a composition of elements: such as roof, floor (or platform), exterior wall and facade. These elements themselves are actually concepts, rather than products, although they are indisputably made of material. Within the envelop of that building

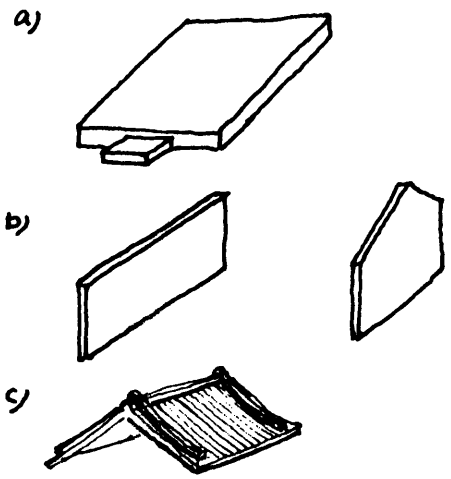


FIGURE 11

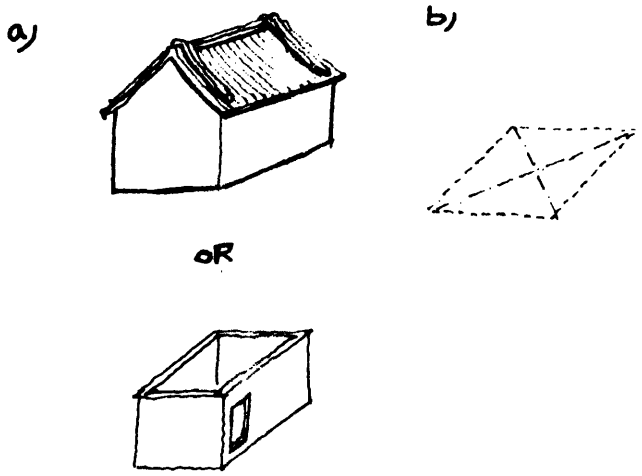


FIGURE 12

made up of "building elements",several rooms could be created by adding partitions. If we consider a Chinese Courtyard house as a compound, it could also be described in the same way, but the elements are here different from those of a single building. Typically Courtyard houses are always enclosed by a huge continuously solid wall with small openings, within which several single buildings could be orderly located in an orderly way.

To come up with only one category of building elements which could cover most issues is quite difficult, and as a matter of fact, it seems unnecessary, unless we only deal with a sepecific purpose of study. In this study, when I describe the built form for the whole dwelling, I mean the dwelling elements such

as (Figure 11):

a) platform and floor

b) exterior wall and facade

c) roof

Then the built form can be expressed by analyzing the relationship of these elements. When studying the spatial organization, I identify the dwelling elements as follows (Figure 12):

a) single buildings and the rooms within it.

b) spaces other than the buildings, which includes circulation spaces, open yards, etc.

Through the description of relationship among those elements, the spatial organization, spatial sequence and space transition can be identified. In the following sections, such categories will be used as a base to describe the spatial characteristicas of the Chinese houses. However, when I try to illustrate the characteristics of these spatial relationship, other relevant elements on a lower level (such as family altar table, emtrance, etc.) must unavoidably be mentioned, they should, though, only be used to support those key issues.

2-2-3: Spatial Organization

2-2-3-1: Centralized Spatial Organization (Figure 13)

As described previously (in the observation 1), the Chinese house always grows and changes over time, but a strong spatial

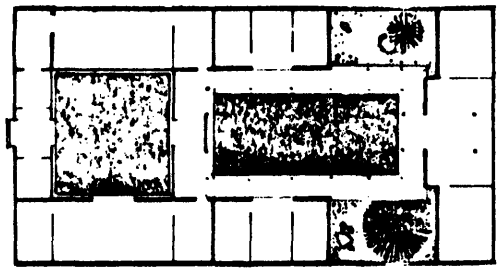


FIGURE 13

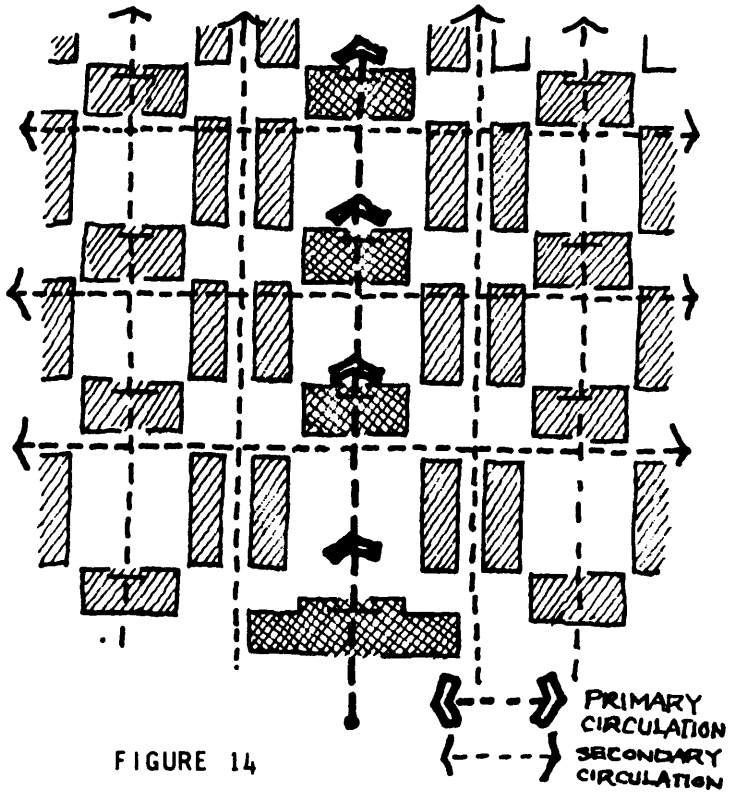
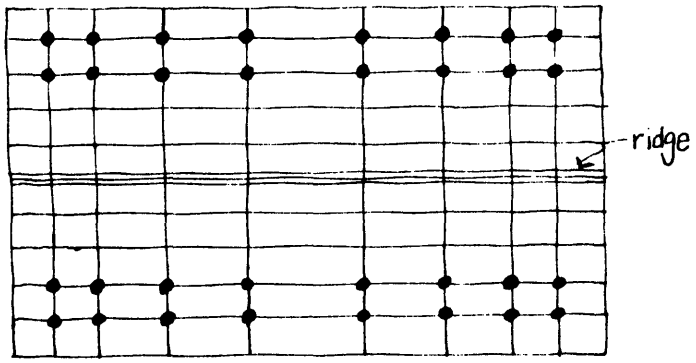


FIGURE 14

organization is observed in order to adhere to the same philosophical principles. "Yuan", the means of courtyard, plays a prominent role. It is the basis by which to organize all single buildings. In classical Chinese architecture, the houses are composed of two different spaces: the enclosed interior spaces, and the exterior spaces with a similarly enclosed character as the former, but without a roof. According to Yuan-Su Lee, to achieve the integration of a cluster of single buildings, the centered "Yuan" is used to organize all the single buildings. Therefore, the "Yuan" has to be treated as crucially as the building, otherwise the scattered single buildings will not be integrated into an organic wholeness. Conceptually, we could consider these single buildings as the suborinates of the "Yuan".

The linkage between rooms or buildings is usually achieved through the open courtyard, not a narrow corridor or passageway. The shape and dimension of the "Yuan" varies. Usually, it is rectangular in shape, rarely is it in another form. If it is located in front of the primary buildings, such as the main building with ancestor hall or reception room, it is usually larger than that of the other Yuans. The dimensional variation is used to distinguished primary spaces and secondary spaces.

A "Yuan" integrates its surrounding buildings to form a basic dwelling component. Several layers of dwelling components could then be orderly interconnected in either the transversal or lateral direction along the axis of the primary buildings. Ideally, the spaces are organized along the central transversal axis. In a more formal mansion or gentry house, there are two other secondary axes, (Figure 14), which flank the central axis, called the left-axis and right-axis. Such axes also the axes for circulation, but also are the lateral circulations through which an interwoven circulation system is formed. Alleys between buildings within the same dwelling usually serve for secondary circulation or service routes. They are always separated from the major circulation system. Servants or household stuff can service the master and master's guests through the alley without passing through the other spaces. Therefore, in general, the overall spatial organization is systematically formed as a centralized geometrical grid system.



STRUCTURE PLAN FIGURE 15

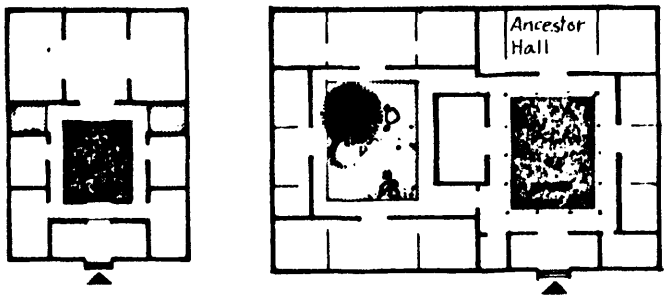


FIGURE 16

2-2-3-2: The Flexibility in Spatial Organization

The overall spatial organization of the Chinese house is predetermined by its rigid and formal adherence to moral & philosophical principles (* 3). The actual process of building is incremental in order to be directly responsive to the immediate and specific needs of the individual family's conditions of growth and expansion which still need to be integrated into the original spatial organization. A standardized (modular) system is used to indicate various predetermined dimensions of building elements, such as columns, beams, roof structure and the principles of distributing those elements. In other words, it illustrates what elements should be used, where those elements should be placed, and how to connect one with the others. The Chinese dwelling layout, therefore, is a representation of the structural plan in which no functional meaning of space is expressed (Figure 15). A room is usually

designed to be adaptable and neutral. Almost all the rooms are of similar dimensions and finishes except for the main hall and ancestor hall (Figure 16), which are flexible to accommodate different functions of the household. For example, a room could be used as a sleeping room at one time and then be converted to be a kitchen at another time. The specificity of each room in its use is delineated by the assigned function which takes the space by filling it with furnishings and equipment. There is a clear separation of the building structure from the particular activities of each room. The overall building structure becomes a generalized framework within which different activities can take place in different relationships depending on the pragmatic demands of that moment.

2-2-3-3: Territory

Here, I would like to address another issue, the sense of territory, to illustrate the whole idea of spatial organization. Basically, all rooms of a Chinese courtyard house face inward on-to the courtyard, for the outside world was considered to be strange. Walls usually enclose the house and are used as a means of protection for the family from the world outside (Figure 17).

FIGURE 17

Within the huge continuous solid exterior wall, the occupants can enjoy their self-contained and self-sufficient life, and appreciate the private spaces and landscape. The demarcation between the inside world and the outside world is very clear. Most elevations of single buildings are designed to be the background for the scene in the courtyard (Figure 4Q). The main entrance serves as the primary medium to communicate with the world outside.

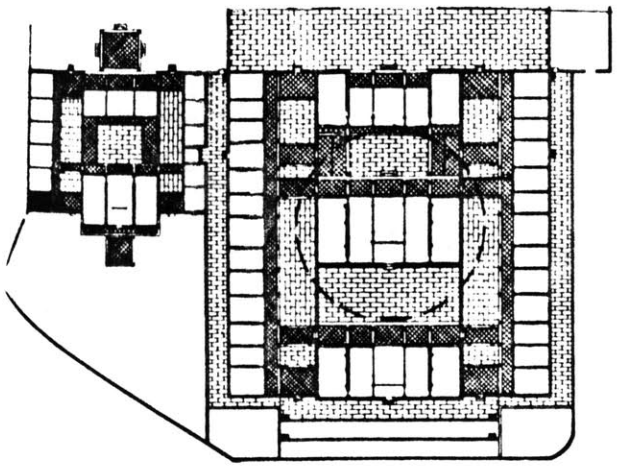


FIGURE 18

2-2-4: Spatial Sequence

In the Chinese courtyard houses, (as mentioned previously), there usually are two circulation systems; the exterior circulation (as the primary system within the open courtyard and between rows of buildings), and the interior circulation (as the secondary system). Along the central axis of the primary circulation, the primary spaces, such as ancestor hall, formal living room, reception room,etc. are linked in parallel, and they form the center of gravity of the whole dwelling (Figurre 18). Almost all entrances and major visual focuses to these primary spaces are orderly arranged so as to reinforce the axial sense. They are achieved either by increasing the height, width or depth, or by centering the entrance, or by

arranging the furniture symmetrically along the axis. In the house of a wealthier family, covered colonnades in the primary circulation system are usually built. Typically, the interior circulation is usually not built in the form of a corridor. Instead, doors connect adjacent rooms laterally alnog a row of building so that to reach an inner room, one has to pass through other rooms (Figure 19). Although these primary spaces are orderly arranged along the central axis. the axial path is actually not straight but circuitous (Figure 20). For instance, in the typical "Syh-Ho Yuan", the entrance to the ritual space (such as the ancestor hall), is along the central axis starting from the main entrance to the dwelling. But, to enter the courtyard behind the ritual space, the axis is shifted through a transition space

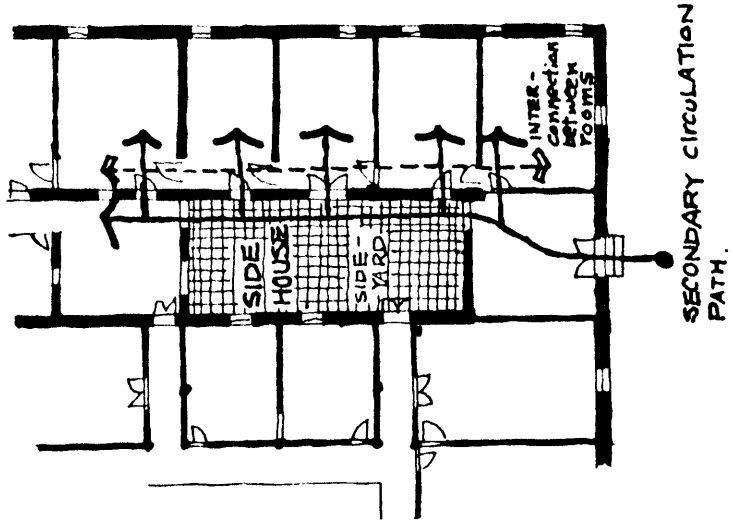


FIGURE 19

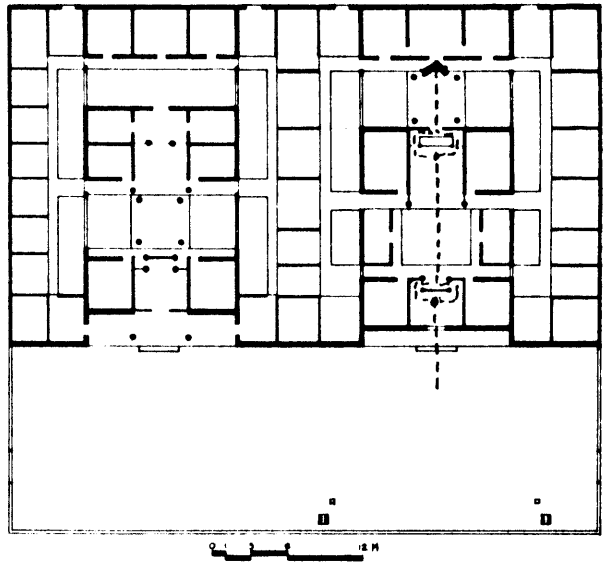


FIGURE 20

behind a solid wall facing the central entrance and then back to the central axis.

In a typical merchant house, the axis such as in the Syh-Ho Yuan is shifted from the central line to one side of the primary space, and then connects the space or courtyard behind that space through a off-centered passageway (Figure 21). This kind of linkage between spaces or buildings

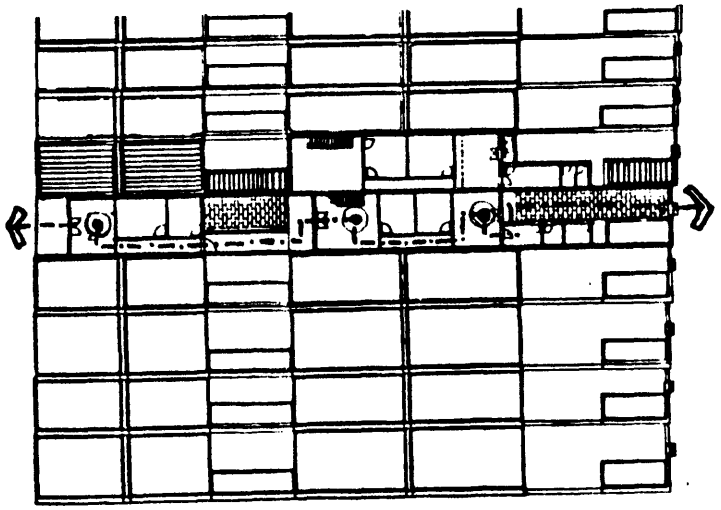


FIGURE 21

created spatial variety, and ensure privacy in various spaces. One cannot look through the whole dwelling from the main entrance. But, if we review the Chinese houses only through the master floor plan or graphic presentation, it always reveals to us an orderly and simplified geometrical spatial organization. In fact, the design concept or spirit does not wholly rely on the two dimensional expression of the layout,but on the three-dimensional "spatial sequence"and its"visual effect". It tightly grasp the whole spatial essence, and is difficult to articulate simply by the floor plan.

The uniqueness of each space, such as the courtyard, main hall, ancestor hall, etc., is created by different ways of arranging the furniture or through a miniature garden or by

dimensional differentiation. The design attention is mostly drawn to the creations of the scenery varieties and the space transition .

Typically, there is always a transitional space between spaces with different characters. When one enters the courtyard houses, the first scene is usually the courtyard itself behind the main entrance. For a larger house, the first courtyard usually serves as the space for receiving guests or family activities, sometimes as the extension space for holding an outdoor banquet, if necessary. This courtyard is more formal, and its dimensions are also larger than that of the side-yards (Figure 22). At the same time, the spaces surrounding this courtyard are also larger in height and width

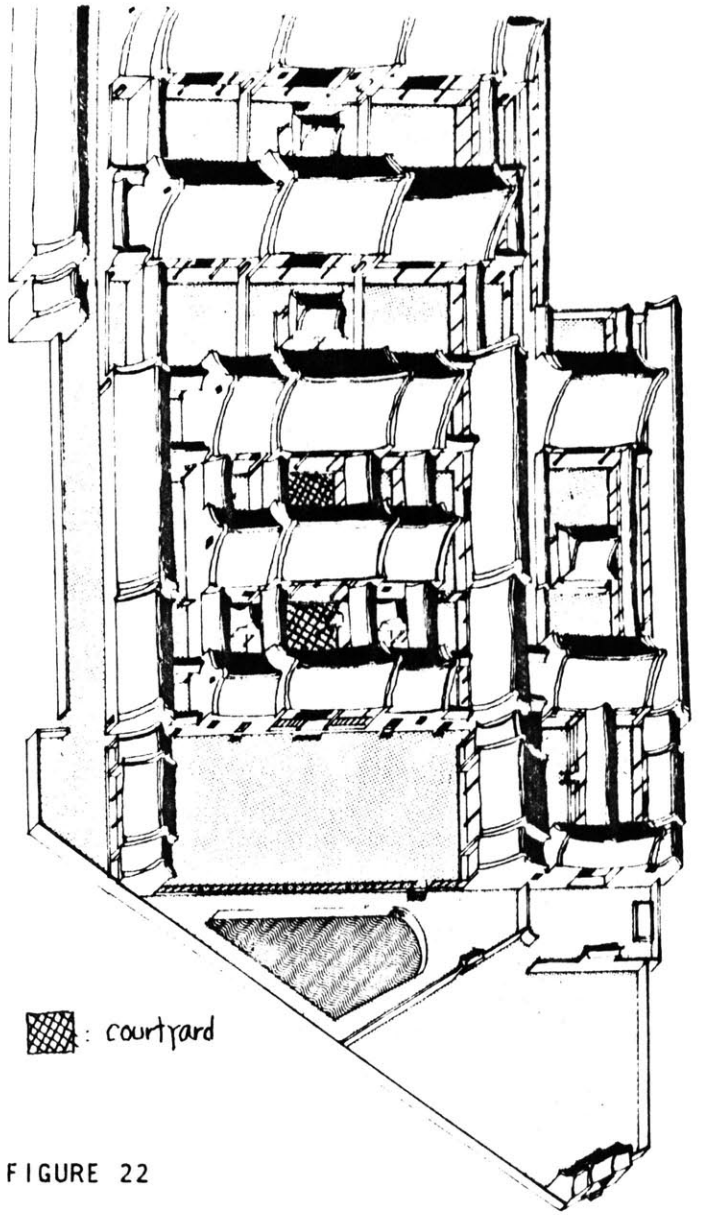


FIGURE 22

than those of the first layer of the building. Therefore, the sense of enclosure is much stronger than the side-yard. The second layer of buildings directly abuts on the first courtyard, in which the main hall is located. There is a partitioning wall separating the first yard from the second one. The partitioning wall distinguishes the outer part of the dwelling from the inner one. The second layer is intended as accommodation for the female members of the family and the servants (Figure 23). Usually, the centered main hall in the second layer building are used to receive guests. The side rooms flanking this hall are the living area of the master of the house.

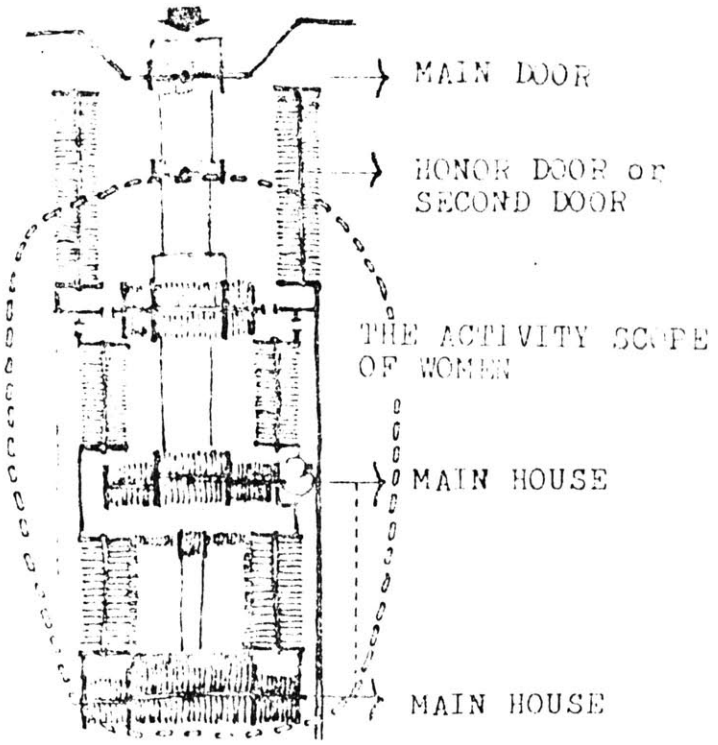


FIGURE 23

The latter building has a high roof. The higher the roof the building has, the more important the building. Decoration elements are also employed to indicate the importance of building. The third yard is more formal, usually serving as the ritual space where the

ancestor hall is located. Buildings located in the third layer are the highest in the whole dwelling, if there are only three layers of buildings, and three generations living together. The grandparents usually live in the last layer of building.

Through these descriptions of spatial distribution, we might draw the spatial sequence as follows (Figure 24):

Outside --> Main entrance --> Courtyard --> (Living spaces --> Courtyard) --> Ritual spaces --> Backdoor --> Outside

Quite often, the living room and the ancestor hall occur in the same main hall. Only if the occupants become wealthier, will they expand their house to accommodate each specific requirements, such as separating the ancestor hall thus becoming independent of the living room.

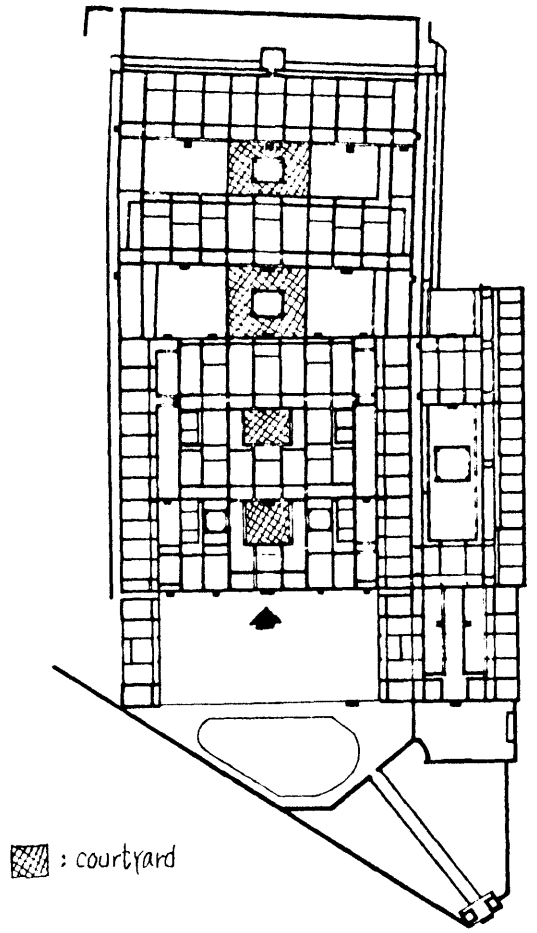


FIGURE 24

The spatial sequence in the merchant house is somehow different from the courtyard house; the difference mainly resulted from the scarcity of land in urban area, as follows:

a) The symmetrical spatial arrangement is not strictly followed. It is usually developed either along the transversal axis into several layers of buildings or vertically into two- or three-story buildings. But, if they manage to acquire enough land, the ideal symmetrical arrangement remains.

b) The symbolic decorations of the roof, indicating the owner's social status, are not strictly observed. But the pure functional requirements of weather protection are emphasised.

c) Adjacent buildings share common bearing walls just like the row houses. Detached and self-enclosed merchant houses were seldom built (Figure 25).

While bearing in mind their differences, as mentioned before, the spatial sequence in a merchant's house is quite similar to that of courtyard house. In general, it consists of three layers. The first layer serves a commercial function. The second layer serves as the spaces for the ancestor hall and master bedroom. But if there are two, or more than two, stories high, the ancestor hall will always be located on the ground floor, while the bedroom might be located on the upper floors. The third layer is usually for the grandparents and the Buddhist hall. The courtyard between layers of buildings always

serves as the space for women's housework, but also serves as a transition space for dividing various functional spaces.

The spatial sequence might be represented in the following way (Figure 26):

Outside --> Transitional space (Arcade) --> Commercial space --> Courtyard --> Ritual space --> Courtyard --> Living space --> Backyard --> Outside

Sometimes, under ritual requirementrs, the merchant house might be purposely built with a two or three-story-high interior courtyard to create a monumental mood, and reinforce the sense of the center. More elegant decorations are also added. Such an approach for an interior courtyard is rarely used in

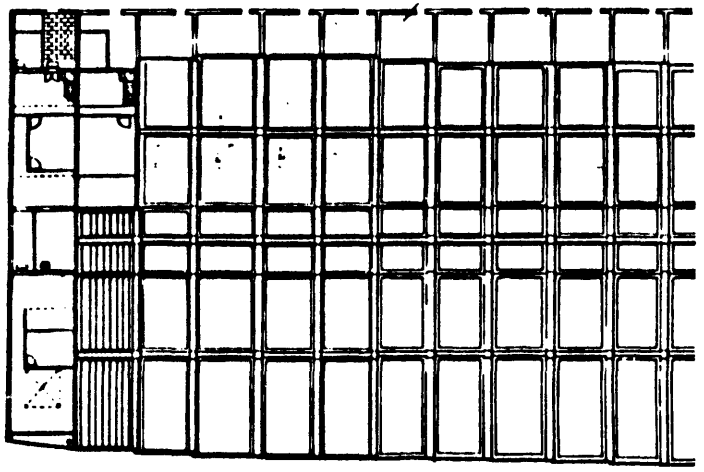


FIGURE 25

the typical courtyard house. Such spaces thus characterized the merchant house.

Another character of the spatial sequence for both types of houses is the centered main entrance. It always receives a lot of the owner's attention . The main entrance, usually located along the central axis, has a direct visual impact and creates spatial continuity with the family altar table which

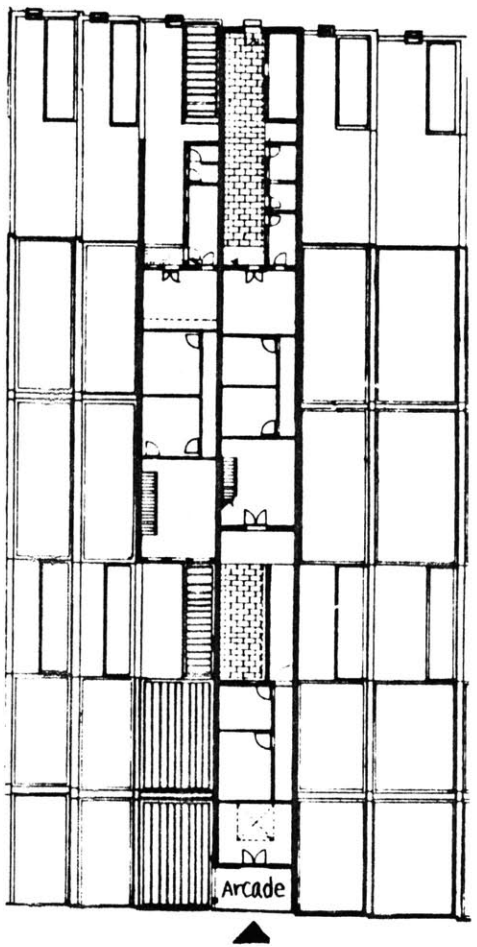


FIGURE 26

always serves as a focal point. In addition, the main entrance is also set back from the front line of the building thus making it more visible. A lot of symbolic leanings are attached on the architrave and the door-frame to symbolize the owner's social status, such as an inscription with text-couplet, etc. (Figure 27).

FIGURE 27

2-2-5: Space Transition between Rooms

The transition between spaces can be described through the analysis of a medium betweem them. This medium could be a transitional space, or only a partitioning element, or both. The relationship between spaces can be articulated by different characters of the interfacial medium. For example, an open medium would allow a good deal of visual access and physical movement between spaces.

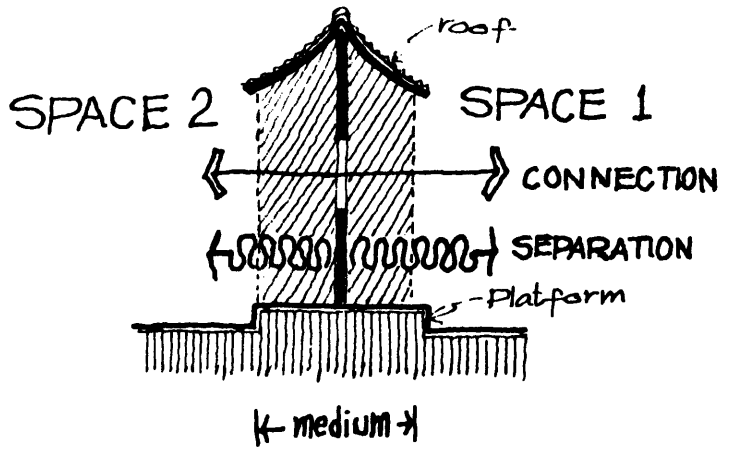


FIGURE 28

In the Chinese House, this medium may consist of exterior walls, partitioning elements (* 4), openings (such as windows, doors or voids,etc.), roofs or platforms (or floors). The analysis of those elements actually illustrate the relationship between spaces divided by such media. Generally, there are two ways to study the character of this medium: As the connection between spaces and as the separation between spaces. (Figure 28)

1) The space transition between the house and the outside world.

a) In a typical courtyard house (Figure 29):

Connection ---

Usually. the south main entrance with a well-decorated architrave, was centered and aligned with the front exterior wall, i.e. at the boundary of the enclosure. It is, in fact, the major medium to communicate formally with the outside world. Indirect visual or spatial accesses are sometimes created by means of two windows flanking the main entrance.

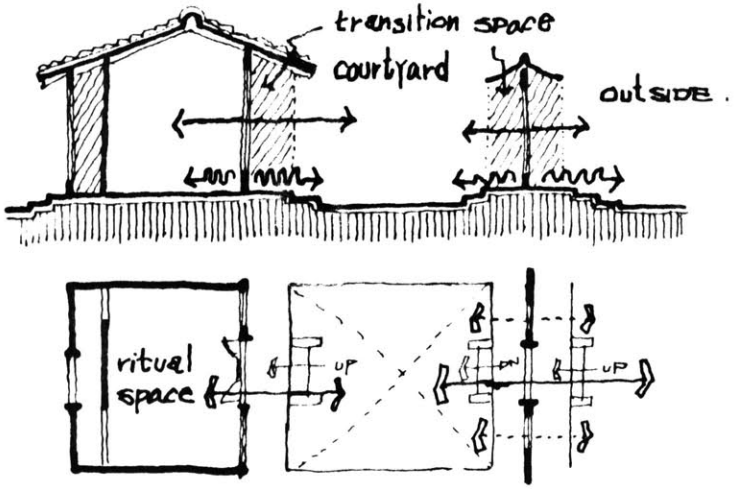


FIGURE 29

Separation ---

The Chinese courtyard house was protected against the world outside by a continuous solid wall with a few small openings. The territorial boundary between the inside and the outside was very clearly demarcated.

A raised platform and a threshold with one or two steps at the entrance separated the spaces.

The foyer or the covered main entrance with well-decorated architrave also indicated the transitional space.

b) In a typical Merchant house (Figure 30):

Connection ---

The centered, or sometimes off-centered, main gate on the front exterior wall formed the formal connection between the house and the outside world. Informal or functional connections, built for the purpose providing more business frontage, was made by two moveable windows flanking the main gate.

Separation ---

A raised platform with one or two steps between the street and the arcade formed the elements to indicate the separation between the inside and outside spaces. The arcade acted as a transitional space and also provided the functions for shelter to protecting clients from weather and as an extension space for the shop on the ground floor.

2) The space transition between ritual space and courtyard (Figure 31):

Connection ---

The ritual space usually had a direct visual and spatial continuity with the courtyard. The courtyard usually served as exterior space for ceremonial requirements. Usually,

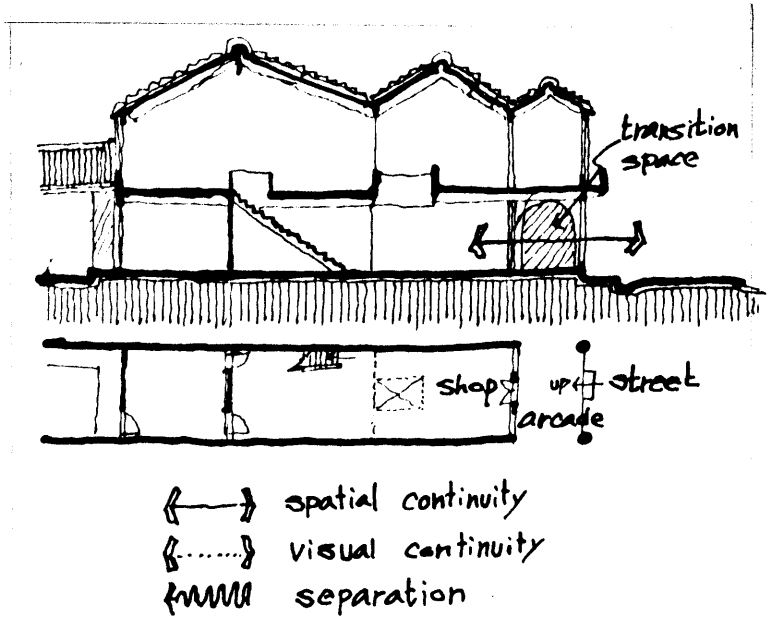


FIGURE 30

the south side of the ritual space, facing the central courtyard, was composed of either a row doors which could be entirely opened, if necessary, or a formal gate with a well-decorated exterior wall. Basically, this south side was softer than the other sides of the ritual spaces.

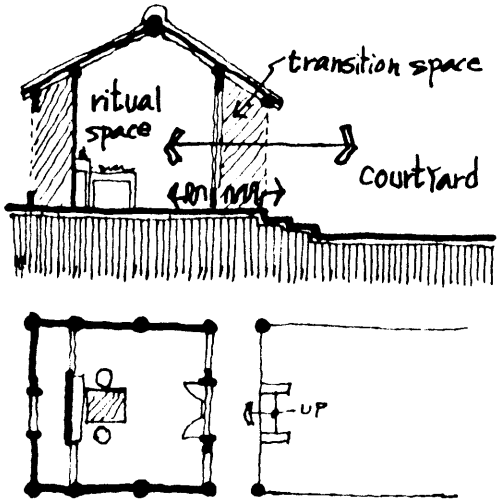


FIGURE 31

Separation ---

The partitioning of space was usually achieved by using moveable partitions with a formal gate always accompanied by a threshold and a well-decorated architrave. There was usually a raised platform with one or two steps between the courtyard and ritual space. The porch in front of the ritual space acted as a transitional space between courtyard and ritual space. (But, if we view it in terms of the whole dwelling, the front courtyard and the porch was , in fact, a transitional space between inside and outside).

3) Space transition between ritual space and living spaces (Figure 32):

Connection ---

A direct visual and spatial continuity between the spaces were possible. They also reserved the possibilities for changing the spatial partitions by taking away the moveable partitions.

Separation ---

The spaces were usually divided by moveable partitions or symbloic partitions, but without a threshold between them.

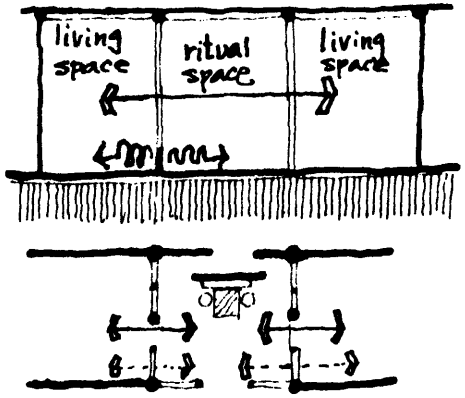


FIGURE 32

4) Space transition between courtyard and general space (Figure 33):

Connection ---

The general space usually had direct or indirect visual and spatial linkage to the courtyard through the doors, and at times through windows, if it was adjacent to the courtyard.

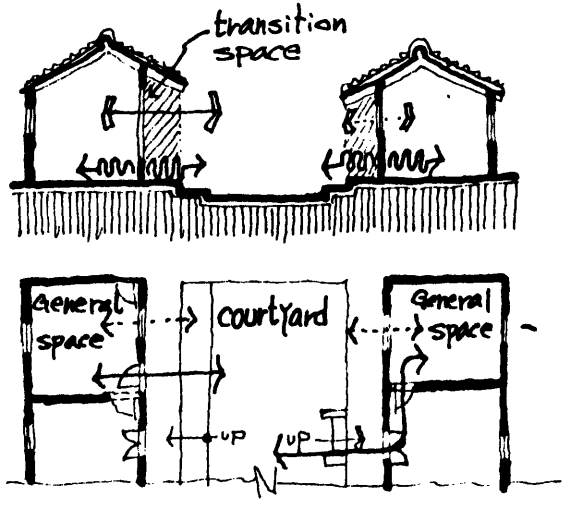


FIGURE 33

Separation ---

The spatial partition was usually achieved by employing a soild partition with a door, a threshold and a architrave. There was a raised platform with one or two steps. The porch wasin front of a general room facing the courtyard and acted as a transitional space.

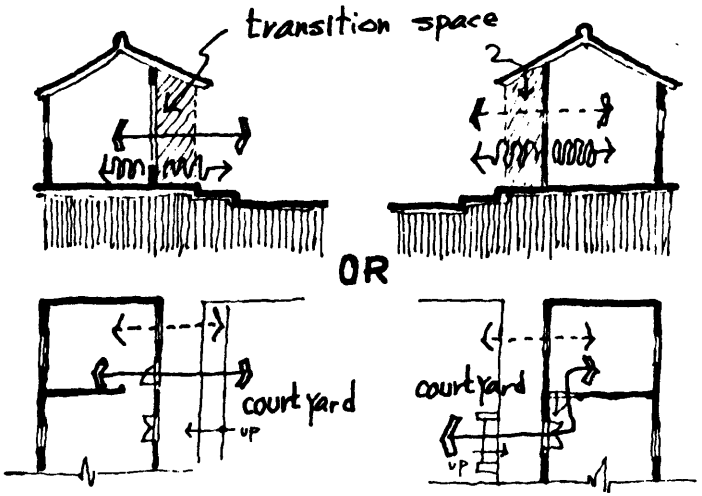


FIGURE 34

5) Space transition between kitchen room and courtyard (Figure 34):

Connection ---

There was usually an indirect visual and spatial linkage between the kitchen and courtyard, although the courtyard always served as as extension of the cooking space. The access to the courtyard was through a door with threshold and architrave. Windows were also used to provide visual communication to the courtyard.

Separation ---

A solid partition was used to separate the kitchen room from the courtyard. The porch with the raised platform acted as a transition space.

6) Space transition between living space (or ritual space) and general space, or between general spaces themselves (Figure 35):

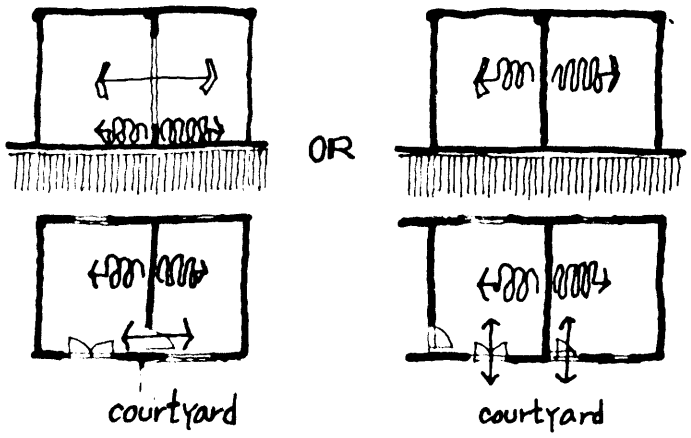


FIGURE 35

Connection ---

There was usually an indirect visual and spatial continuity through the door between them. But, sometimes, they were totally separated without any visual and spatial linkage.

Separation ---

A soild parition and a door opening with threshold and architrave were usually used between these spaces.

2 - 3: GENERAL DESCRIPTIONS on THE ROOM LEVEL

In this section, the qualities of individual room space are discussed. To describe effectively the quality of a space, the framework is set up as follows:

PROPERTIES OF ENCLOSURE	QUALITY OF SPACE
1) Dimensions	- Proportion - Scale
2) Shape	- Form
3) Configuration	- Definition of space - The means to define spaces vertically and horizontally, such as exterior walls, roof and floor, etc..
4) Surfaces and edges	- Color - Texture - Pattern - Surface articulation
5) Openings	- Degree of enclosure - View

2-3-1: Introduction --- Observation 1

To understand the way that a room is constructed, the properties of space have to be identified first.

A wooden-frame system is the basic construction system of Taiwanese buildings, which is actually an extension of the traditional Sothern Chinese style, and is also the representation of a typical Chinese wooden structure. The layout of the floor plan is usually arranged on the basis of the width and the depth of the building and the number of rooms which are contained in that building. A room, more often, is lined up in a linear way to form a house either perpendicular or parallel to the main transversal axis. Sometimes, a house consists of three, five or seven rooms, which are called, respectively, a three-bay house, five-bay house or seven-bay house. Most of the houses in the Taiwan area are usually made up of three bays (Figure 36) or five bays, rarely with seven bays. The structural columns are usually engaged in walls and become part of the partitions or the exterior wall. They are visible but rarely independent of the partitioning system.

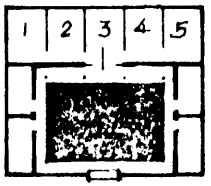


FIGURE 36

The wooden frame roof (truss) is aligned with the partitions thus making a complete vertical subdivision within the house. Basically, the floor plan and the structural plan are adapted to each other. Therefore, the interval between wooden structural frames are usually the same as the width of the rooms. The rooms are usually the same dimension expect for the ancestor's hall (which is larger). In general, there are three different types (* 5) of construction to make the wooden frame . But, the Tai-Liang type (* 6) and Ch'uan-Tou type (* 7) are the most popular methods of construction in the Taiwan area.

The Tai-Liang type is usually used in the formal or larger mansions. It is also often combined with the Ch'uan-Tou type for a larger number of houses.

The first two issue will be reviewed separately for the whole room. They are purely geometrical issues and their integral effects are more important than the other issues. The rest of the issues, (configuration, surface and edge, and opening), will be disscussed on the basis of the two aspects similar to those of the furniture level --- the selection of elements and the distribution of elements. I will also go one step further to describe the characteristics of each element in defining space, color, texture, surface articulation and the location of openings

2-3-2: The Categories of Rooms

There is no way to describe the properties of spaces without knowing the catagories of rooms. In general, we can divide rooms in traditional Chinese houses in the Taiwan area into two groups: the interior spaces, and the exterior spaces (see list 1 & 2).

List 1:

1) The interior spaces:

- Ritual spaces --- ancestor hall
- Living spaces --- Living room
  Family room
  Main hall
- General rooms --- Bedroom
  Study room
  Guest room
- Service room --- Kitchen room
  Storage room
- Transition space --- Foyer
  Arcade
  Passageway
- Commercial space --- Shop

2) The exterior spaces (the transition space):

- Courtyard
- Sideyard
- Alley
- Porches

If we categorize these interior spaces in terms of their relative importance in the whole dwelling, they might be classified as follows (see list 2).

List 2

1) Primary space --- Ancestor hall
Main hall
Family room
Living room
Bedroom

2) Secondary space --- Kitchen room
Service room

2-3-3: The Selection of Elements

The selection of elements defining a room varies depending on the theme. For example, if we intend to describe the orientation of the room, the elements in relation to that point could be: The vertical planes, such as exterior wall, partitions,etc. and the horizontal planes, such as floor, platform,etc.. The relationship between those elements defines the orientation of a space. But, if we go one step further to study the character of one of the elements defining a space, which will still affect the quality of a space, such as the location of an opening in a wall, the selection of elements in relation to that point would also be different from that of the orientation to a space. Therefore, we could say that the selection of elements actually depends on the theme we choose.

The selection of elements concerning the following issues that we are going to discuss will be as follows:

1) On the issues of dimension, shape and configuration:

As mentioned previousely, these issues deal directly with the integral sense of a space. Any three-dimensional form articulates the volume of space surrounding it and generates a field of influence, or, the territory orientation of those elements of form define specific types of space. Therefore, we identify these elements for the whole space, that is elements defining a space, into two parts (Figure 37); one is the horizontal planes, such as the roof, baseplane; the other is the vertical planes, such as exterior wall (* 8) and partitions.

The first part is the horizontal plane: roof and platform.

The second part is the vertical plane: partitions, load-bearing walls or non-load-bearing walls.

a) Horizontal planes

b) Vertical planes

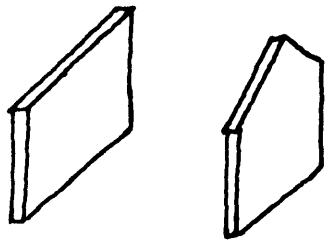


FIGURE 37

Vertical forms are generally more active in our visual field than horizontal planes, and are, therefore, instrumental in defining a volume of space and providing a strong sense of enclosure. Vertical elements of the form also serve as support for a building's floor

and roof planes. They create the visual and spatial continuity between the interior, the exterior environment and the orientation of circulation between rooms. They help to filter the flow of air, light, etc., through and to the interior spaces.

In this study, I will naturally pay closer attention to the study of vertical elements.

2) On the issue of surface and edge

I am going to pay attention to the individual element that defines a space. Therefore, the sub-elements that I identify would be: the material itself, the column, the wall-body, openings, decorations and some symbolic signs.

3) On the issue of openings:

I concretrate on the individual element itself. The sub-elements I identify would be: doors, windows, voids and the wall-body itself. The relationship among those elements or subelements will address the issues that I will deal with.

2-3-4: The Descriptions of Rooms

2-3-4-1: Dimensions

In general, the width of the ancestor hall varies from 4.2m to 5.5m; the depth is between 5.5m to 9.0m; the height of the ridge is between 4.2m to 5.2m. The width of the other rooms are usually smaller than the

ancestor hall. They vary from 3.6m to 5.5m. The depth and the height usually depend on the dimensions of the ancestor hall. The typical dimensions of each room are usually as Table 1 shown (* 9).

TABLE 1 Unit: Lu-bain-foot

Width	Main Hall	14	16	18
	Bedroom	12	14	16
Depth		18	24	30
The Height of Beam		14	15	17

Footnote: 1 Lu-bain-foot = 29.7 cm

Therefore, the general proportion is as follows:

width : depth : height = 1 : 1.5 : 1

2-3-4-2: Shapes

With the exception of some Hakka dwellings found in Mainland China where the shapes are in the form of concentric circles, most traditional Chinese dwellings could be considered as a composition of rectangular shaped spaces, both those of the interior and exrerior. The spatial structure of a Chinese dwelling is a geometrical grid system, as discussed previously. Accordingly to the book entitled " Cathay's Idea-Design Theory of Chinese Classical Architecture " written by Prof. Yuan-Shu Lee, the typical floor plan of a Chinese single dwelling can generally be expressed by the arangement of the structural framework or the roof structure. In other words, the floor plan is actually the reflection of the structural plan without any functional expression (Figure 15).

2-3-4-3: Configurations

Relevant elements:

The horizontal elements: roof (overhead plane)

platform (base plane elevated)

The vertical elements: side partitioning walls

front and back exterior walls

There are six types of vertical elements which define a space according to Francis D. K. Chang's analysis in "Architecture: Form, Space and Order." (* 10) A linear vertical element can define the vertical edge of a volume of space, such as column, etc.. But if a series of linear vertical elements are tightly integrated into a vertical plane, it will articulate the space that it fronts. A vertical plane associated with another vertical plane will form an "L"-shaped configuration of planes which generate a

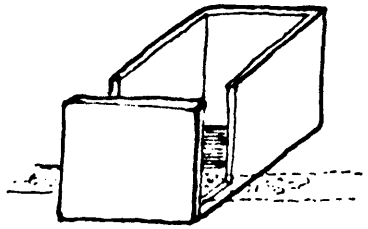


FIGURE 38

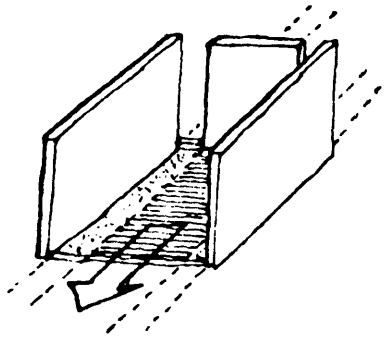


FIGURE 39

field of space from the corner outward along a diagonal. If there are two parallel vertical planes, they define an axially oriented volume of space.

A "U"-shaped arrangement of planes defines a volume oriented toward the open end of the configuration. Four planes will enclose an introverted space, they actually articulate the field of space around the enclosure. In most Chinese houses, the space of the room is usually defined by combining the "U"-shaped configuraiton of planes with an isolated vertical plane, creating two openings flanking the front of the rooms (Figure 38).

In the ancestor hall, the combination of vertical and horizontal elements basically create the form of a rectangular box with a prism loft on top. These vertical elements in the ancestor hall play different roles in defining the space. The front plane facing the courtyard is always either in the form of a row of doors which could be opened entirely, if necessary, or in the form of a wider door opening, or is left completely opened. The remaining three sides are generally fixed. Therefore, we might consider the configuration of the ancestor hall as a "U"-shaped configuration of vertical planes, which defines a field of space that has an inward focus as well as an outward orientation (Figure 39). We might say that the front side, with an opening and lighter traits, is the primary element in affecting the sense of space because of its uniqueness relative to the other three sides. It allows the space to have visual and spatial continuity with the courtyard.

2-3-4-4: Surfaces and Edges

1) Side walls or partitions:

As described previously, most columns are usually engaged in the exterior walls and the interior partitions. The location of partitioning walls and the side walls are based on the layout of the wooden structural frame. Therefore, surfaces and edges are articulated by those inserted columns, support elements or the pillasters (in western architectural terms) (Figure rule a-31).

2) Back wall:

The back wall of a building facing the outside is basically filled with brick or other materials, but the front side is made up of either moveable door-like panels or brick walls with a wide gate in the center.

3) Front wall:

The front side of each building usually receives a lot of attention similar to most regional architecture, but the difference between them is that the well-decorated front facade in a Chinese house usually faces the inner courtyard rather than the outside (street), in which the centered main entrance is the primary medium to claim owner's status. For the Chinese in older times, the outside was a strange world, symbolizing insecurity and uncontrol. Thus, a huge blank wall with smaller openings always faces the strange outside world. According to Yuan-Shu Lee's viewpoint, those elegant facades, particularly in the front facade of a main house and the ancestor hall, in fact, act as

the background for the courtyard. Most of the buildings' facades are designed to create the scene in a courtyard. The main spirit of Chinese architectural art is to arrange dramatically and sequentially these various layers of building and scenery. Therefore, to design a building's elevations as the background for the courtyard is more important than as the expression for building itself. For example, a building, which is always rectangular in shape, has four facades, but the formative continuity among the four sides of the courtyard is more important than that of the building facades (Figure 40). Therefore, when we study the elevations of traditional Chinese houses, we cannot neglect the location where that elevation actually is placed in the dwelling layout, and we also cannot neglect the factor

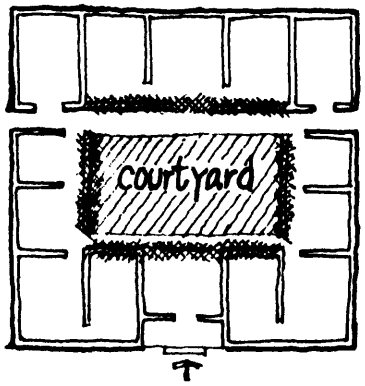


FIGURE 40

of elevation as a background for the courtyard.

Besides these characteristics, it should also be noted that there must be some spaces reserved for inscribing or hanging the pair of scrolls or calligraphic paintings, such objects must be displayed symetrically on any wall, be it the side walls or back walls, or front walls (Figure 27).

Another issue that should be addressed is " color ". The traditional architecture is mostly wooden, with stone and brick used as secondary materials. Paint is desirable not only because it can provide various colors but also because it can protect the wooden frame. Therefore, it plays a very important role in Chinese architecture. Chinese architecture generally has a tendency toward using bright, happy and aplendid colors. Different color have different symbolic meanings. In general, the corresponding meaning for the primary colors are as follows:

Green --- peace and eternity.

Red ----- luck and happiness.

Yellow -- power and wealth.

White --- sadness and peace.

Black --- destruction.

Under this classification of color meaning, green and red colors are mostly used to symbolize good luck and wealth in dwellers. Pure white and black are avoided and rarely employed except for outlining the ridge or edges of a building. Yellow can only be used for very important buildings, such as a big temple or emperor's palace. During the Ching dynasty, most buildings in Taiwan were always colored in the following manner:

1) The platform is usually constructed by stone. Therefore, the original color of stone always is kept, which is chalky or milk white.

2) The body of building is usually constructed of wood or brick. Garnet or red is the general color in most dwellings.

3) The roof is always colored in gray or fuscous, which is actually the original color of tiles. The ridge is always chalky.

2-3-4-5: Openings

Up to now, I have already generally described some spatial properties, but there is another issue, i.e. openings.

The size, shape and location of openings or voids for an enclosed form strongly affects the quality of a space. Here, I should limit the definition of opening to coventional terms, i.e. windows, doors or voids in the fixed partitions or walls. The other forms of openings, such as opening formed by so-called " Chao " (罩) or " Ko-Shan " (隔扇) ,(see figure rule a-25), have already been discussed in the section, "space transition."

Location:

In the Chinese courtyard houses, most of openings are wholly within the encolsing planes of a space, which do not weaken the edge definition nor the sense of enclosure of the space. Basically, the form of the space still remains intact and perceptible. Openings are rarely located along one edge or near a corner of a wall or on ceiling plane, nor do they visually span vertically between the floor and ceiling planes, or horizontally between two wall planes, except for the openings in the main hall, such as the ancestor hall, where there are two openings usually introduced at the both ends of the

rear ends in order to connect the parts of the building behind this ancestor hall or serve the function for service movement from the side rooms. Therefore, a secondary zone is created in that space. Sometimes, the side rooms that flank the ancestor hall have direct accesses to the ancestor hall. In this case, the space of the ancestor hall actually is multidirectional and dynamic in nature. It is a public space and the heart of the whole dwelling (Figure 39).

SHAPE

Besides the rectangular shape of openings, there are a lot of variations in shape, which usually contrast with the enclosing plane and emphasize its own individuality. They can be in the shape of a circle or semi-circle, bottle-like, or hexagonal, octagonal, sectoral, etc.. But, the rectangular shape is the generic shape which is mostly adopted for ordinary dwellings. The other shapes of openings are usually used to symbolize something or make a space more interesting. These variations could occur any where. The individuality of the opening is often reinforced with a heavy frame (see figure rule a-34).

DIMENSION

Because the individuality of openings is always emphasized by contrasting with the enclosing wall, the opening is narrowly bounded by the wall to create contrasting effects.

2 - 4: GENERAL DESCRIPTIONS on THE FURNITURE LEVEL

VIEW

While some spaces have an internal focus, such as a family altar table, or have an outward orientation given to them by a view to the outdoors or an adjacent space, such as natural scenery, a courtyard with a small private garden or with a man-made miniature water-fall, openings provide this view, and establish a visual relationship between a space and its surroundings. In this case, small openings tended to frame such a view and are seen as a painting on the wall. Sometimes, they could also be in various shapes to create a sense of interest and uniqueness.]

The arrangement of furniture makes a " place ". The furniture indicates the boundary of a " place ". Here, I would like to discuss the arrangement of furniture by the selection of furniture and the disturibution of furniture. In the selection of furniture, I will deal with the issue of what kind of furniture is being used in a particular room. In the distribution of furniture, I will deal with the issue of how they relate to one another, In other words, the relationship among these furniture.

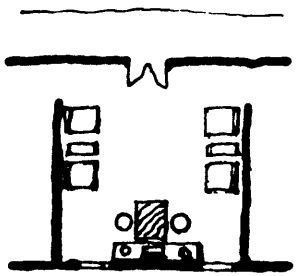


FIGURE 41

2-4-1: Introduction --- Observation 1

In the Ming and Ching dynasty, one, or more than one, suite of furniture used to be arranged in a symmetrical layout. In general, furniture is placed against the window, and facing the main entrance directly and is always the gravity center of that room. The main table, such as the family altar table. is usually located in a very prominent place, and dominates the whole disposition of furniture in that room. The suited chairs and tea-poy table are grouped with this table to form a so-called "place" (Figure 41). A cabinet, commode and bookshelf,etc. are also, more often, coupled to be placed in a symmetrical way and required a strict and orderly arrangement. Therefore, various and subtle accounterments are used to create a lively atmosphere in the room. For instance, paintings, a pair of scrolls, calligraphic paintings, curio and miniature gardens, etc. usually with very bright and beautiful colors and shapes are used to satisfy these kinds of special requirements. These accounterments matched with brown furniture and white walls, create a gorgeous space.

2-4-2: The Arrangements of Furniture

Now, I try to describe the arrangement of furniture in different rooms from the followimg aspects: the selection of furniture and the distribution of furniture.

2-4-2-1: In The Ancestor Hall

1) The selection of furniture

Site --- The ancestor hall acts as a site for the furniture.

Elements --- Family altar table

Eight-person table (Credence)

Drum stool

Formal sitting chair (Faureul)

Tea-poy table

2) The distribution of furniture

The room is the site for the furniture on the lower level, and the furniture will be the infill elements for the room on the higher level. Therefore, there are two kinds of relationships involved; one is the horizontal relationship among furniture from which we can formulate the general rules for this level, and the other is the vertical relationship between the furniture and the room, from which we can also formulate the interface rules between the two levels.

a) Family altar table:

The family altar table used to be placed on the transversal axis against the solid wall and facing the main entrance of that room. It actualy plays a dominant role, relative to the other furniture, in the ancestor hall (see figure rule a-38).

b) Eight-person table and Drum stool:

The eight-person table, usually associated with the family altar table, is also located on the transversal axis. Two drum stools respectively stand beside both sides of the eight-person table and in front of the familay altar table.

c) Formal sitting chairs and Tea-poy table:

Formal sitting chairs and the tea-poy table are always together and symmetrically located at both sides of the transversal axis. The arrangement of formal sitting chairs and tea-poy table forms the " place " in which major family actiivities, such as social gatherings, wedding ceremonies, worship rites and welcoming guests, etc. take place.

In short, most furniture are usually placed against the wall and symmetrically in the room.

2-4-2-2: In The General Room

a) The selection of furniture:

Site --- general room as a site for furniture

Elements --- Bed with bedspread
Foot stool
Table
Five-drawer chest
Closet
Drum stool
Wash stand
Chairs

b) The distribution of furniture

a) Bed (see figure rule a-38)

The bed used to be against either the center

segment of the solid wall, which could be considered the same as that of ancestor hall where the family altar table is located, or in the corner of the bedroom. A small foot stool always accompanies the bed, where users remove their shoes and keep them there.

b) Table

The table also sits against the wall opposite the location of the bed. Drum stools and chairs are placed beside the table or sit in front of the table.

c) Closet and Five-drawer chest:

The closet and five-drawer chest are separately placed against the side walls in terms of the transversal axis of the room, beside where the table and bed are placed.

d) The rest of the furniture:

They depend on the requirements.

2-4-2-3: In The Kitchen Room

The kitchen is also an important room in the Chinese house. It reflects the organization of family structure.

1) The selection of furniture:

Site --- Kitchen as the site for furniture

Elements --- Chinese stove

the other auxiliary facilities,

such as a place for storing fagots.

2) The distribution of furniture:

The location of the Chinese stove is not predetermined. Sometimes, it is placed in the temporary room attached to the end of main

house or side house (Hu-Long). Sometimes, it is placed in the end room of the main house. But, the most important factor needed to be considered is that the location of the kitchen requires very good ventilation because of the thick fumes created while cooking.

FOOTNOTES

1. Reference to "Traditional architecture" by Chien-Lang Lee, page 46.

2. "Hu" --- Protection
"Long" --- Dragon
The meaning of "Hu-Long" is the protection of the main building from the world outside.

3. Reference to M.I.T. Thsis by Yih-Ping Chang, 1983.

4. A distinction must be made between walls and partitions. The wall is a mass and the partition is a surface. The wall serves to form the enclosure and performs a static function, but the partition, both exterior and interior, are infill between the pillars and have no static functions, but instead, aesthetic and symbolic value.

5. These types of wooden frame are Tai-Liang type, Ch'uan-Tou type and Ging-Gan type. (see figure 42)

6. Tai-Liang type
The wooden frame is built up by planting the columns on the stone bases along the direction of the building depth, and then placing major beams on the top them. The distinctive feature of this type of construction is that the whole framework consisted of several layers of column-beam frames, sometimes of two layers, three layers or more, with the shorter column-beam frame used to be laid to overlap on the major one in order to support the roof frame (see figure 43).

7. Ch'uan-Tou type
The main difference between the Tai-Liang type and the Ch'uan-Tou type is that the

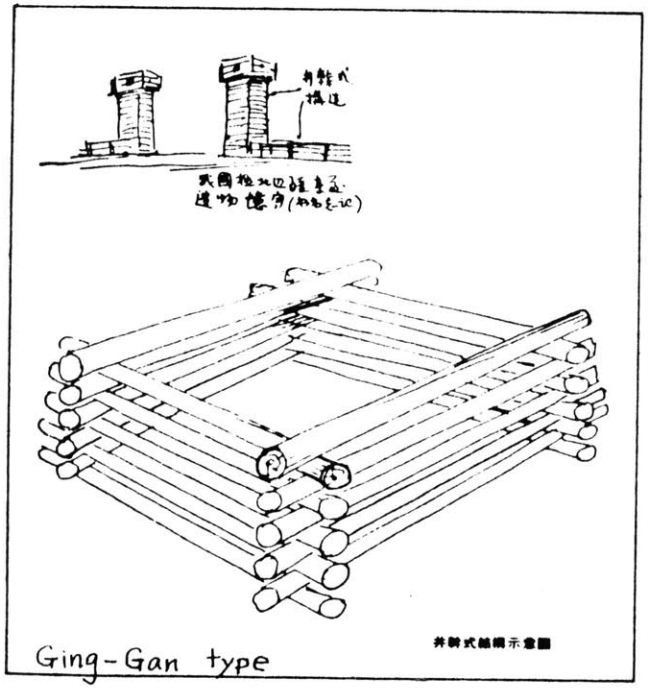


FIGURE 42

roof truss of the Ch'uan-Tou type rests directly on the main columns instead of on the shorter column-beam frame, but there are still several layers of tie-beams between columns (see figure 44). Another difference is that the distance between two columns in the Ch'uan-Tou frame is much narrower than that of the Tai-Liang frame.

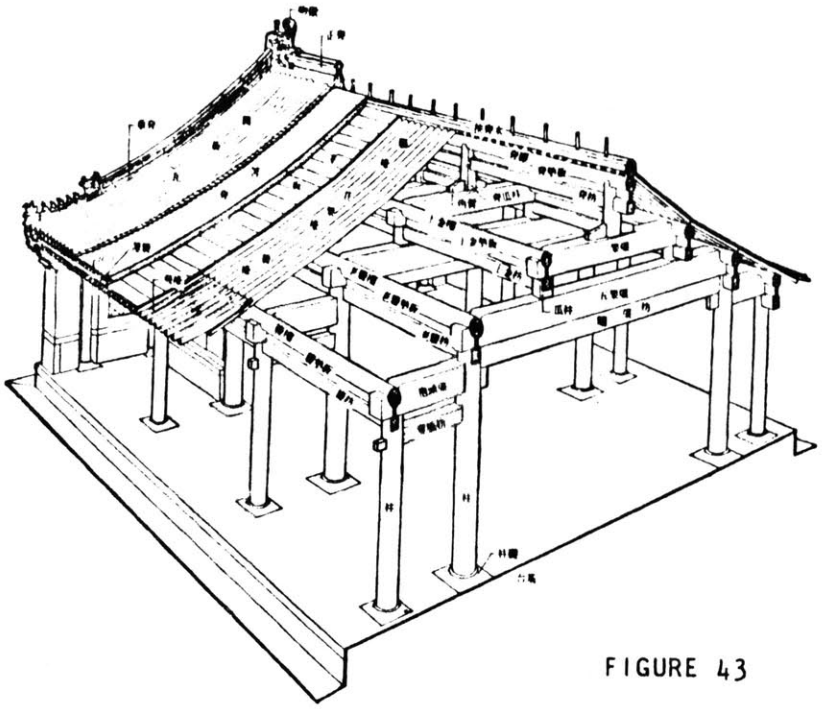


FIGURE 43

8. The meaning of the exterior wall is relatively defined depending on its context (or surrounding).
On the building level, the exterior wall is discussed in terms of integrity, i.e. it is viewed as the facade of a building, which we usually use in an architectural sense.

On the room level, the portion of the exterior wall bounding the room is only seen as one component of the room. It is only a fragment, not viewed as the integral elevation of a building any more.

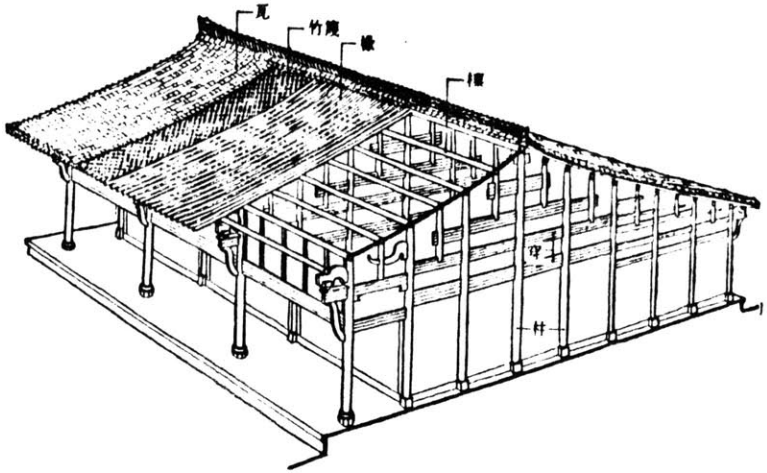


FIGURE 44

9. Reference to "The Traditional Style of Taiwan Houses" by Shao-Mei, page 8.

10. Reference to "Architecture: Form, Space and Order" by Francis D. K. Chang, page 137.

CHAPTER 3: RULES and PHYSICAL PATTERNS ---- 72

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3 - 1: INTRODUCTION

The rules will be abstracted on the basis of their characteristics:

1) Popularity:

The rules must be shared by the majority, not by a certain group of people. The conformity with rules serve to establish the conventions which make the transmission of formal meaning (or image) under ordinary circumstances possible.

2) Inheritability:

The rule must be able to be inherited and adjusted through generations, and it is subconsciously generated by the majority, not by the minority or specific persons.

3) Implicitness:

The rule must be subconsciously accepted by the majority, and is hard to turn it concretely into regulations or laws. It is always implicit and behind the physical environment in nature. Thus I do not consider laws, building codes or regulations as rules because of their explicit dominance which everybody must follow.

3 - 2: ON THE DWELLIG LEVEL

3-2-1: Spatial Organization

Rule a-1. ACCESS

Each unit should have direct access to the public open space. The access will allow the occupant to identify themself and have the opportunity to claim his territories.

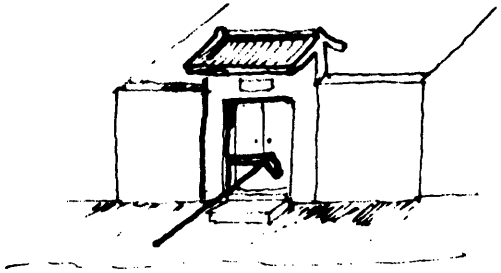


FIGURE Rule a-1

Rule a-2: BUILT FORM

The built form must be rectangular.

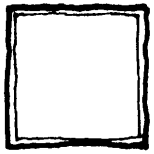


FIGURE Rule a-2

Rule a-3: SPATIAL ORGANIZATION IN THE GRID SYSTEM

The spatial organization and the circulation system should integrate into geometrical grid system.

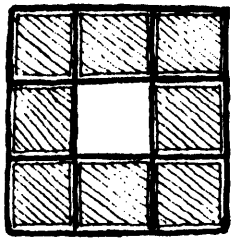


FIGURE Rule a-3

Rule a-4: CIRCULATION

All circulation must be taken through a courtyard. The linkage between spaces surrounding the courtyard is achieved through a room-like courtyard opened to the sky, not by a narrow corridor or passageway. Such a circulation space provides more flexibilities not only for movement, but also for accommodating various activities.

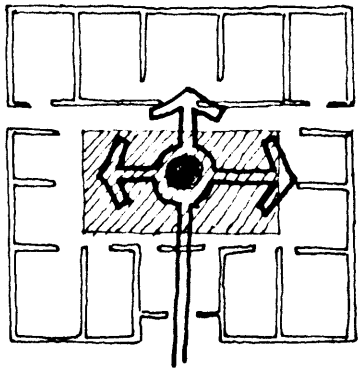


FIGURE Rule a-4

Rule a-5: THE CENTRALITY OF THE DWELLING

The ancestor hall and the courtyard in front of the ancestor hall should be conceived as the center of gravity for the whole house. The huge solid exterior wall, for instance, is usually employed as a means of protection for the family from the outside world. The family activities are oriented towards the inside. The wall also serves as a symbolic

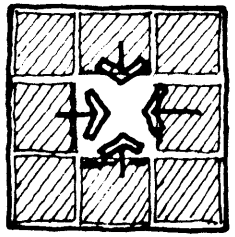


FIGURE Rule a- 5

representation of the cosmological principles of the sequence and forms' directions. The house should have an inward characteristics:

1) The Central courtyard should be the center of family activities.

2) There should be a clear articulation of territory.

3) Building elevations should face the courtyard rather than the street (the outside) and use the main entrance as a primary medium to communicate with the world outside.

Rule a-6: FLEXIBILITY IN SPACE FUNCTION

In the Chinese House, the central hall is always reserved for ceremonial purposes but all other rooms can be used for a variety of purposes depending on the needs of the moment. Rooms should be able to serve a variety of functions including using them as sleeping quarters, studios, for storage or dinning, etc.. They could all look similar in shape, form and dimension. For large compounds which house more than one household, each household may occupy a portion of the compound with its own center of activities,inner courtyard and rooms. But the distribution of such elements are according to needs.

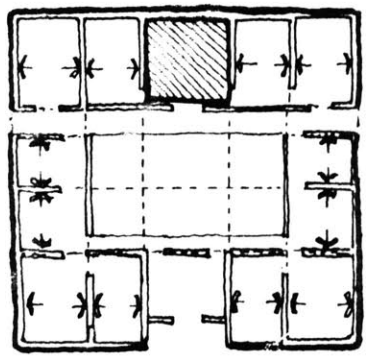


FIGURE Rule a-6

Rule a-7: FLEXIBILITY IN STRUCTURAL SYSTEM

Extreme structural flexibility should be considered. Preferably the same method of construction should be used for different types of building. It should also provide flexibility for constant changes, renewal and addition.

Rule a-8: RECTANGULAR SHAPE

Form, arrangements, axis are preferably laid out at right angles. A diagonal arrangement, axis edge or even walls etc., should be avoided in the layout or design, because diagonal means slanted which connotes evil ways. (the Chinese generally try to avoid any descriptions which would lead to bad connotations in their literal pronounciation.)

Rule a-9: THE ORIENTATION OF THE MAIN HOUSE

The main house are should perferably face south with a hill in the back and overlook the water (river, lake etc.). The north-south axis is reinforced by the symmetrical organization of space around the axis.

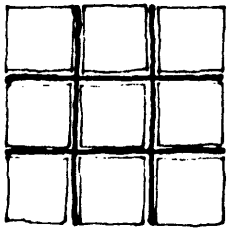


FIGURE Rule a-8

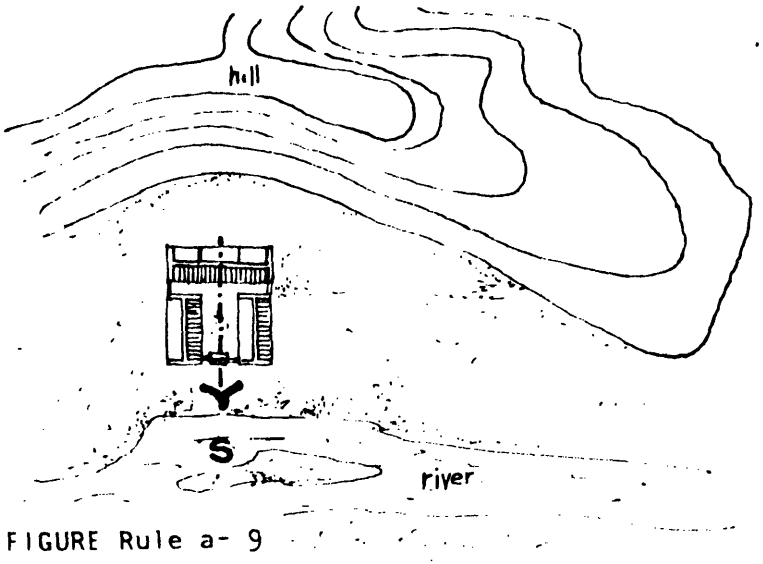


FIGURE Rule a- 9

Rule a-10: THE BOUNDARY OF TERRITORY

The territory must be clearly demarcated. The spatial quality, outside and inside the territory, must be clearly distinguished.

Rule a-11: CLEAR DISTINCTION BETWEEN THE PRIMARY SYSTEM AND THE SECONDARY SYSTEM

There should be a clear distinction between the primary system and the secondary system. Such distinction should be reflected not only in the circulation system, but also in the system of physical built form. For instance, the height of the main house is usually higher than that of houses in the side wings.

3-2-2: Spatial Sequence

RULE a-12: CIRCULATION SYSTEM

The exterior circulation within courtyards and between buildings is the primary circulation system.

The interior circulation within each building between rooms is the secondary circulation system.

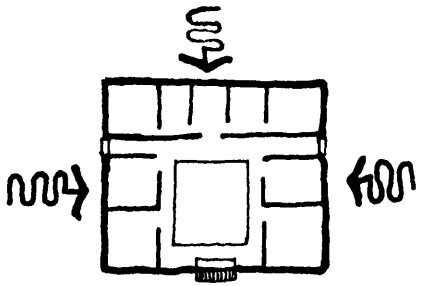


FIGURE Rule a- 10

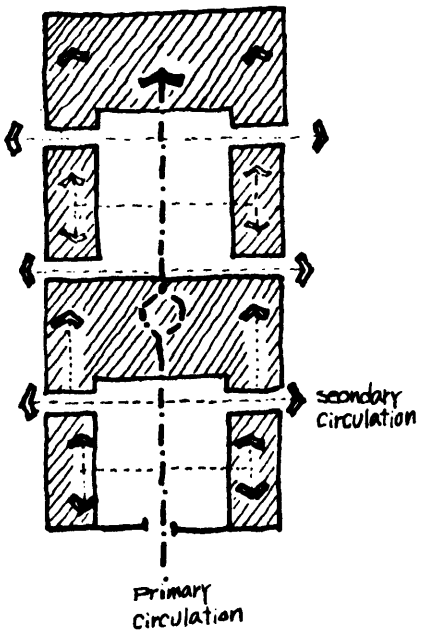


FIGURE Rule a-12

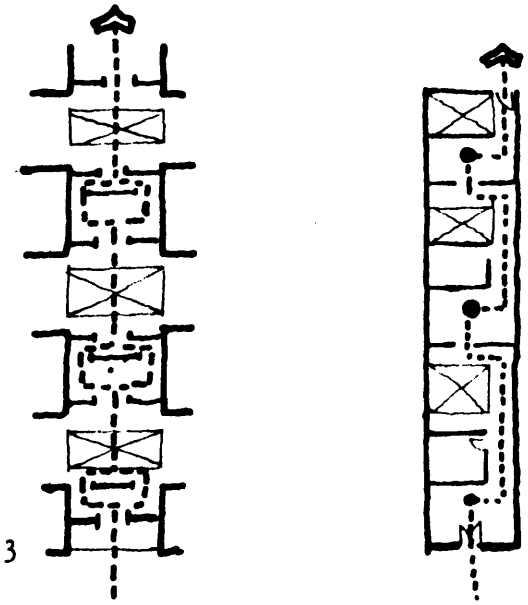


FIGURE Rule a-13

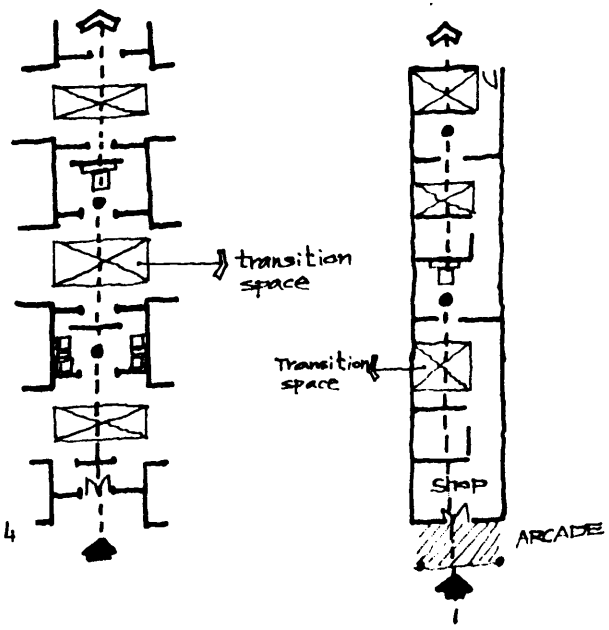


FIGURE Rule a-14

Rule a-13: CIRCULATION PATH

The axial path should be circuitous, although all the primary spaces are symmetrically arranged along the central axis. For example, the entrance to the ritual space, such as the ancestor hall, must happen along the axis. But, to enter the space / courtyard behind the ritual space, the axis shifts, and the transition space is usually behind a solid wall facing the central entrance. The axis in the primary spaces can also be shifted by a variation of arrangement, with a back door on one side of the primary space, connecting the back parts of the dwelling by means of a passageway parallel to, but away from the central line.

Rule a-14: SPATITAL SEQUENCE

For the courtyard house:

Outside --> Main entrance --> Courtyard --> (Ritual space --> Courtyard --> Living spaces) --> Back door --> Outside.

For the merchant house:

Outside --> Transitional space (Arcade) --> Commercial space --> Transitional space --> Ritual space --> Transitional space --> Outside.

A transition space should be placed between two spaces with different characters.

Rule a-15: THE ORGANIZATION OF PRIMARY SPACES

The primary spaces, such as the ancestor hall, formal living room and family room, should be located along the central axis and form the central system of organization of the whole dwelling. The main entrance to these primary spaces should be located in the center of the front facade and also line up along the central axis.

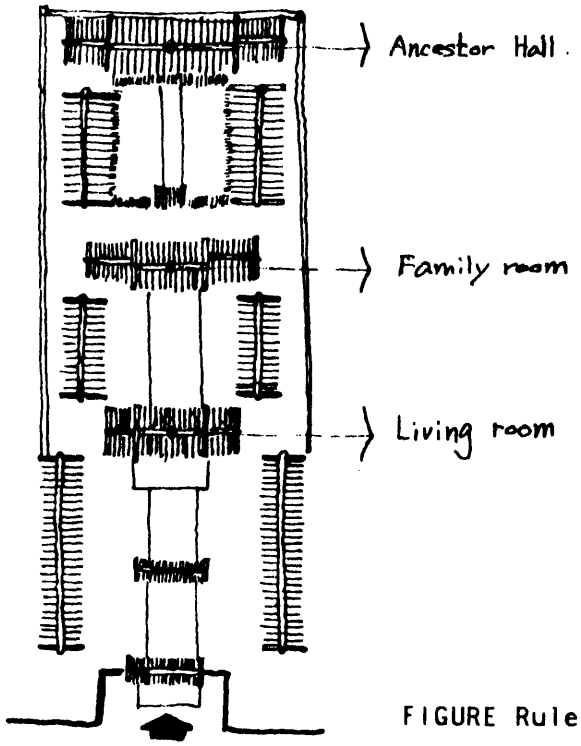


FIGURE Rule a-15

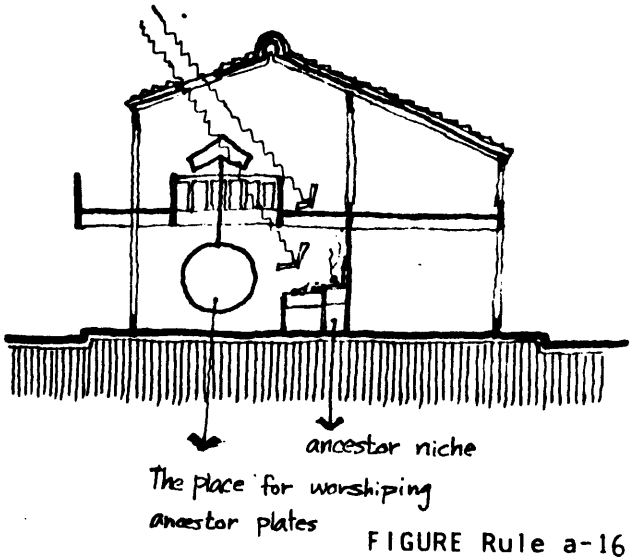


FIGURE Rule a-16

Rule a-16: ANCESTOR HALL and NICHE

The ancestor hall always serves as a place for receiving guest, having family activities or praying to the ancestor plate. It was more public relative to the rest of the rooms.

There are no habitable spaces directly overlapping on the top of ancestor hall within the same dwelling unit, except for the place for praying to the ancestor. That symbolizes reverence for the ancestors. In other words, the spaces right above the niche still could be used for another space. The space for placing the ancestor plate usually was semi-enclosed and well-decorated, and also required a place around itself for attaching the symbolic couplets.

Rule a-17: THE INTENSIFICATIONS OF PRIMARY SPACES

On the building level:

The following patterns are used to strengthen the importance of the primary spaces.

1) Locating the central axis:

2) Increasing the vertical dimension:

- Interior courtyard --- The most important building, such as the ancestor hall, was made higher in order to signify its relative

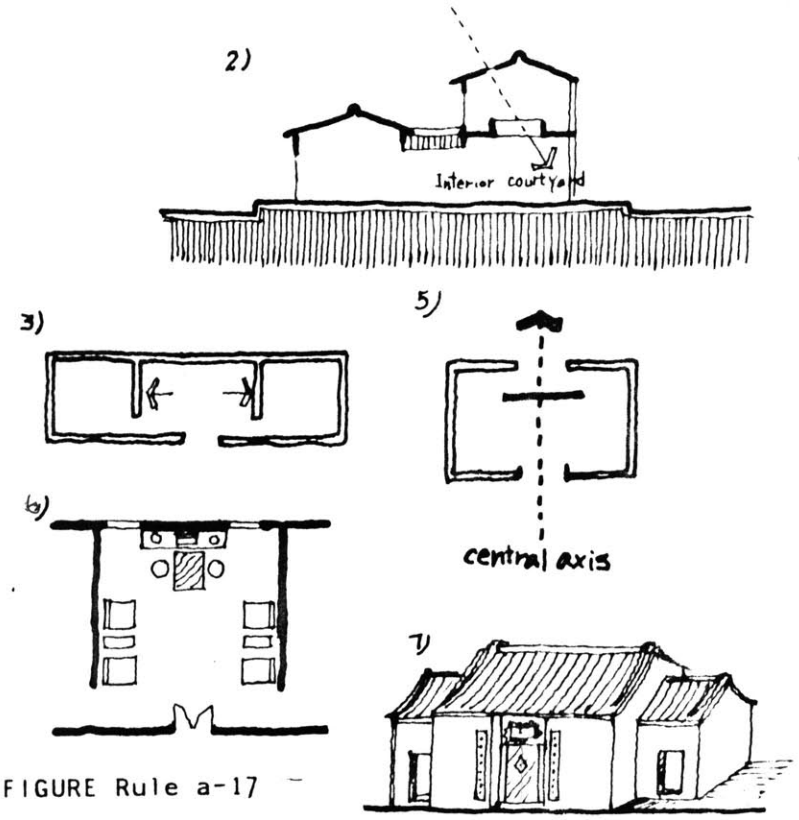


FIGURE Rule a-17

importance. Sometimes, it may be two or three stories high.

- The height of the roof --- To make use of the height of roof to articulate the hierarchies of spaces.

3) Increasing the horizontal dimension:

Enlarging the width of the space.

4) More detail treatment:

To use more decoration to articulate the important spaces.

On the room level:

5) Centering the main entrance doorway:

The main entrance door should be centrally located on the front facade. Such a room is always the formal connection between the cluster of rooms with the other groups of rooms or courtyard.

On the furniture level:

6) The furniture arrangement should be symmetrical:

Such furniture may include the family altar table, formal sitting chairs etc., and they may be the focal part of the activities in a particular room.

7) The arrangement of the couplet on door panels:

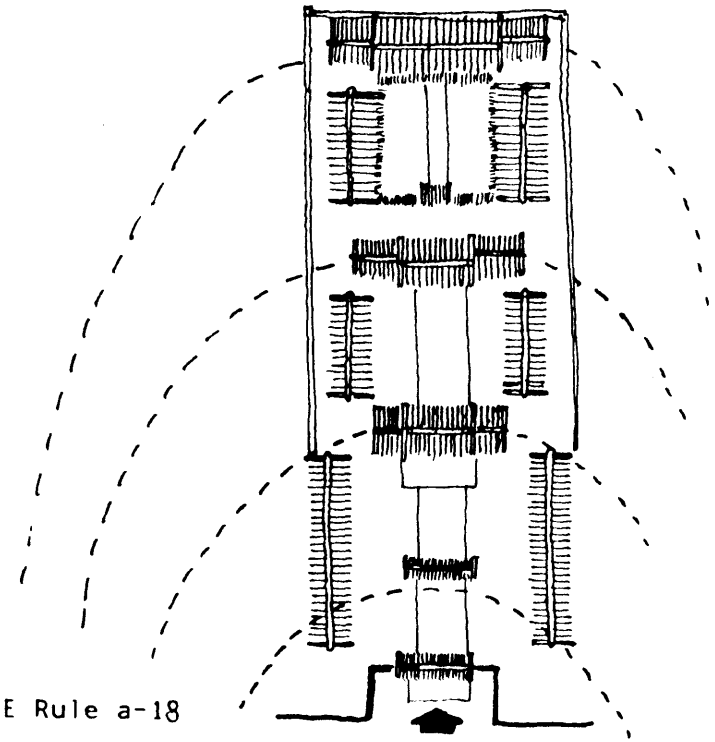


FIGURE Rule a-18

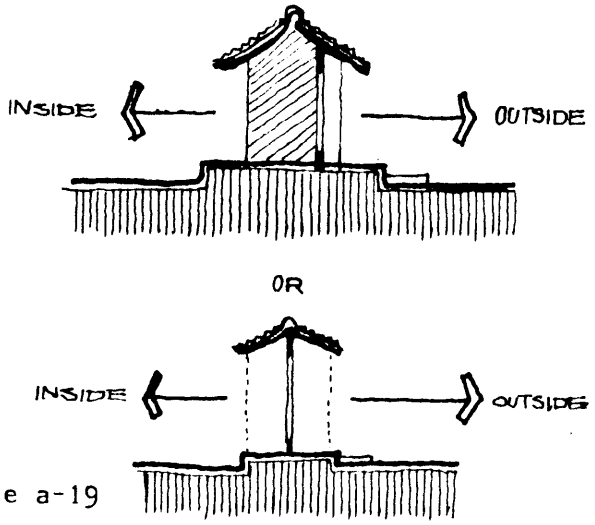


FIGURE Rule a-19

3-2-3: Space Transition

Rule a-18: INTIMACY GRADIENT

Entry --> Main hall --> Ancestor hall --> bedroom or kitchen room

A high degree of privacy is maintained in the Chinese house. This sequence of privacy can never be converted or confused, which ensures that the user can feel fully free to do anything without fearing any unexpected disturbance from the outside territory. The latter the position, the higher privacy it holds.

Rule a-19: TRANSITION SPACE

There should be a transition space between the inside and outside. This transition space could be a foyer or just the main gate.

Rule a-20: MAIN ENTRANCE

1) Location ---

The main entrance to the dwelling should be located on the central axis.

2) Form ---

There should be a symbolic element for the main entrance. The main entrance should not only be located at a prominent position, but should contain a symbolic element, such as a door panel tablet inscribed with characters giving the owner's status, owner's status on the door panel.

3) Setback ---

The main entrance to the dwelling should be set back to create a transitional space between the public territory and the private territory. It should also manifest a sense of welcome.

4) Threshold and Architrave ---

Usually, the main entrance should at least have a threshold and a well-decorated architrave on the top of doorframe to distinguish the inside from the outside.

Rule a-21:. GATE

Gates should be located on the wall parallel to the ridge of the pitched roof and not in the gable end wall.

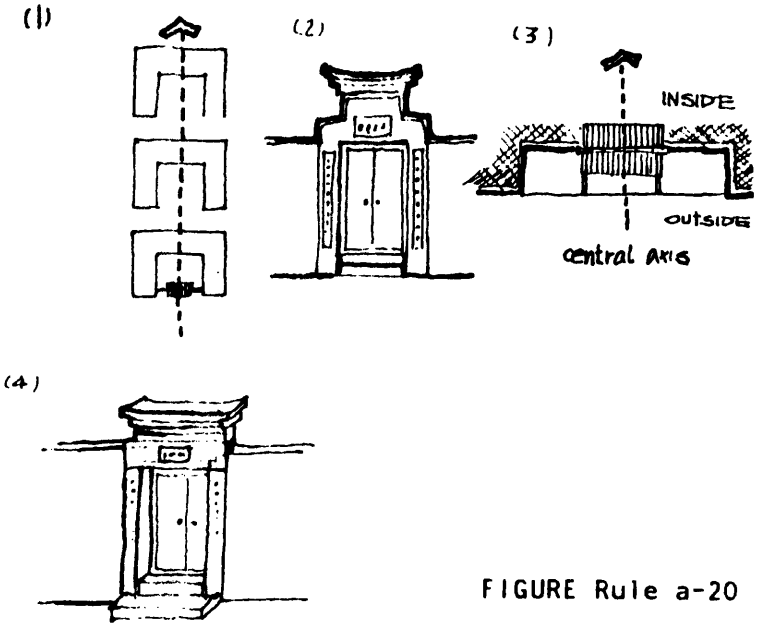


FIGURE Rule a-20

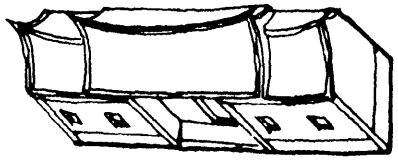


FIGURE Rule a-21

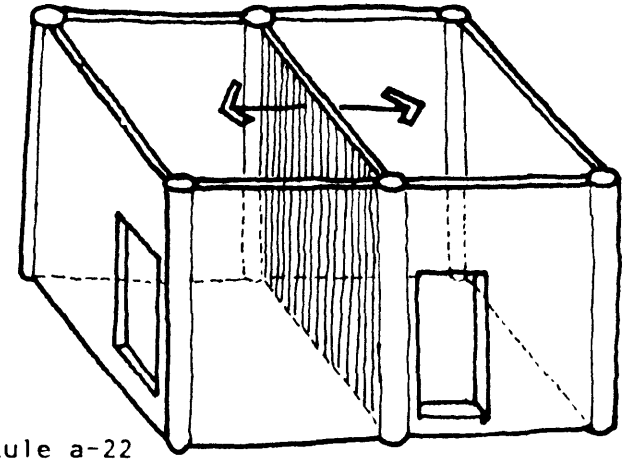


FIGURE Rule a-22

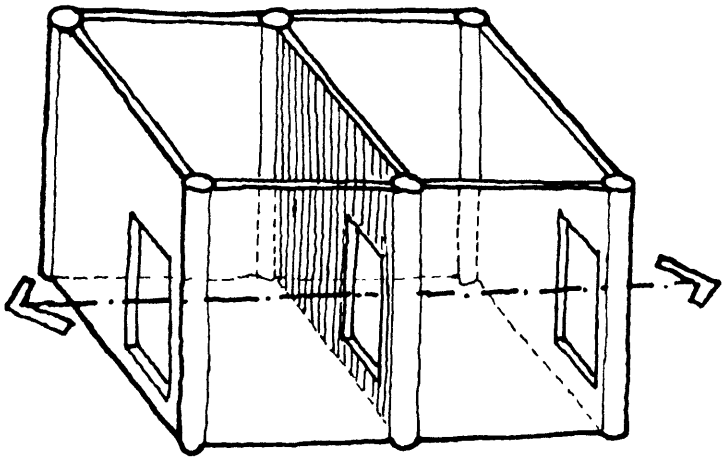


FIGURE Rule a-23

Rule a-22: TOTAL PARTITIONING

The space may be totally divided without any visual and spatial linkage.

1) Partitioning elements: Solid partitions, such as solid walls, brick walls, panel walls, etc.,could be used.

2) Position: These partitions should be fixed and should be mostly employed to divide spaces with heterogeneous characters, functions, or for separating the spaces in the private zone.

Rule a-23: TOTAL PARTITIONING WITH A DOOR OPENING

A space may be also totally separated by solid partitions, but there will be a door opening to provide optional visual and spatial continuity. Most general rooms could be divided in this way.

1) Partitioning elements: Solid partitions. (refer to rule 21)

2) Position: These partitions should be fixed and mostly used to divide the spaces with different characters or functions, or spaces in the private zone.

Rule a-24: PARTIAL PARTITIONING

A space may be divided by " moveable partitions " in order to provide some flexibility and a higher degree of visual and spatial linkage, access to adjacent spaces, or some ventilation and natural light.

1) Partitioning elements: Moveable partitions, such as folding screen, screen, door-like or window-like partitions with a void in the upper part, which we call " Ko-Shan " (隔扇). These partitions could be entirely removed to make a large space, if necessary.

2) Position: This type of partition should usually be used to divide the spaces with similar characters or functions, or to subdivide a room.

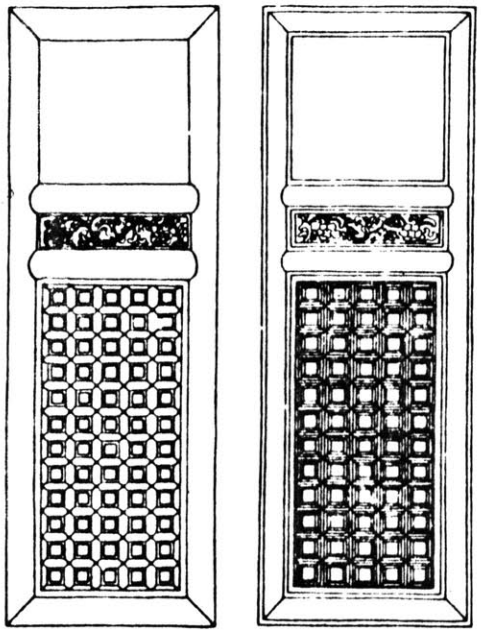


FIGURE Rule a-24 (upside down)

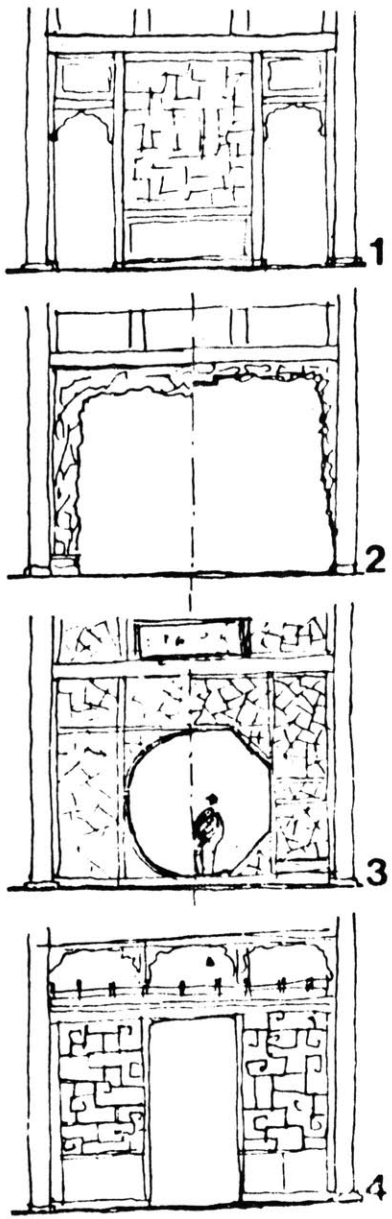


FIGURE Rule a-25

Rule a-25: SYMBOLIC PARTITIONING

The space may not actually be divided, but only symbolically divided by " symbolic partitions " which narrow down the height and the width of the connection.

1) Partitioning elements: This type of partition was termed " Chao " (罩). There are four basic variation.

2) Position: This type of partition should be used to divide the spaces with homogenous characters and functions, or to indicate a subdivision within a room.

3 - 3: ON THE ROOM LEVEL

3-3-1: Dimensions

Rule a-26: DIMENSIONS OF ROOMS

The ancestor hall should be the largest in the whole dwelling, in terms of width, depth

and height. It is also located at the most dominant location and has the most elaborate decoration. If we simplify the dimensions of each room, we can roughly induce the typical dimensions as follows: (see Table 1)

Rule a-27: Proportion

Therefore, we can infer the general proportion from rule 25 as follows:

width : depth : height = 1 : 1.5 : 1

The ratio of the diameter and the height of the column is usually around 1:8 or 1:13.

Rule a-28: THE WIDTH OF SOLID WALL FOR PLACING FAMILY ALTAR TABLE OR TERMINATING THE CENTRAL AXIS

The main door to the ancestor hall should always be centered at the front side and face directly the solid wall at the back. The width of back wall may not necessarily be the same as that of ancestor hall, but wide enough to place a family altar table.

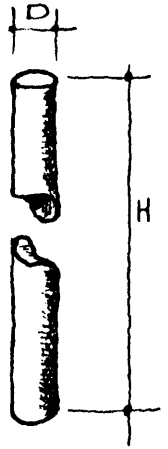


FIGURE Rule a-27

H: D = 1:8 ~ 1:13

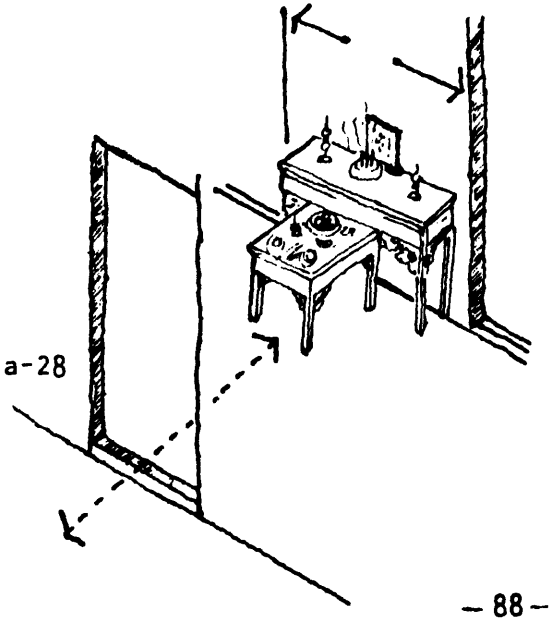


FIGURE Rule a-28

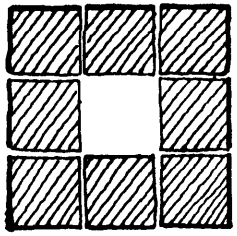
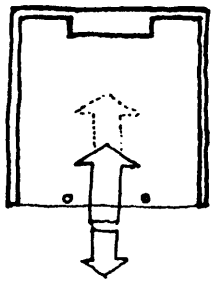
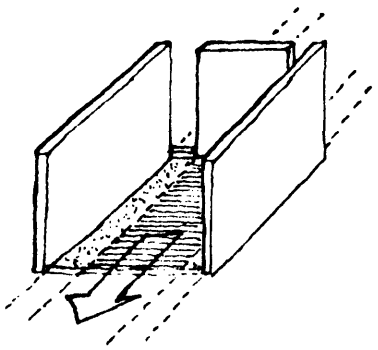


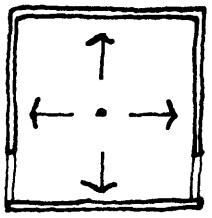
FIGURE Rule a-29

1)





2)



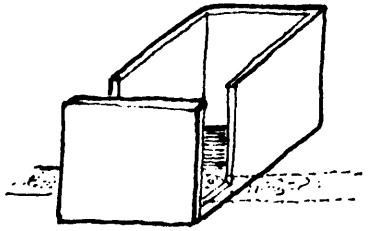


FIGURE Rule a-30

3-3-2: Shapes

Rule a-29: SHAPES

Apart from some of the Hakka dwellings found in Mainland China in the form of concentric circles, most traditional Chinese dwellings are always considered as a composition of rectangular shaped spaces. (reference to Rule a-3).

3-3-3: Configurations

Rule a-30: CONFIGURATIONS

1) For the ancestor hall

The ancestor hall should always be a "U"-shaped configuration of vertical planes, which define a field of space that has an inward focus as well as an outward orientation. This configuration allows the

space to have visual and spatial continuity with the courtyard.

2) For the other rooms

The other rooms always have a "[]"-shaped configuration with one or two doors on both lateral walls, or with one door on the front wall of that room, which also define a field of space that has an inward focus but less of an outward orientation.

3-3-4: Surfaces and Edges

Rule a-31: SURFACES AND EDGES

1) On the side walls and partitions:

Surfaces and edges on the side walls and partitions, more often, are articulated by the columns or structural elements which always are engaged in the walls.

2) On the back wall:

The back side of the room is always only a soild wall.

3) On the front side

The surface and edges on the front side are always more elegant and gorgeous than those of the other sides. They are articulated by either well-decorated door-like panels or well-decorated brick walls.

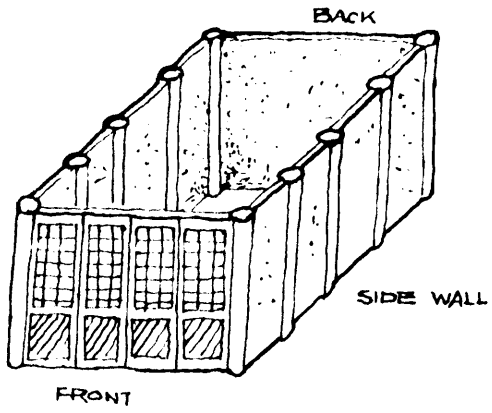


FIGURE Rule a-31

Rule a-32: A PLACE FOR INSCRIBING OR PASTING UP THE SCROLL PAIRS OR COUPLETS

There must be some place to inscribe or paste up the pair of scrolls, calligraphic paintings or couplets on the surfaces of walls.

1) On the back wall:

In the ancestor hall, the back wall is the most important wall. those places should be placed symmetrically around the ancestor niche.

2) On the side walls:

They should have symmetrical places for pasting up those symbolic or decorative scrolls, or calligraphic paintings on the columns or walls.

3) On the front side:

The places for those things are always located around the door-frame.

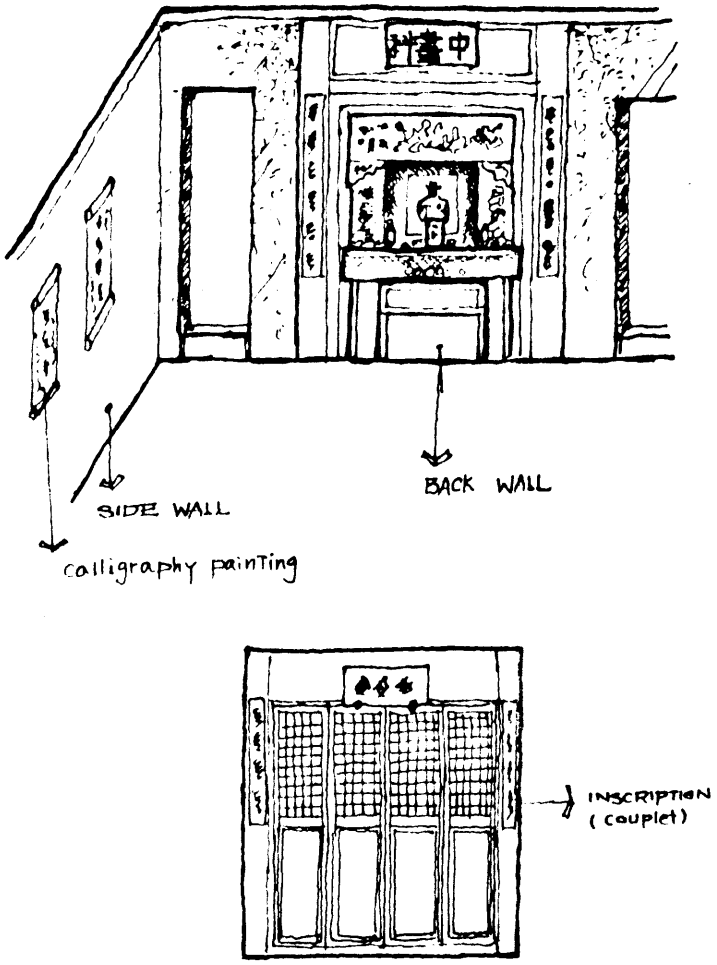


FIGURE Rule a-32

RULE a-33: COLOR

Chalky, garnet and green could be used to paint the building.

3-3-5: Openings

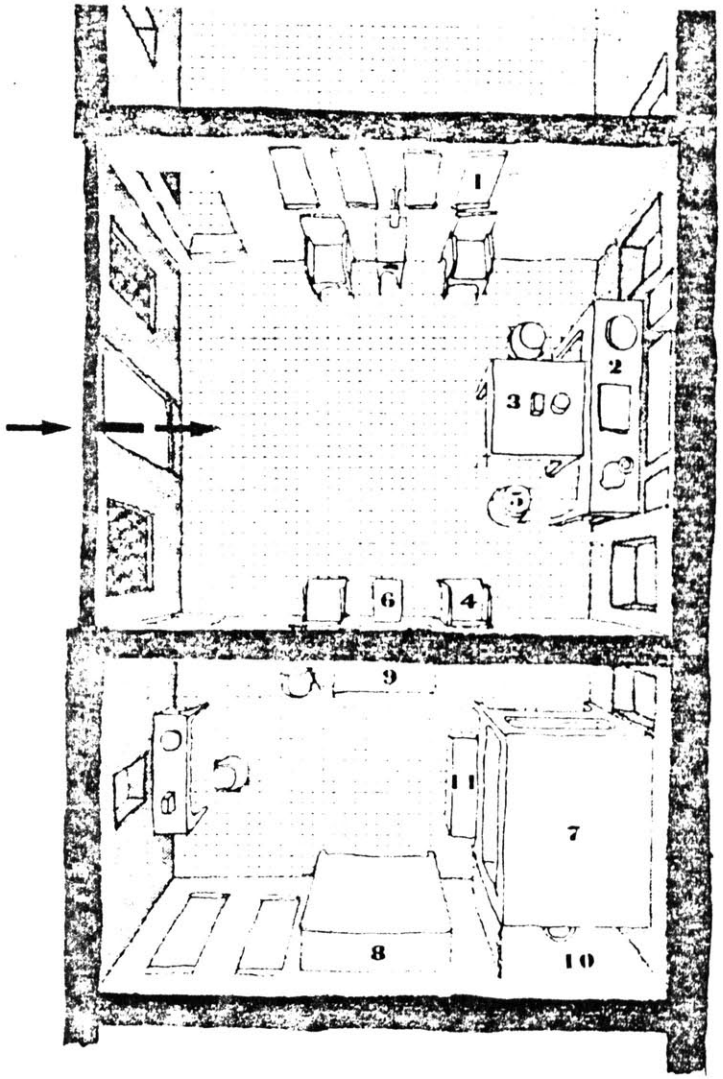
Rule a-34: OPENINGS

The openings always are within the enclosing planes of a space, and they are rarely locate along one edge or at a corner of a wall. Besides, being rectangular in shape, there still are a lot of variations, such as circle, semicircle etc.. But, the rectangular shape is popular, and their dimensions also contrast with those of walls, that is to make it smaller. Most openings are usually reinforced with a heavy frame.

3 - 4: ON THE FURNITURE LEVEL

Rule a-35: THE ARRANGEMENT OF FURNITURE

All the furniture should be placed against the wall and arranged symmetrically.



1 PAIR SCROLLS CALLIGRAPHY PAINTING
2 FAMILY ALTAR
3 SIX PERSON TABLE
4 CHAIR
5 DRUM STOOL
6 TEA TABLE
7 BED
8 CLOSET
9 CHEST OF DRAWER
10 WATER CLOSET
11 FOOT STOOL

FIGURE Rule a-35

Rule a-36: FAMILY ALTAR TABLE

The family altar table and eight-person table associated with the drum stools should always be placed in the ancestor hall along the wall facing the main entrance.

Rule a-37: TEA-POT TABLE

The Tea-pot table should always be placed between formal sitting chairs, rarely in front of these chairs.

Rule a-38: BED

The bed and table in the bedroom should always be placed on the transversal axis of bedroom and opposite each other. The bed should be parallel to the direction of the ridge or beams.

Rule a-39: CHINESE STOVE

The Chinese stove should be closed to the openings of kitchen room in order to provide a good condition for ventilation.

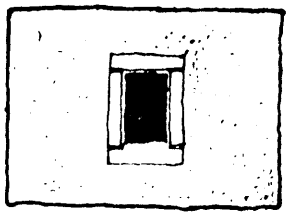


FIGURE Rule a-34

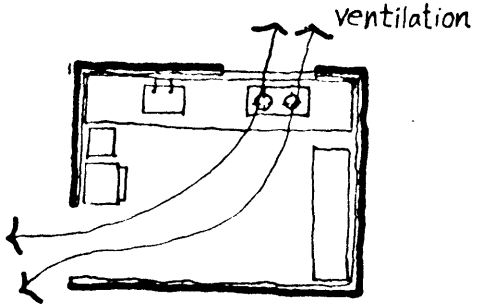


FIGURE rule a-39

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4 - 1: INTRODUCTION

In this chapter, I attempt to make a new set of rules, on which the design will be based, by implicitly selecting or transforming the relevant traditional rules, and by implicitly borrowing some new conventions from the contemporary context and building codes. That does not mean that any decision is perfect or that further study is not required, but means only that these selected rules are derived from an inner logic and consistency.

4 - 2: ON THE DWELLING LEVEL

4-2-1: Spatial Organization

Rule b-1: ACCESS

Each unit in the walk-up apartment should have its main entrance open directly to the public open space or to a commonly shared entrance hall. The common entrance hall should enable the expression of the user's identification and the control of his territory.

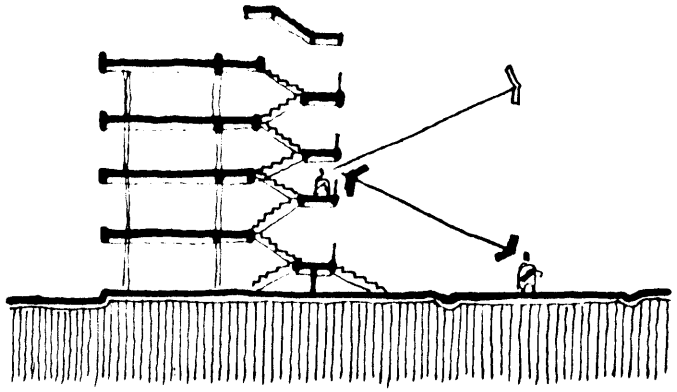

FIGURE Rule b-1

Rule b-2: BUILT FORM

The same as rule a-2.

Rule b-3: SPATIAL ORGANIZATION IN THE GRID SYSTEM

The same as Rule a-3.

Rule b-4: CIRCULATION

The major circulation path should be through a centered space mostly used for family activities.

Rule b-5: THE CENTRALITY OF DWELLING

The house should have inward characteristics:

1) The living room, or sometimes a combination living room and dining room, could be conceived as the center of gravity for the whole dwelling.

2) There should be a clear articulation of territory. Such centrality is very important for the occupants to identify their existential place. (* 1)

Rule b-6: FLEXIBILITY IN SPACE FUNCTION

The central public space in the dwelling, which could be the living room,etc., is always reserved for a variety of purposes depending on the needs of the moment. They could all look similar in shape, form and dimensions.

Rule b-7: FLEXIBILITY IN STRUCTURAL SYSTEM

The same as rule a-7.

Rule b-8: RECTANGULAR SHAPE

The same as rule a-8.

Rule b-9: ORIENTATION

All the spaces around the public space in the dwelling should create an internal focal point but also should have a strong sense of orientation towards the connection with the exterior space. This outward orientation of dwelling. (* 2)

Rule b-10: THE BOUNDARY OF TERRITORY

The same as rule a-10.

Rule b-11: CLEAR DISTINCTION BETWEEN THE PRIMARY SYSTEM AND THE SECONDARY SYSTEM

There should be a clear distinction between the primary and the secondary system. Such distinction should be reflected not only on the circulation system, but also on the system of physical built form.

4-2-2: Spatial Sequence

Rule b-12: CIRCULATION SYSTEM

The primary circulation system should have a direct connection with the public space of the dwelling. The connection between rooms is the secondary circulation system which should be distinguished from the primary one.

Rule b-13: CIRCULATION PATH

The central axis of the dwelling should not vertically cut through the whole, but be circuitous.

Rule b-14: SPATIAL SEQUENCE

The outside --> Main entrance --> Transitional Space (Foyer or Front Balcony etc.) --> Public space (Such as Livingd Room) --> Transitional Space --> Private Space (Dining Room or Bedroom etc.) --> Transitional Space (Back Balcony etc.) --> Outside.

A transitional space should be placed between two spaces with different characteristics.

Rule b-15: THE ORGANIZATION OF PRIMARY SPACES.

The primary spaces, such as the living room, family room or dining room, should be located along the central axis and form the central system of organization of the whole dwelling.

Rule b-16: ANCESTOR HALL and NICHE

The same as rule a-16, but the living room could substitute for the ancestor hall.

Rule b-17: THE INTENSIFICATIONS OF PRIMARY SPACES

The same as rule a-17.

4-2-3: Space Transition

Rule b-18: INTIMACY GRADIENT

Entry --> Living room --> dining room --> bedroom or kitchen room

Rule b-19: TRANSITION SPACE

The same as rule a-19

Rule b-20: MAIN ENTRANCE

The same as rule a-20.

Rule b-21: GATE

It is not applicable in this design.

Rule b-22: TOTAL PARTITIONING

The same as rule a-22.

Rule b-23: TOTAL PARTITIONING WITH A DOOR OPENING

The same as rule a-23.

Rule b-24: PARTIAL PARTITIONING

The same as rule a-24.

Rule b-25: SYMBOLIC PARTITIONING

The same as rule a-25.

4 - 3: ON THE ROOM LEVEL

4-3-1: Dimensions

Rule b-26: DIMENSIONS OF ROOMS

It is not applicable in this design.

Rule b-27: PROPORTION

It is not applicable in this design.

Rule b-28: THE WIDTH OF SOLID WALL FOR PLACING FAMILY ALTAR TABLE OR FOR TERMINATING THE CENTRAL AXIS

The main door to the dwelling should always be centered at the front side and directly face the solid wall at the back. The width of the back wall may not necessarily be the

same as that of the dwelling, but wide enough to place the family altar table.

4-3-2: Shapes

Rule b-29: SHAPE

The same as rule a-29.

4-3-3: Configurations

Rule b-30: CONFIGURATIONS

The public space, such as the living room, should always be in a "U"-shaped configuration of vertical planes, which define a field of space that has an inward focus as well as an outward orientation. This configuration allows the space to have visual and spatial continuity with the exterior space of the dwelling. The other rooms are always "□"-shaped configuration with a door on any wall, which also define a field of space that has an inward focus but less of an outward orientation.

4-3-4: Surfaces and Edges

Rule b- 31: SURFACES and EDGES

The same as rule a-31.

Rule b-32: A PLACE FOR INSCRIBING OR PASTING UP THE SCROLL PAIRS OR COUPLETS

The same as rule a-32.

Rule b-33: COLOR

It is not applicable in this design.

4-3-5: Openings

Rule b-34: OPENINGS

It could be the same as rule a-34.

4 - 4: ON THE FURNITURE LEVEL

Rule b-35: THE ARRANGEMENT OF FURNITURE

It is not applicable in this design.

Rule b-36: FAMILY ALTAR TABLE

It should always be placed in the public space, such as the living room or dining room, and should be against the wall facing the main entrance.

Rule b-37: TEA-POT TABLE

It is not applicable in this design.

Rule b-38: Bed

It is not applicable in this design.

Rule b-39: CHINESE STOVE

The same as rule a-39.

---

(1) (reference to "Exstence, Space and Architecture" written by Christian Norberg-Schulz).

(2) (reference to "Mensch Und Raum" written by O. F. Bollnow.)

CHAPTER 5: THE PROPOSED DWELLING MODEL for
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5 - 1: INTRODUCTION

I have developed a rule system. Before beginning to bring all those rules together in order to make new dwelling types, we must know about the uses that can be made of the spaces. Therefore, we will start with analyzing the capacity of various spaces on various levels by investigating in what ways a given space can be used or inhabited. Once we are familiar with such capacities, we should be freely able to deploy those spaces on a higher level according to the rules that we already made, because we already know what uses or functions could be allowed in those spaces.

Therefore, I actually begin with the arrangement of furniture and lead toward the organization of forms and spaces, not start from a functional program, but from an architecture image.

Before I move to the physical design, I would like to make some assumptions , on which the proposed dwelling model will be based, to limit the scope of this study

1. It is assumed that these formulated rules and patterns are acceptable in terms of the contemporary context.

2. It is also assumed that various dwelling units be accommodated in an apartment complex, which will create a wide range of variety. However, this need not necessarily be the case and hence cannot be a accepted as a rule.

3. It is assumed that apartments be developed in such a way that various groups of people with various backgrounds can be accommodated.

4. It is assumed that the four-story limit of apartments is an appropriate way to express the personal connection between building height and the health of a people. (* 1)

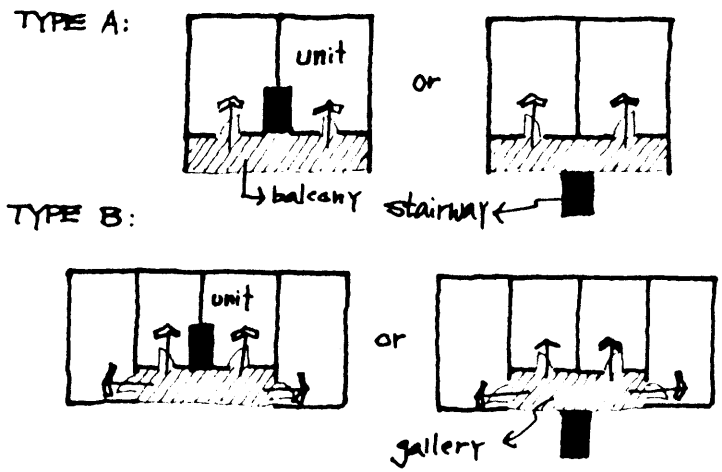


FIGURE 42

5 - 2: THE GIVEN REQUIREMENTS

5-2-1: Dwelling and Access Types

Since this study is to deal with walk-up apartments, the access to each dwelling unit on the upper floors should rely on stairs rather than on mechanical equipment, e.g. elevators. However, there are other access types in walk-up apartments (* 2). For instance, we may use an exterior public gallery with commonly shared stairs, or an in-between interior corridor with open stairs, as an access. According to the previous rules, I should limit this study to the following access types (Figure 42). But, it also, however, need not necessarily be accepted as a rule that we have to strictly follow.

5-2-2: The Requirements of Spaces and Functions

Besides the selected rules and patterns, we should also abide by the local building requirements and the public housing regulations. Relevant samples of the requirements are listed in tables (Table 2 & 3).

The main entrance to each dwelling unit should be on the front side, never on the lateral sides or the back side. For all those types of access directly lead to the center of the dwelling. It simply disobeys rule b-14: Spatial Sequence.

TABLE 2 The Minimum Dimension and Area in Different Types of Rooms: (The requirements of building codes in Taiwan)

Unit: m²

The Number of Bedrooms	Studio	1 - 2	2 - 3	3 - 4	3 - 4	Minimum Dimension (unit: m)
Category	Type A	Type B	Type C	Type D	Type E	
Living Rm.		12 m²	12	14	15	2.7 m
Dining Rm.		6	8	9	10	2.4 m
Living Rm. + Dining Rm.		16	18	20	22	2.4 m
Dining Rm. + Kitchen Rm.		9	10	12	14	2.1 m
Master Bedroom		10 (1)	10 (1)	10 (1)	10 (1)	2.7 m
Bedroom (A)			7.5 (1)	7.5 (2)	7.5 (2)	2.1 m
Bedroom (B)		5 (0-1)	5 (0-1)	5 (1-2)	5 (1-2)	1.8 m
Kitchen Rm.	4	4.2	4.2	5.5	5.5	1.8 m
Toilet Rm. + Bath Rm.	3	3.4	3.4	4	4	1.5 m
Bath Rm.				1.35	1.35	0.9 m
Storage Rm.	2	2	3.5	5	6	
Living Rm. + Dining Rm. + Bedroom	18					2.7 m

Footnote: The number of (0-1) or (1) stands for the number of rooms.

TABLE 3 The Minimum Heights in Various Rooms:

Room	Height (cm)
Living Spaces	260
Non-living Spaces	240
The Bottom Edge of Beam	210
Mezzanine as a Living Space	180
Toilet with a Ceiling	210

Footnotes:

Living Spaces: Bedroom, Living Room, Kitchen Room, Dining Room, etc.

Non-living Spaces: Toilet, Bathroom, Storage Room, Staircase, Corridor, Balcony, Basement, etc.

5 - 3: THE PROPOSED DWELLING MODEL

5-3-1: Method

An ideal methcd should serve as a base on which a design can be explicitly made, and which should be able to reflect the selected rules. The method is a back-and-forth decision-making process between design and theme. The task of thematic design is to identify the revelant elements and the relations among them. Here, I intend to employ a zoning system, based on the SAR method, as a base, where all the relations among those identified elements can be explicitly located.

Here, two types of zoning distribution are developed to be bases on which a lot of variations can be made.

"A zone distribution is a system of zones and margins, the relative positions of which follow certain conventions".

α --- An alpha zone is an internal area, intended for private use, and is adjacent to an exterior wall.

β --- A beta zone is an internal area, intended for private use, and is not adjacent to an external wall.

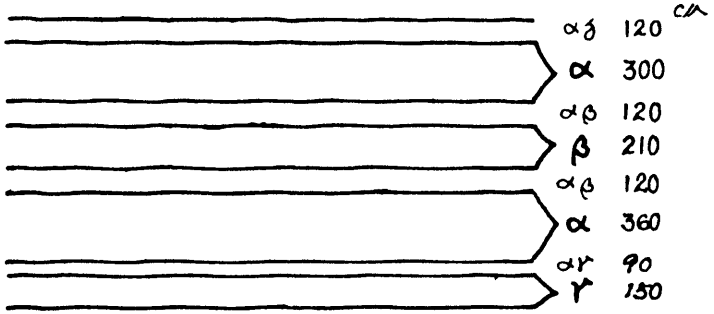
γ --- A gamma zone can be internal or external but is intended for public use.

δ --- A delta zone is an external area intended for private use.

Margin --- A margin is an area between two zones, with the characteistics of both these zones and taking its name from them. (* 3)

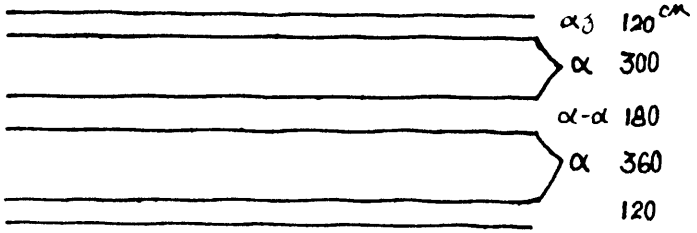
TYPE A:

THE GROUND FLOOR and THE FOURTH FLOOR

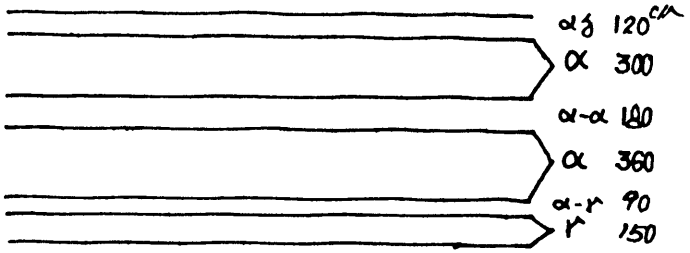


THE SECOND FLOOR and THE THIRD FLOOR

TYPE B:



THE GROUND FLOOR and THE FOURTH FLOOR



THE SECOND FLOOR and THE THIRD FLOOR

(1) PERFORMANCE RULE (* 4)

In every zone distribution three primary positions can be distributed:

Position 1:

The minimum depth of a space is the width of one zone and maximum depth is the width of the zone plus the two adjoining margins.

Special purose spaces (* 5), such as bedroom, study room, guest room, master bedroomm,etc.,

will be usually be located in position 1.

position 2:

The minimum depth of a space is the width of the zones plus the width of the margins between them. The maximum depth is the width of the zones and the margins.

General purpose spaces, such as living room, ancestor hall, family room, etc., will be located in either position 1 or position 2.

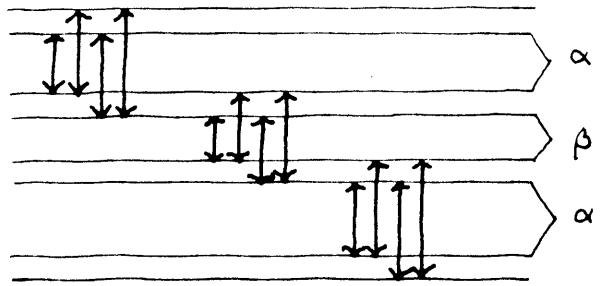
position 3:

The maximum depth of a space is the width of the margin.

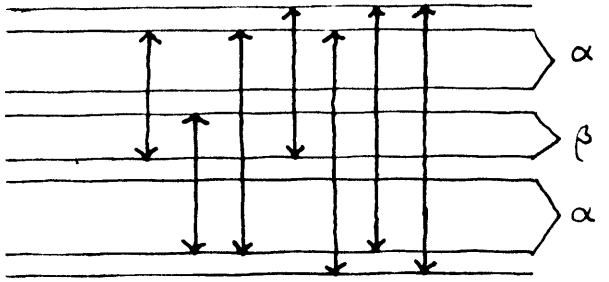
Service spaces, such as kitchen room, bath room and toilet room, etc., will be located in position 1 or position 3.

All these positions conform to the general performance rule (* 6):

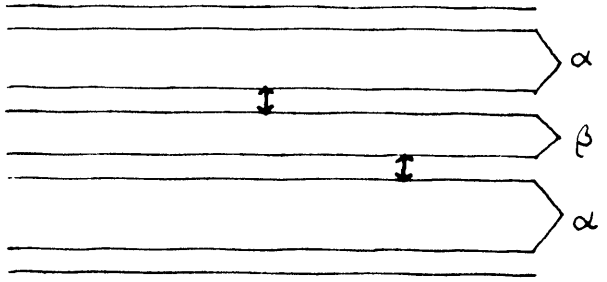
Spaces always end in a margin where the structural components will be placed.



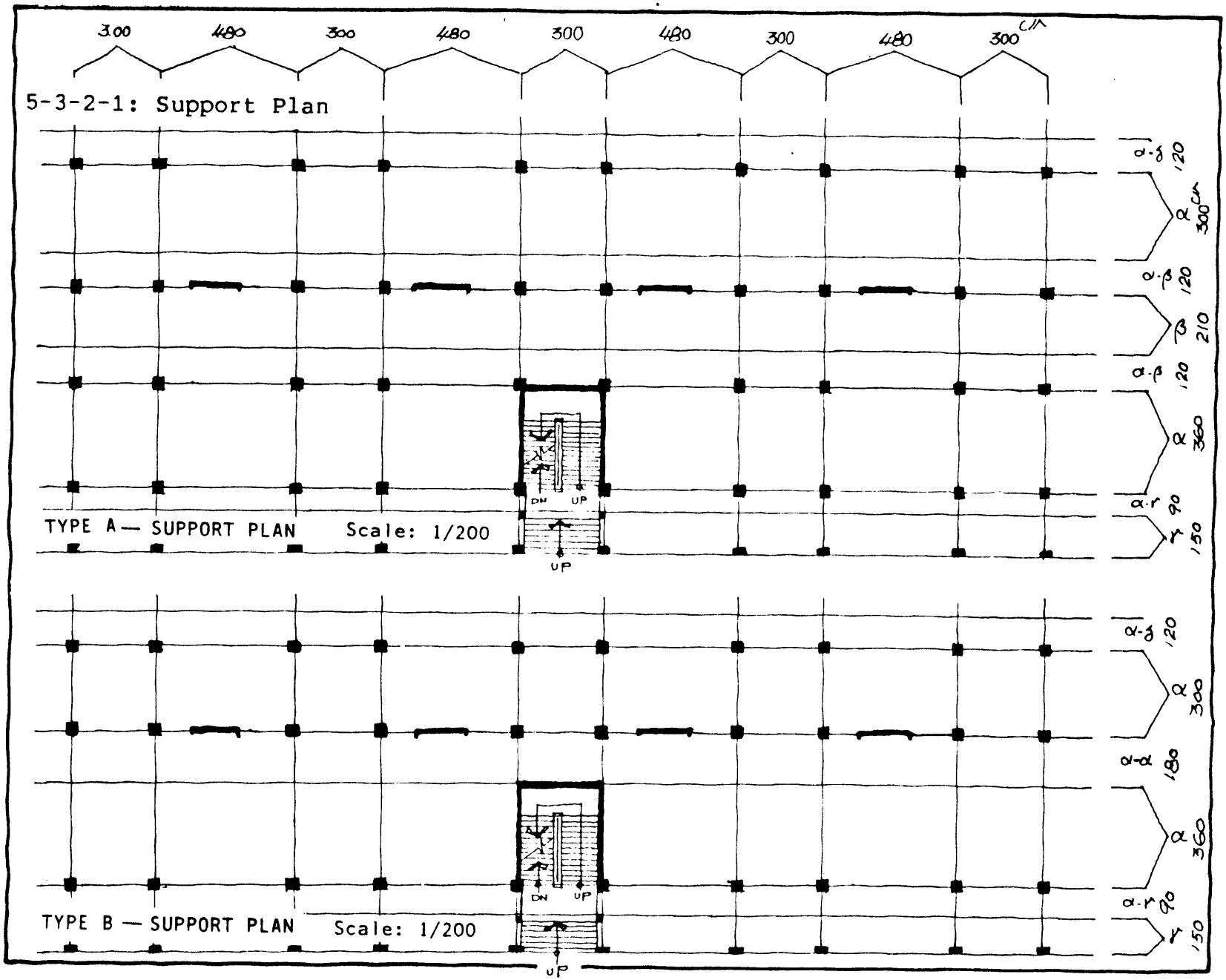
POSITION 1

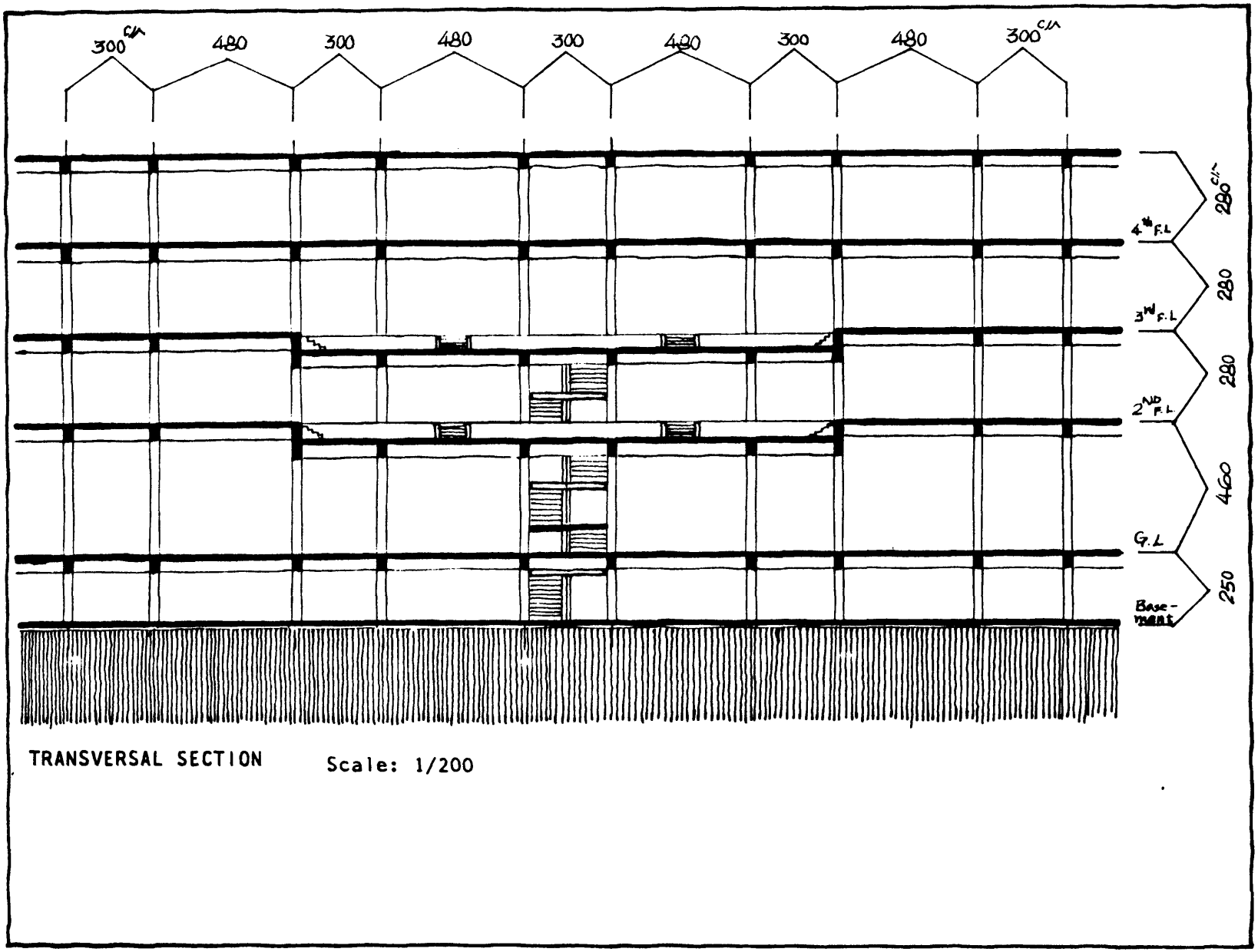


POSITION 2

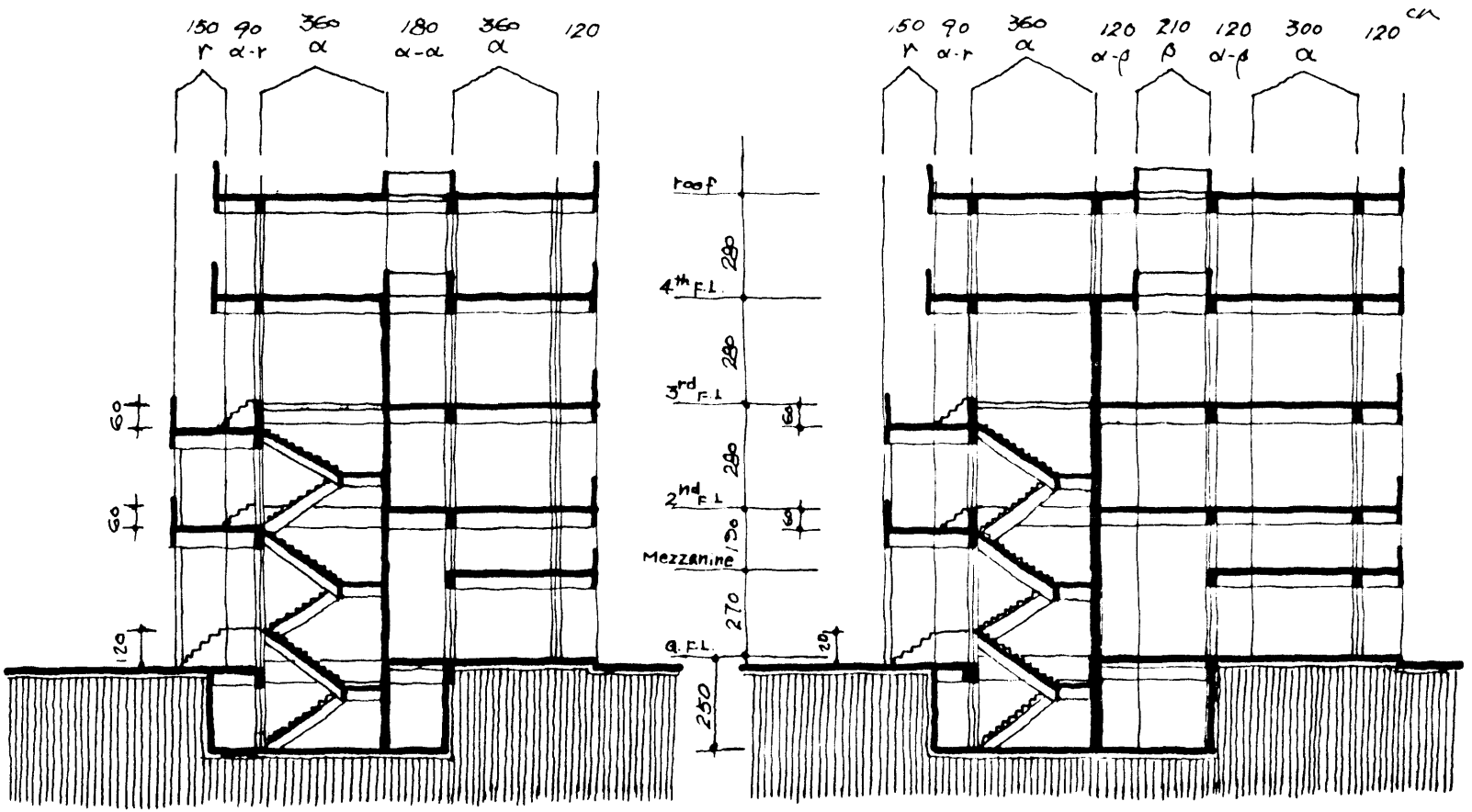


POSITION 3


300
480
300
480
300
480
300
480
300
5-3-2-1: Support Plan
α-β 120
α 300
α-β 120
β 210
α-β 120
α 360
α-γ 90
γ 150
DN
UP
UP
TYPE A — SUPPORT PLAN Scale: 1/200
α-β 120
α 300
α-α 180
α 360
α-γ 90
γ 150
DN
UP
UP
TYPE B — SUPPORT PLAN Scale: 1/200

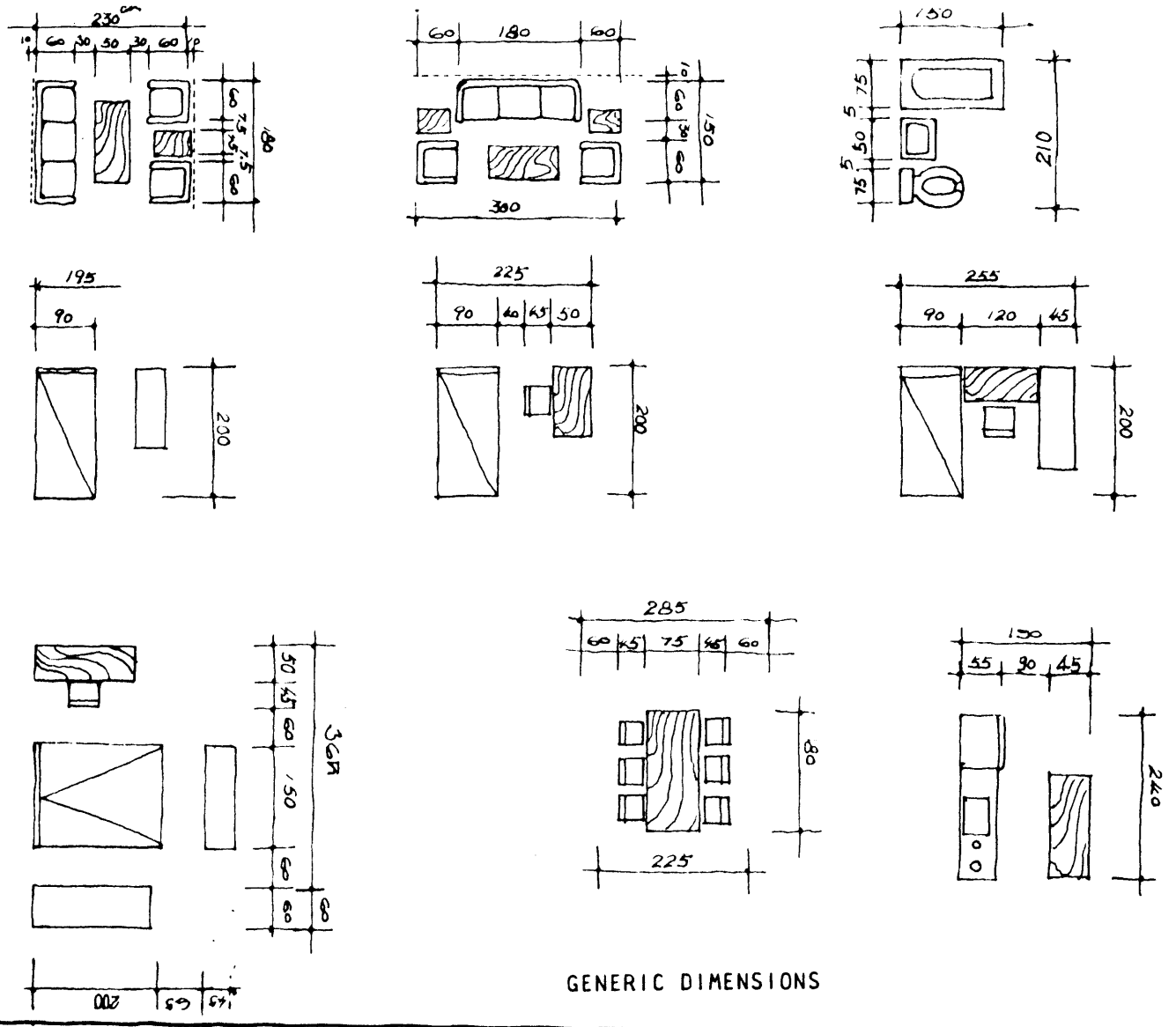


TRANSVERSAL SECTION Scale: 1/200



LATERAL SECTION Scale: 1/200

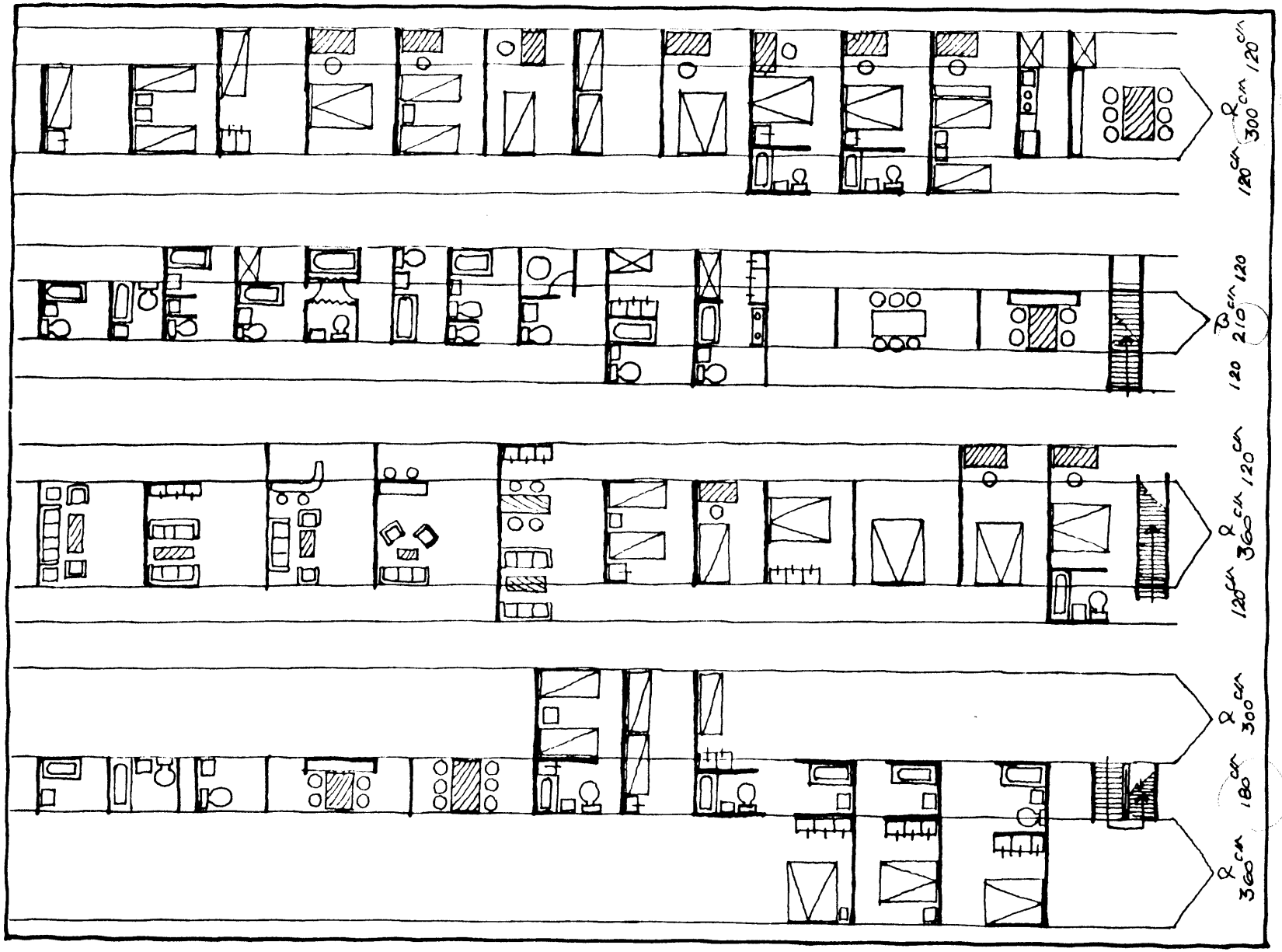
5-3-2-2: Dimensional Study



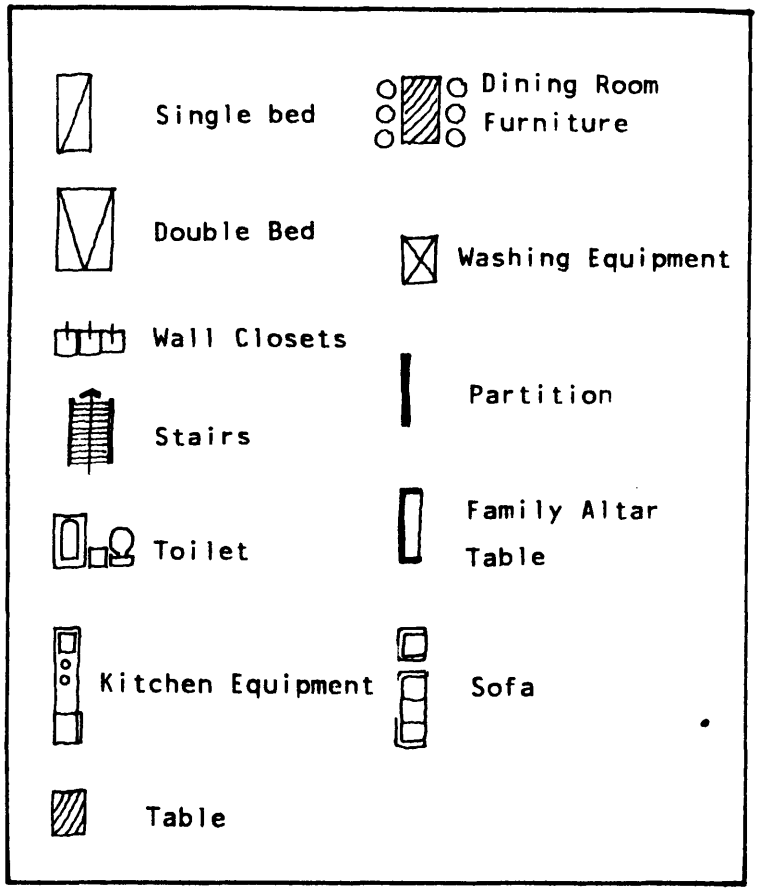
GENERIC DIMENSIONS


WIDTH
Scale: 1/200
300 cm
300 cm
300 cm
300 cm
480 cm
480 cm

DEPTH Scale: 1/200



ILLUSTRATIONS



PREFERRED DIMENSIONS and AREAS

According to rule b-6 (Flexibility in space function), I intend to search for an appropriate dimensions for each room which will adopt certain degree flexibility in terms of the function of each room (Figure 43).

Each space will be categorized under the classification of large, medium and small space by indicating the range of the minimum and maximum dimension for each type of room.

1. Large space is a space intended to be used as living room, family room, etc..

2. Medium space is a space intended to be used as master bedroom and double bedroom etc..

3. Small space is a space intended to be used as single bedroom and kitchen room, toilet room with a bathroom, etc..

These minimum dimensional requirements will create a flexibility in the usage of space. The large space should be able to accommodate its own activities and the activities of the smaller spaces. The smallest space should also be large enough to accommodate its own possibile activities. In other words, a large space should be able to be subdivided into a medium space and a small space, and a medium space should also be able to be subdivided into a small space and a utility space, so that the flexibility will be provided by such classification.

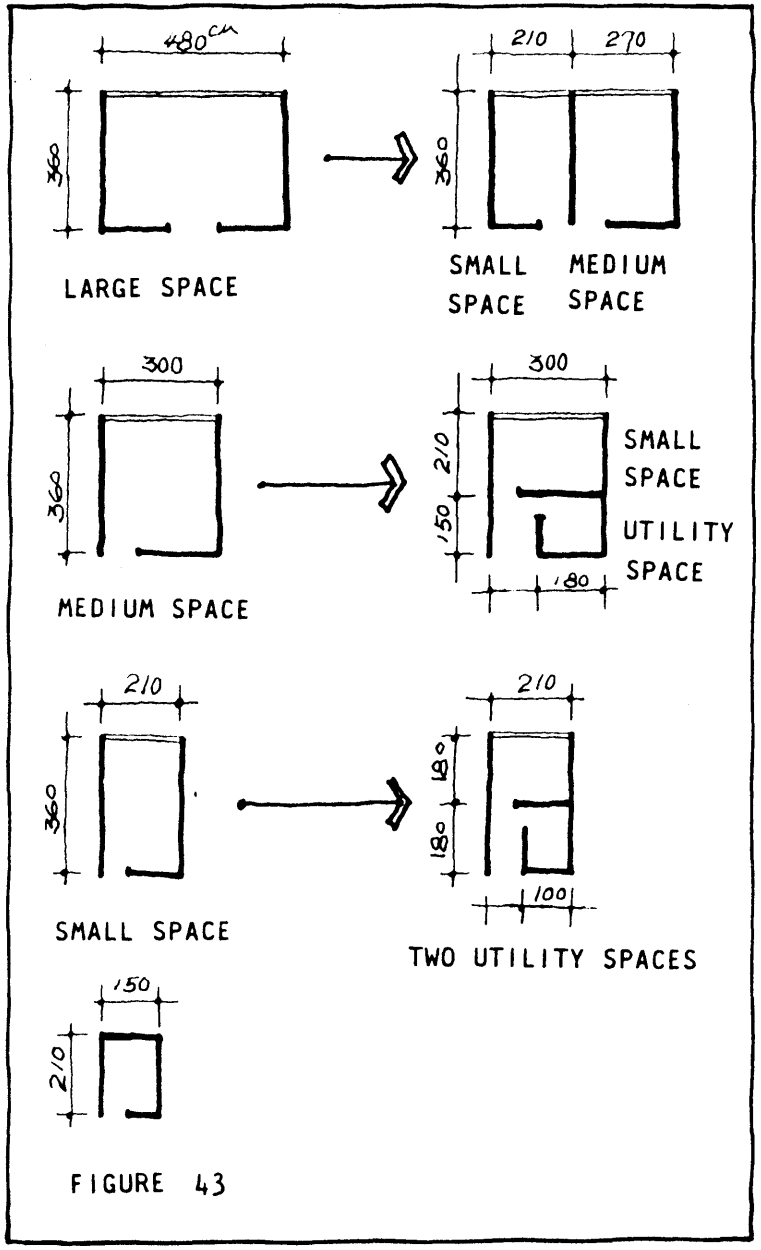
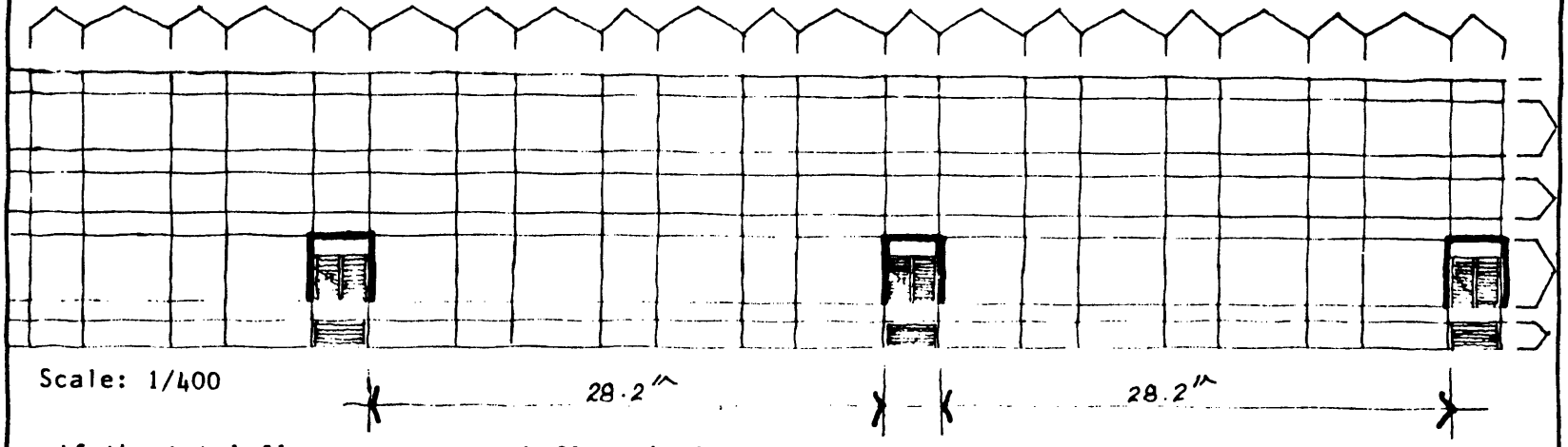


FIGURE 43

5-3-2-3: The Determination of Access

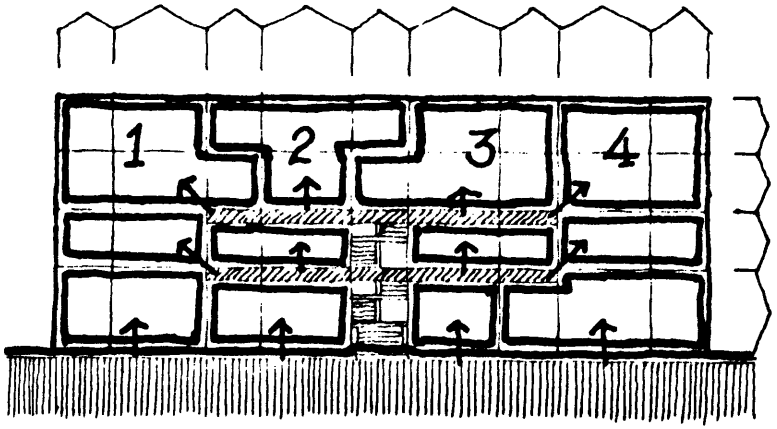


Scale: 1/400

If the total floor area on each floor is less than 400 m^2, it requires a minimum of a common stairway as access to the ground. (required by Building Regulations).

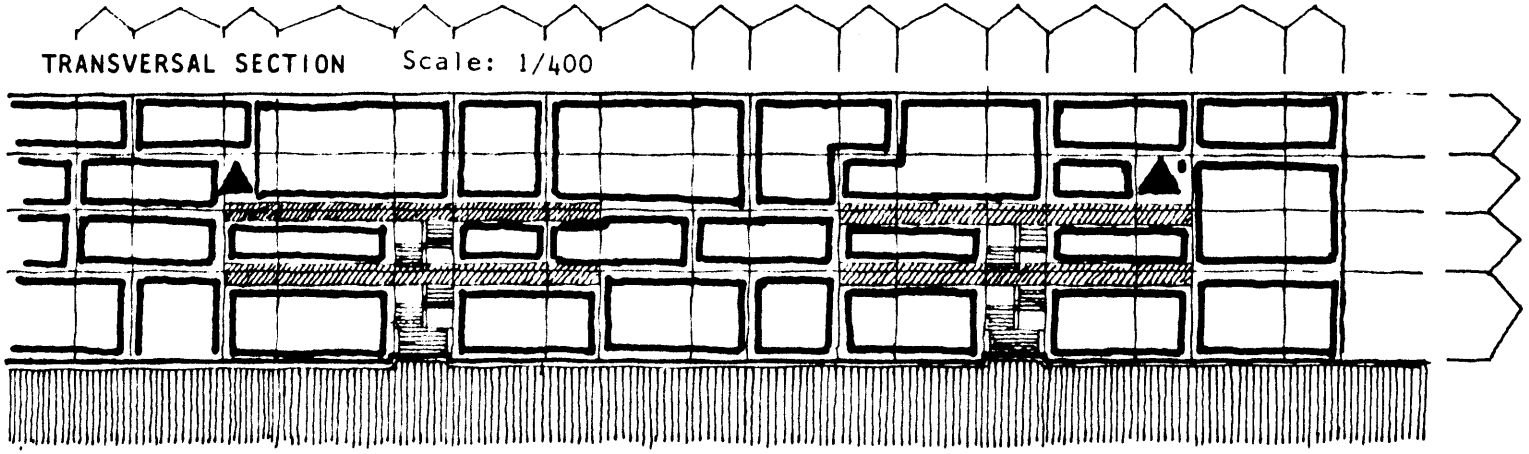
2. Thus, the maximum distance between two common stairways in this design is fixed at 28.2 m.

3. A common stairway with adjacent galleries which located both in the second and the third floor can serve four dwelling units on each floor.



5-3-2-4: Variations of Dweling Units within The Support Plan

TRANSVERSAL SECTION Scale: 1/400



PRIMARY CIRCULATION

Common Gallery

Common Stairway

SECONDARY CIRCULATION

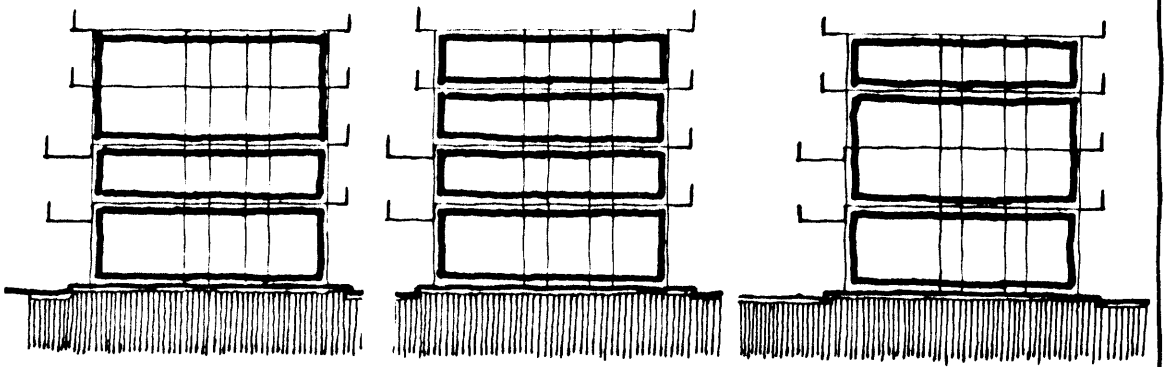
Extra Stairway

Variations of Dwelling Units

LATERAL SECTION

1. Common gallery at the second and third floor will serve as access to the upper floors.

2. Should unit(s) created on the fourth, an extra stairway will be needed as access between the third and fourth floors. (Relevant rule: b-1)



Two-Story-Unit Occurring at The Upper Floor

All One-Story-Unit

Two-Story-Unit Occurring at The In-between Zone

5-3-3: Dwelling Units

5-3-3-1: Basic Dwelling Units

1. We may construct a three-story-unit or a two-story-unit.

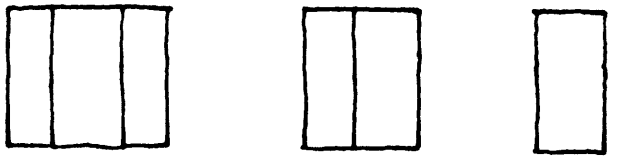
2. There are many possibilities of making various combinations of dwelling units. I would like to limit the maximum floor area and the height of dwelling unit to two-story-unit with three three bays.

3. Thus, morphologically, I can develop three basic dwelling types.

4. The combinations beteen vertical and horizontal variants can create different dwelling unit with variance.

BASIC DWELLING UNITS

● FLOOR PLANS

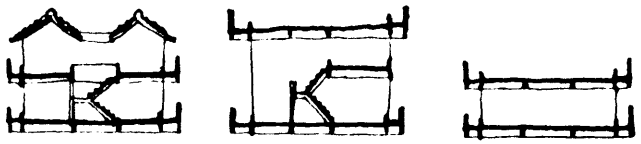


Three-Bay-Unit

Two-Bay-Unit

One-Bay-Unit

● SECTION



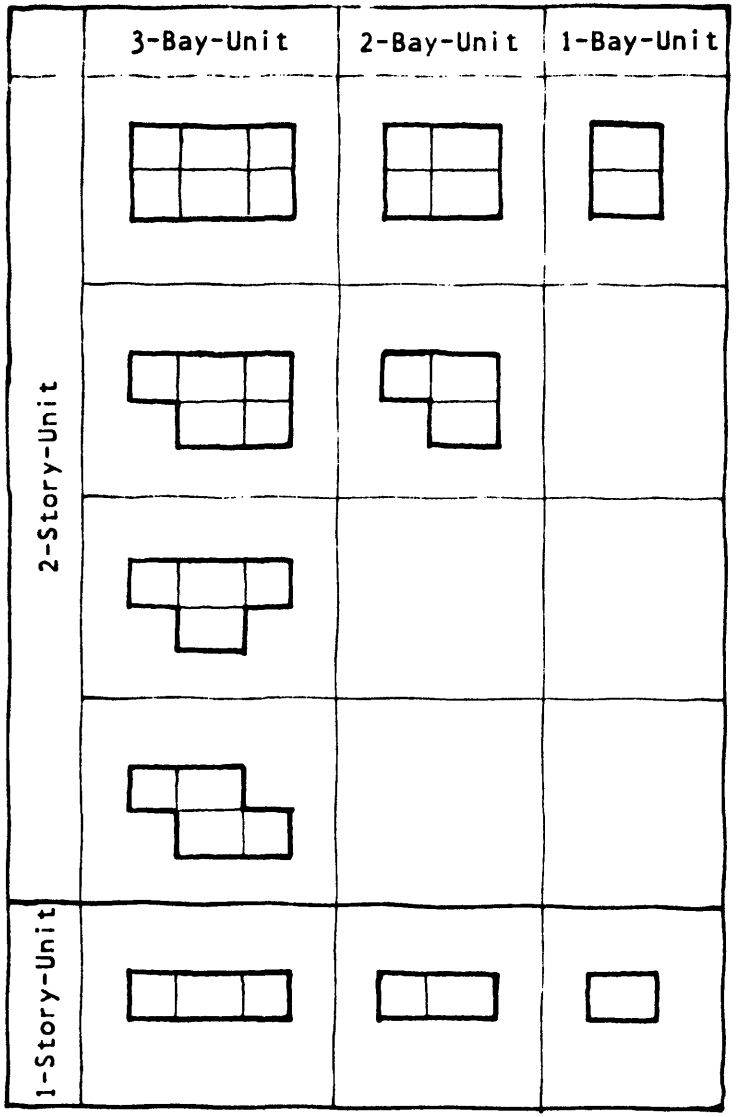
Two-Story-Unit

One-Story-Unit with a Mezzanine

One-Story-Unit

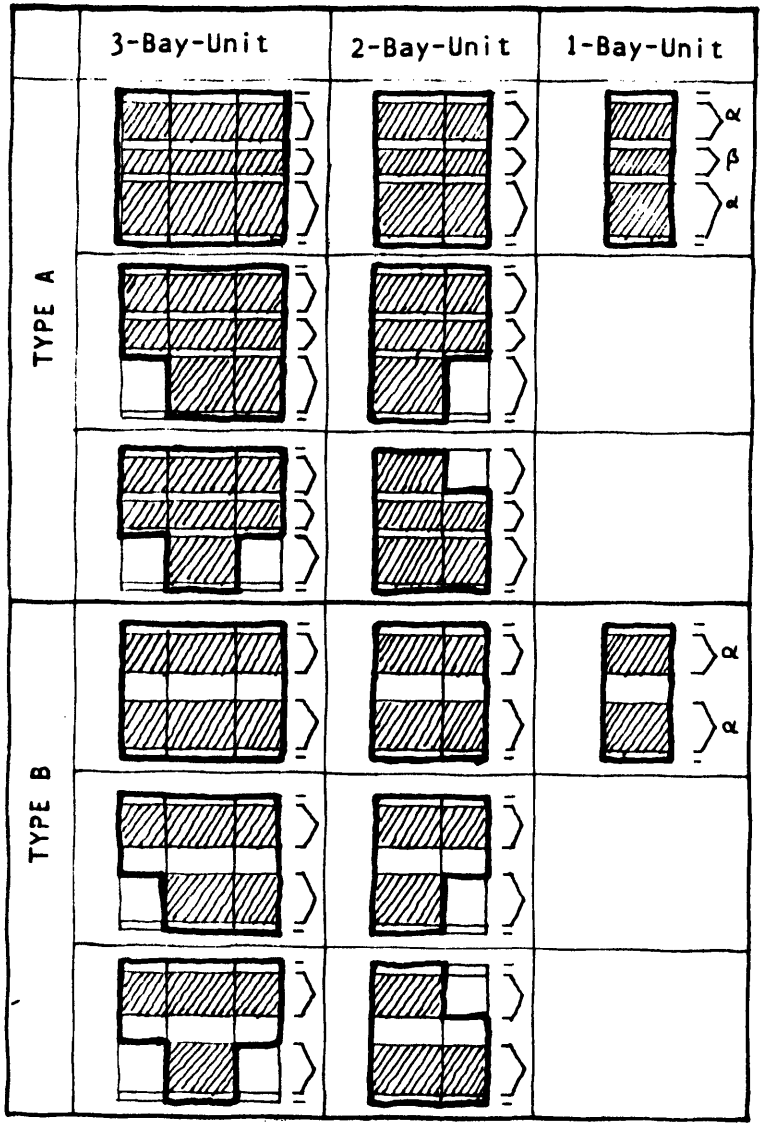
5-3-3-2: Variations of Dwelling Units

VERTICAL VARIATIONS



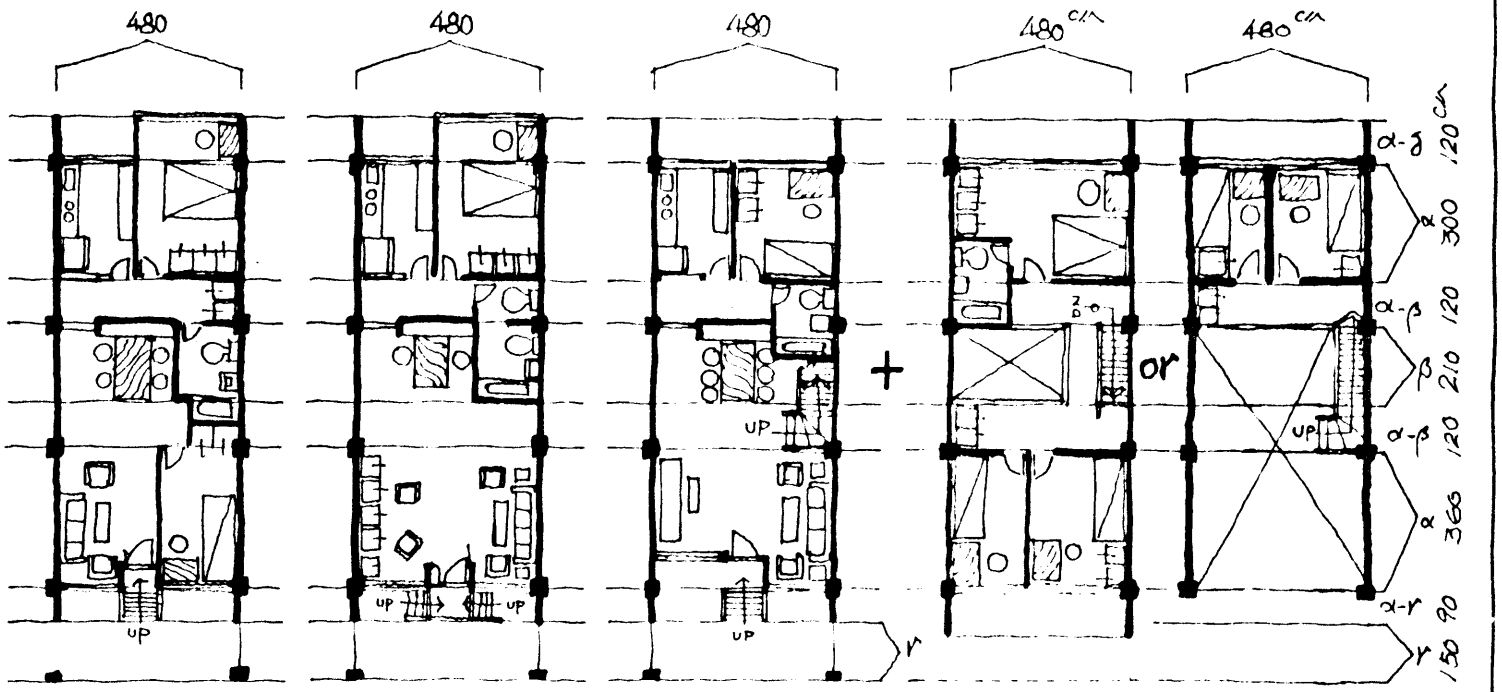
HORIZONTAL VARIATIONS

Dwelling Unit



5-3-4: Examples

5-3-4-1: Type A

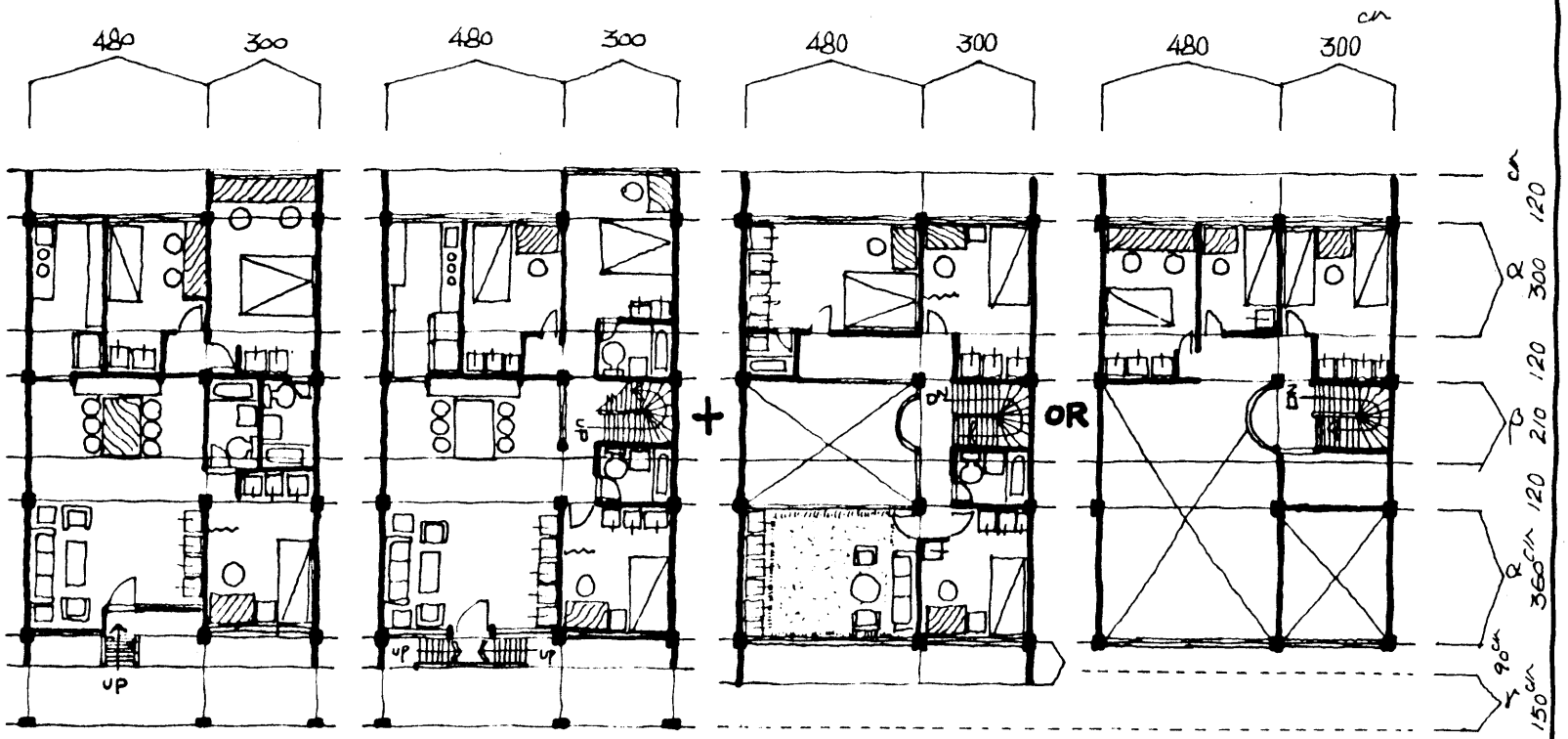


LOWER FLOOR UPPER FLOOR

TYPE A --- ONE-STORY-UNIT with ONE BAY

TYPE A --- TWO-STORY-UNIT with ONE BAY (OR MEZZANINE)

Scale: 1/200



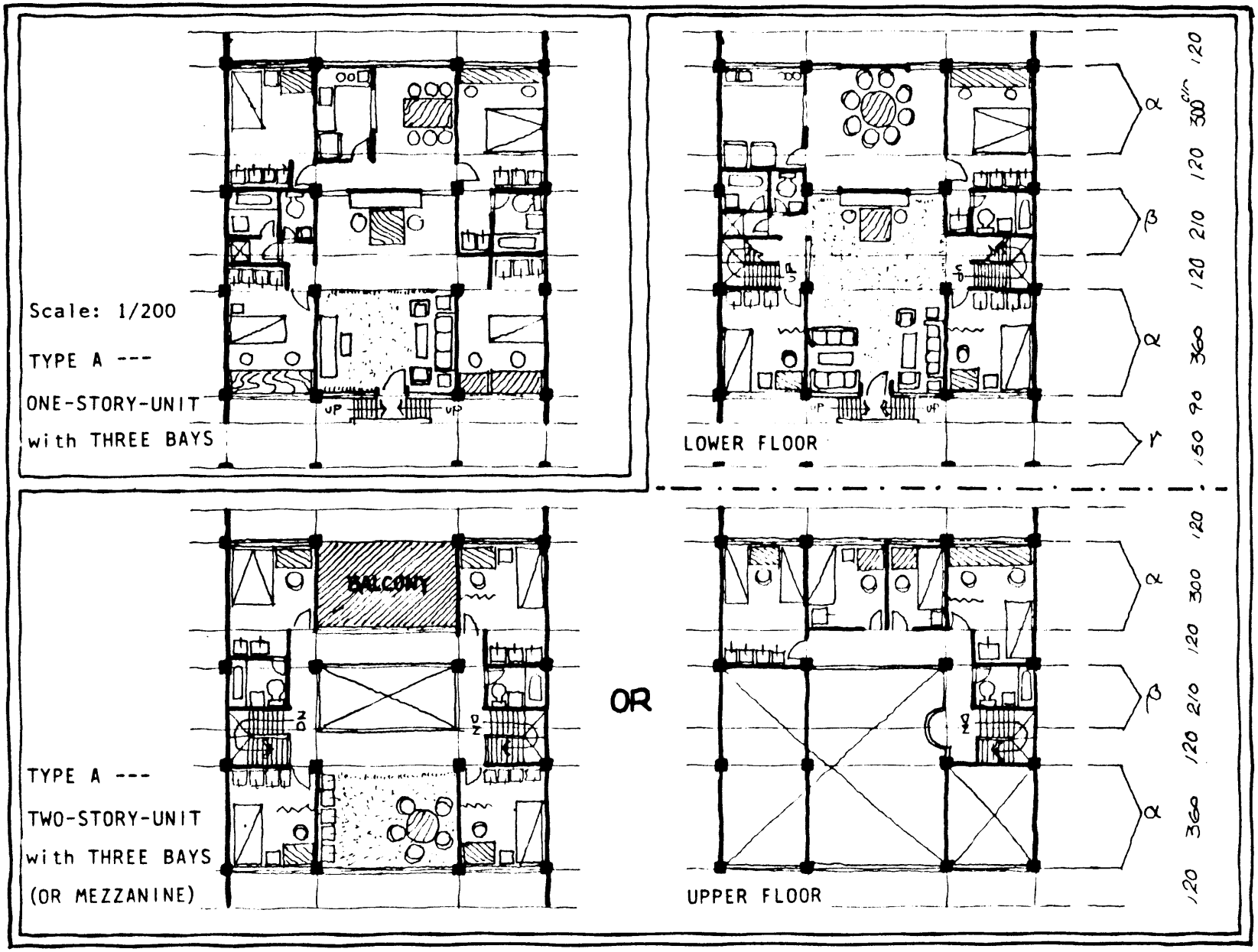
TYPE A --- ONE-STORY-UNIT
with TWO BAYS

Scale: 1/200

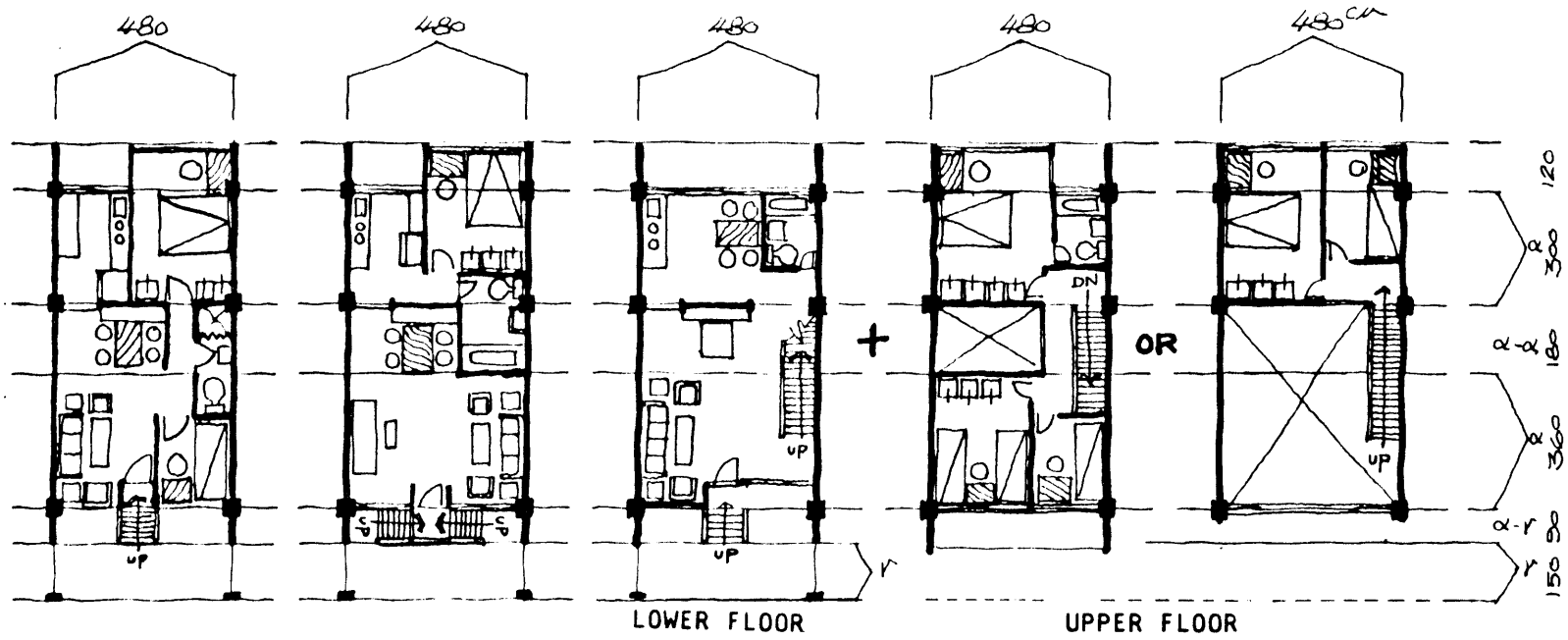
TYPE A --- TWO-STORY-UNIT with TWO BAYS (OR MEZZANINE)

LOWER FLOOR

UPPER FLOOR


Scale: 1/200
TYPE A ---
ONE-STORY-UNIT
with THREE BAYS
LOWER FLOOR
TYPE A ---
TWO-STORY-UNIT
with THREE BAYS
(OR MEZZANINE)
BALCONY
OR
UPPER FLOOR

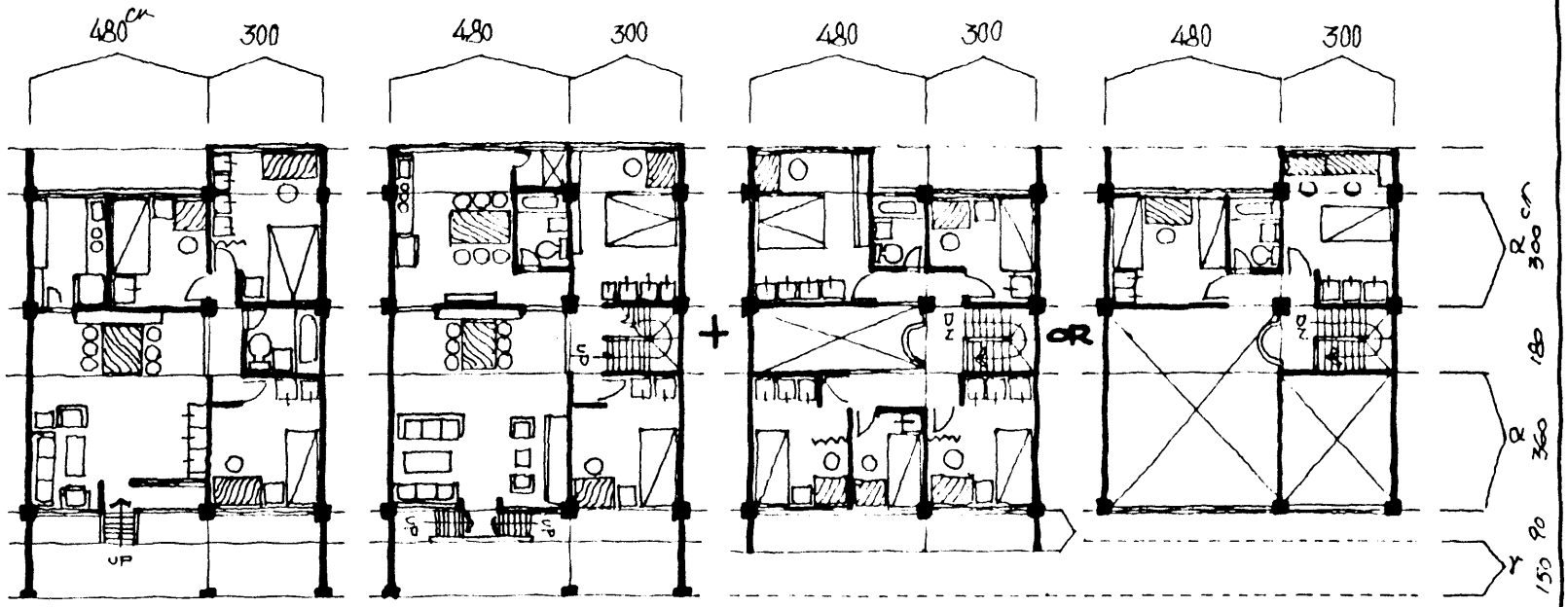
5-3-4-2: Type B



TYPE B --- ONE-STORY-UNIT with ONE BAY

TYPE B --- TWO-STORY-UNIT with ONE BAY (OR MEZZANINE)

Scale: 1/200



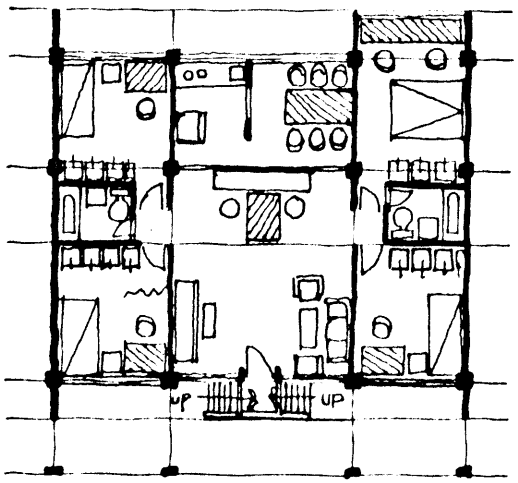
TYPE B --- ONE-STORY-UNIT WITH TWO BAYS

TYPE B --- TWO-STORY-UNIT WITH TWO BAYS (OR MEZZANINE)

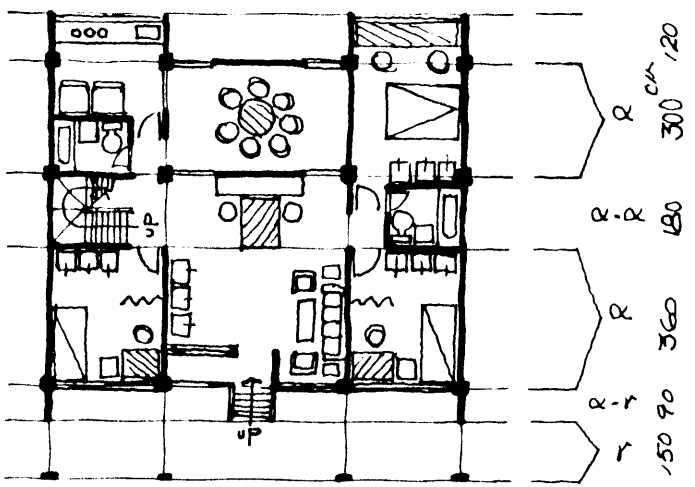
LOWER FLOOR

UPPER FLOOR

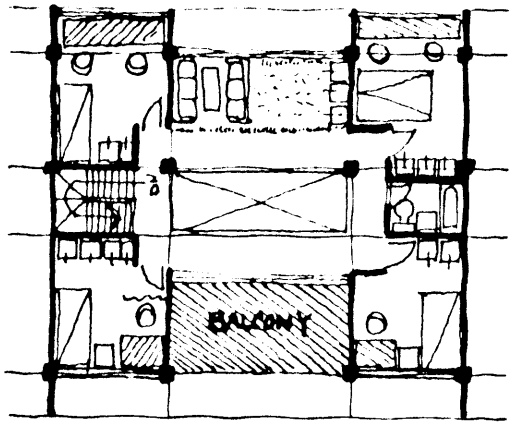
Scale: 1/200



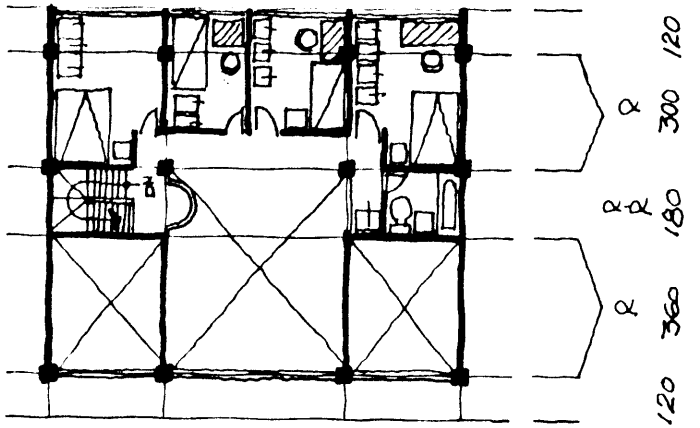
TYPE B --- ONE-STORY-UNIT with THREE BAYS



LOWER FLOOR



OR

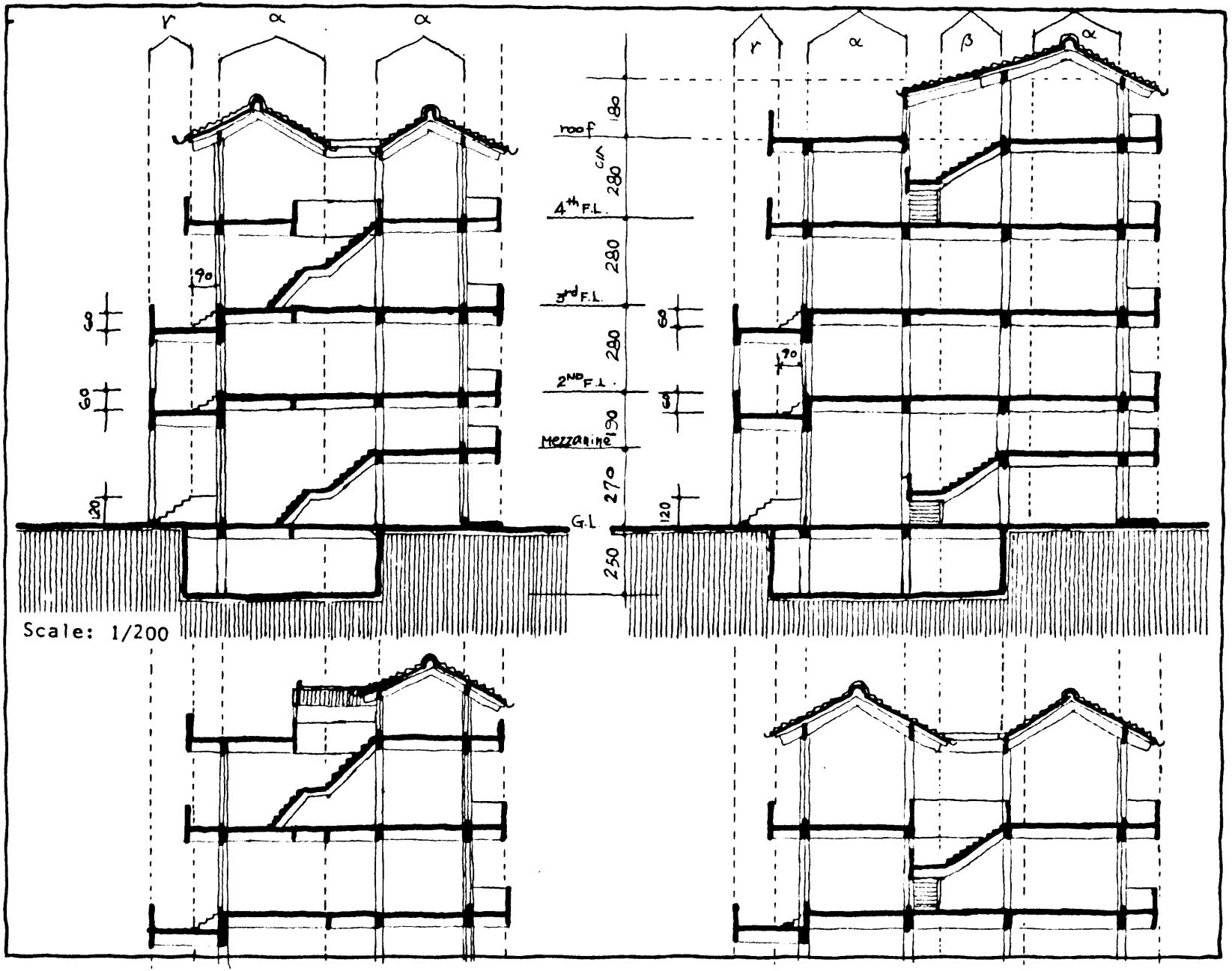


Scale: 1/200

UPPER FLOOR

TYPE B --- TWO-STORY-UNIT with THREE BAYS (OR MEZZANINE)

5-3-4-3: Sections of Type A and Type B



5 - 4: DISCUSSIONS

This is a review of the proposed dwelling model

5-4-1: On The Support Level

Advantages:

a) Neighborhood interaction:

The neighborhood interaction can be increased by means of the public gallery.

b) Privacy and territory demarcation:

The privacy of each dwelling unit can be maintained by a split level between the public gallery and the habitable floor, at the same time the private balcony of each dwelling unit is treated as a transition space which demarcates the private territory.

c) Flexibility:

Since the concept of support system caters to the demand to different floor plans, a wide range of variations can be accommodated.

Disadvantages:

a) Construction cost:

The construction cost might be increased by the split level public gallery.

5-4-2: On The Dwelling Level

Advantages:

a) Flexibility:

The marginal space allows the occupants to change the arrangement of spaces within their territory; therefore, the house can be changed over time on the basis of the specific requirements.

Disadvantages;

a) Circulation:

A longer circulation path is implied in the layout as compared to the layout with an entrance at the sidewall.

b) Public spaces for family activities:

Because the living room will be cut through by the circulation path, the need for a larger area would be required.

c) The conflict between circulation movement and activies in the living room:

All movement has to pass through the living room, thus generating the possibilities of conflict. The conflict will be sharpened when there is a guest in the living room.

Disadvantages:

a) Floor:

Because a room is not only designed for a specific use at one time, but also to be used for other uses or be subdivided at another time, the need for larger areas under each room category would be required.

5-4-3: On The Room Level

Advantages:

a) Flexibility:

All the spaces are grouped into three categories of large, medium and small spaces by indicating the range of minimum and maximum dimensions, thus enabling a flexibility in the function of room.

(1) Reference to "Pattern Language" written by Alexander.

(2) referrence to the Japanese architecture information book vol. 1, p 122 - p 123.

(3) Referrence to "Variations" by N. J. Habraken, p 53 - p 55

(4) Referrence to "Variations" p 62 - 64

(5) 5. The definitions of special purpose space, general purpse space and service space are different from those of the catagories of rooms in chapter 2, referrence to "Variations" p 57)

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6 - 1: CONCLUSION

It is undeniable that the entire social structure in Taiwan has undergone a tremendous change due to the constant economic development in the last thirty years. The change has been so widespread that it has not only affected traditional values but also the everyday lives of its people. The change will surely go on, however, one still feels among these changes a sense of tradition conveyed through living style and religious belief. (Readers can refer to "ph.D. Dissertation by John K. C. Liu, 1980). The relationship between old and new is so subtle that the apartment buildings in Taiwan, which have adopted an overwhelming Western style, have failed completely to reflect it. Thus, the question of how to fuse the traditional ideas into the contemporary context, and how to develop a contemporary Chinese dwelling in Taiwan still leaves room for exploration.

As we know, traditional and imported built forms are heterogeneous in nature because of the different contexts from which they are derived; however, it seems necessary to consider adaptation if we have tradition in mind. For example, the well-organized layout of the traditional courtyard house with a strict symmetrical axis was actually created on the basis of doctrines of Confucianism, which depicted family structure as a subsystem of the dictative political system, which means, the status of the father in a family was as important as that of the emperor to a dynasty. Such a rigid layout

for the Chinese dwelling, no matter how we look at it in terms of the concept of spatial organzation or the social concept, would not exist in the twentieth century. Unless we still insist on the kind of life-style under the hierarchy of the Chinese family structure with the supremacy of father, we do not have any reason to insist on the rigid layout of "Syh-Ho Yuan". It does not mean that a symmetrical layout is inappropriate, it simply implies that we should not adopt the layout without questioning its origin and our intent. As a matter of fact, the concept of symmetrical layout has been widely accepted if the sense of monumentality is intended.

In architecture, traditional moral values can only be expressed in physical forms, however, it is rather superficial if a concrete expression means attending only to trivial details, such as decorations.

To summarize my arguments:

1. In the process of selecting a meaningful pattern, the issue is not whether to inherit or reject tradition, but whether the attitude toward tradition is rational. What I would like to encourage is a rational attitude.

2. Under the principle of free choice, the popularity of any timeless pattern will never be eliminated in a rational manner.

3. The process of formulating architectural style is gradual and accumulative. Architects cannot impose patterns on residents. It takes continuous searching for the architects from the past and the present,

together with participation from residents, to form any architectural pattern. My purpose is to address the feasibility of whether traditional patterns could be applied to the contemporary context, and to further propose a rational design and research method.

6 - 2: THE IMPLICATIONS for FUTURE RESEARCH

1. Adaptation of Traditional Patterns

As the emphasis of this study is on the formation of a model, I am aware of the fact that the study has not addressed the problem of how to adapt traditional patterns into the contemporary context. The issue of adaptation is nevertheless very important, and calls for further studies.

2. The Support Model

Since the environmental context, both socio-cultural and physical, is constantly transforming, how to make a physical living environment adaptable to this constant transformation is another important issue, which was also not explored in this study. It appears necessary to study the capacities of forms (including zoning analysis and sector analysis), the support structure, and the infill components in order to make a support model that can be changed over time to meet occupants' in-time requirements.

3. Surrounding Context

I did not discuss how to select a specific site for the proposed dwelling model, neither did I explain how to plan a neighborhood, which is feasibile in my conceptualization.

4. Evaluation of Design Process and Environmental Quality

Once the dwelling model is made,one should evaluate the entire design process (to see if the theme is consistently reflected in the design), and the environmental quality. A set of criteria for a good living environment is needed , which may contain issues like the sense of territory,orientation, privacy, identity, convenience, accessibility and safety.

5. Research model

The physical environment is a representation of the socio-cultural context. The changes in socio-cultural context will also result in the transformations of the physical environment. A model which studies the interactive relationship between them will help us understand the process of physical environmental transformations, which in turn will serve as a good predictor for future developments in the physical environment. The power of prediction, together with the knowledge about environmental transformational processes, is the very important areas of research in architecture.

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