SELF-BUILT HOUSING IN HANOI: THE STUDY OF SOCIO-CULTURAL VALUES AND ITS INFLUENCE ON HOUSING DESIGN

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INTRODUCTION

Architecture is an expression of socio-cultural factors that respond to both physical protections and material needs. To support this assertion, Rapoport indicated that house form is generally based on culture to express the meaning of architecture while other relevant factors including materials, climate and technology are secondary priorities in the process of design[1]. In the work of Oliver and Rudofsky, traditional housing designs have their own characteristics reflecting harmony between local climate and cosmology of indigenous people [2,3]. Though historical development, various evident in Vietnam show that culture was a significant influence on architecture [4,5]. Therefore, the design of housing reflects the cultural aspects and lifestyles of the people. On the other hand, the lifestyles, social and politic aspects are changing overtime result in process of housing transformation[6]. This paper focuses on the process of evolution of self-built housing regarding two major factors namely cultural needs and daily lifestyles. Both factors play significant roles to create sense of community and meaning of a home design. It is argued that despite the introduction of new materials, urban regulations, policies, and construction techniques, each having great influence on city development; that socio-cultural perception and daily activities taking place in the houses still play important roles that define the sense of community.

OVERVIEW OF BACKGROUND OF HANOI

Vietnam is located in South East Asia, and the country borders with China, Lao, and Cambodia. Hanoi is situated in the North, on the South bank of the Red River delta. Throughout history, Hanoi is known as one of the most ancient cities in Vietnam. The start point of Hanoi being occurred when Ly King moved the royal citadel to Hanoi in 1010[7]. Since then, the sense of community has been identified with four main different built environments: an ancient quarter with typical shop houses that was influenced by Chinese merchants during the feudal periods; a colonial town during the period (1887-1954); a residential quarter during the central economic planning period (1954-1986); and a complex built environment since the economic reform. Apart from the residential living quarter that was planned by the government and state companies during the central economic planning period, in all the other urban residential areas are mainly filled with self-built housing. Today, self-built housing are still contributing approximately 70 percent of housing production in Hanoi city[8]. Therefore, this study compares and focuses on characteristics of self-built housing, including traditional town houses, colonial town houses and contemporary houses. The concept of

self-built housing in this study is defined as: a house that is funded by the householders themselves and the owners invest and manage the processes of design and construction to meet their own living needs.

Figure 1: The development of Hanoi: top left: feudal period; top right: colonial period; bottom left: central economic plan period; bottom right: since the economic reform(Drawn by Ngo Kien Thinh based on historical maps, satellite map in 2016, photo analysis and site observation)

EVOLUTION OF SELF-BUILT ARCHITECTURE

The traditional urban housing

The characteristics of traditional Vietnamese house reflect cultural needs, geography and nature. Hanoi located in maritime route from China to other Eastern countries and later, Western countries; thus, design of traditional town houses had various distinct features including functions, form and

spatial layout to adapt with living conditions in urban areas[9]. The traditional urban house is widely known as a shop-house because of two different functions: commercial area and living area. The commercial spaces including shops, storage, and workshop which are always located near the main entrance. Moreover, the shape of the building is long and narrow. There are two main assumptions about typological characteristics of urban house in Hanoi[10,11].

Firstly, the housing plot is formed following the traditions of Vietnamese people. Children always have to move out of the family home after marriage and build a new house for themselves except for the oldest son who is responsible for taking care of ancestral worshipping and his parents in their old age. Also, parents would generally endow their son with their own land and parts of their business. In Hanoi, this distribution commonly occurred around the historical quarter and traditional residential areas. Over time, an original parent's house would be separated into smaller houses. Furthermore, as a traditional way of living, the family business is generally passed from generation to generation. Hence, each house had at least one small frontage as a shop front to inherit the family business. Consequently, the width of house became smaller and smaller.

Secondly, another hypothesis about the building typology stems from economic purposes. As the starting point, the old quarter was the marketplace and trading area. Each house always had at least one small frontage for commercial purposes. The frontage spaces in traditional houses were valuable in term of attracting customers to shops on the ground floor. Therefore, during the feudal periods, building tax was calculated according to the width of building. As a result, the small width of traditional house could avoid large amounts of tax. Nevertheless, the length of building tends to increase opposite to the respective width.

In addition, the spatial organization of traditional house is characterized by clear division of space and geometrical rules. A house generally has two floor levels: a ground used for public purposes and an upper floor used for private family spaces. Living spaces are linked by several courtyards, and as a result of Vietnamese culture, the layout of building should provide enclosed form, allowing the building itself to be filled with life energy. People in Vietnam believed that life energy was an essential element, according to Feng Shui, that was responsible for the quality of the residence. The ideology of Feng Shui principles was popular in traditional society and was followed to create a harmonious environment to bring life energy into the buildings[12]. However, in reality, it is usually difficult to obtain an ideal site in the towns and cities. Consequently, in order to achieve a desirable living environment, the form of the courtyard house has been selected as symbolic ideal model in urban spaces. Although the size and shape of courtyard might vary in different houses, the courtyard, the enclosure of space by building and wall always represent the heart of dwelling units. The Vietnamese houses always surround their courtyards with main living spaces or walls to create sense of privacy, security, control of noise and dust, and to offer light and air.

Ground floor

First floor

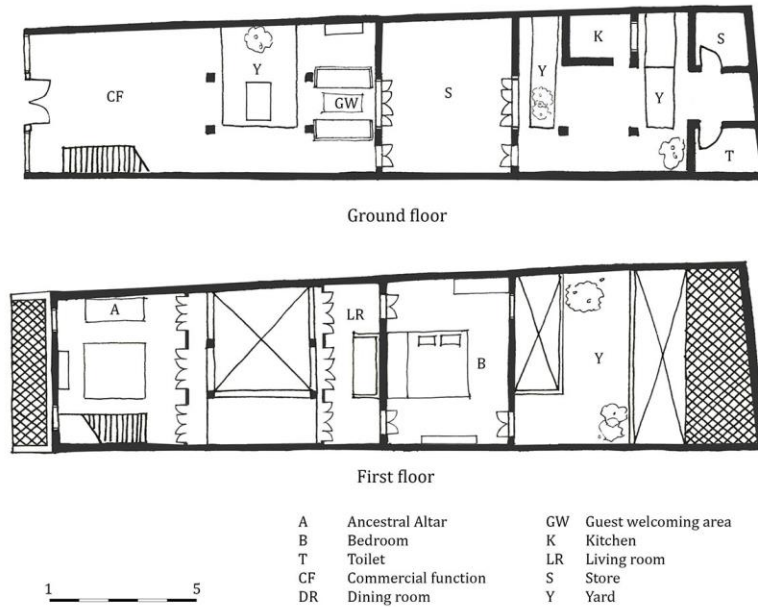|			
A	Ancestral Altar	GW	Guest welcoming area
B	Bedroom	K	Kitchen
T	Toilet	LR	Living room
CF	Commercial function	S	Store
DR	Dining room	Y	Yard

Figure 2: Example of traditional town house plan in 87 Ma May street (Drawn and images by Ngo Kien Thinh). Top: housing plan; Below left: ancestral altar; below right: family living space

In addition, under the Vietnamese culture, ancestral worship is significant[13]. Thus, the location of the ancestral hall always has the highest priority in the process of design [14]. The ancestral hall is generally located in clearest space in the house following Feng Shui principles.

Housing during colonial period

During colonial periods, the French attempted to develop Hanoi as a replica of Paris and started the processes of modernization and globalization, and new planning, landscape and architecture had generally followed Western principles[15]. As a result, these changes in political and social factors have impacted on housing form[16]. Land parcels were planned and shaped more geometrically in

rectangular shape. Town houses generally applied new materials and construction technologies whilst the façade was copied from French architecture. Nevertheless, the function and spatial organisation of the building was heavily influenced by old custom and cultural aspects that often seen in traditional housing designs.
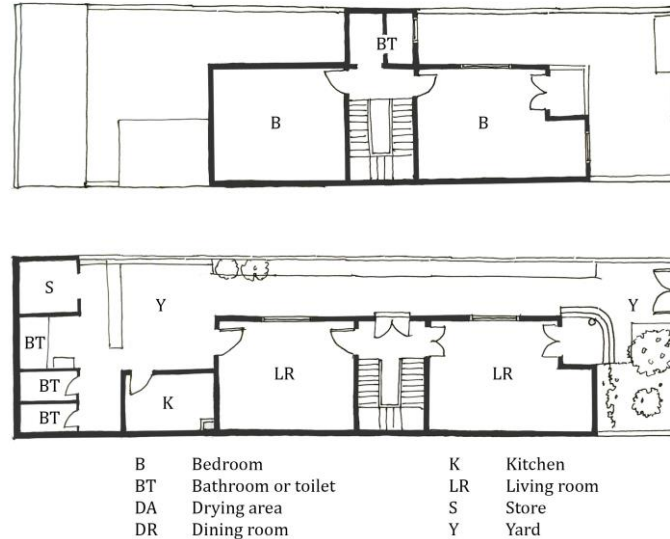

B	Bedroom	K	Kitchen
BT	Bathroom or toilet	LR	Living room
DA	Drying area	S	Store
DR	Dining room	Y	Yard

Figure 3: Examples of the colonial town house plan in Hanoi during colonial period (Adapted from Balderstone & Logan)[17]

Contemporary self-built housing

Since the economic reform in 1986, Vietnamese urban has experienced with changes in built environment[18]. During the period between 1954-1986, Vietnam applied a centrally planned economy. Every production was distributed regarding rank and number of working year of employees. In addition, state fully controlled housing production and popular housing type after wars was a collective apartment in living quarters. Since the reform, there are various changes in political and economic factors. The country is moving from a centralized planning to a decentralized transitional economy. Both marketization and decentralization have boosted the foreign and private development.

In term of social factor, census data show that nuclear family dominated the contemporary urban areas in Vietnam. For example, UN-Habitant estimated that the household size is decreased from 3.8 person in 2009 to 3.1 person per household in 2049[19]. The similar studies show that the average Vietnamese women in 1960 has a total of 6.39 children, it decreased to 2.05 children in 2012[20]. The figures show considerable demographic changes in household size and composition. However, although households have physical changes, they are still bound to traditional values and customs. In addition, although there is no need for large houses to accommodate extended families, there are higher living standards regarding living spaces.

All of those factors have contributed to the process of transformation of self-built housing. Architecture as the physical embodiment of social life has changed to adopt with new conditions. In historical urban areas (old quarter and French quarter), inhabitants often demolish the traditional houses and rebuilt new houses[21]. In addition, new self-built residential areas including urban villages, planned areas for the state employee and commercial areas are quickly dominated urban

districts [22] . Although the size of housing plot is depending on regional planning and past development, a physical characteristic of contemporary self-built house in all urban areas has identified with three to six floors with concrete structure, and the façade design is based on perception of house owners. In addition, the building density is usually very high, and in most case, house could cover 100 percent of the plot (figure 4). The physical changes come from two main reasons:
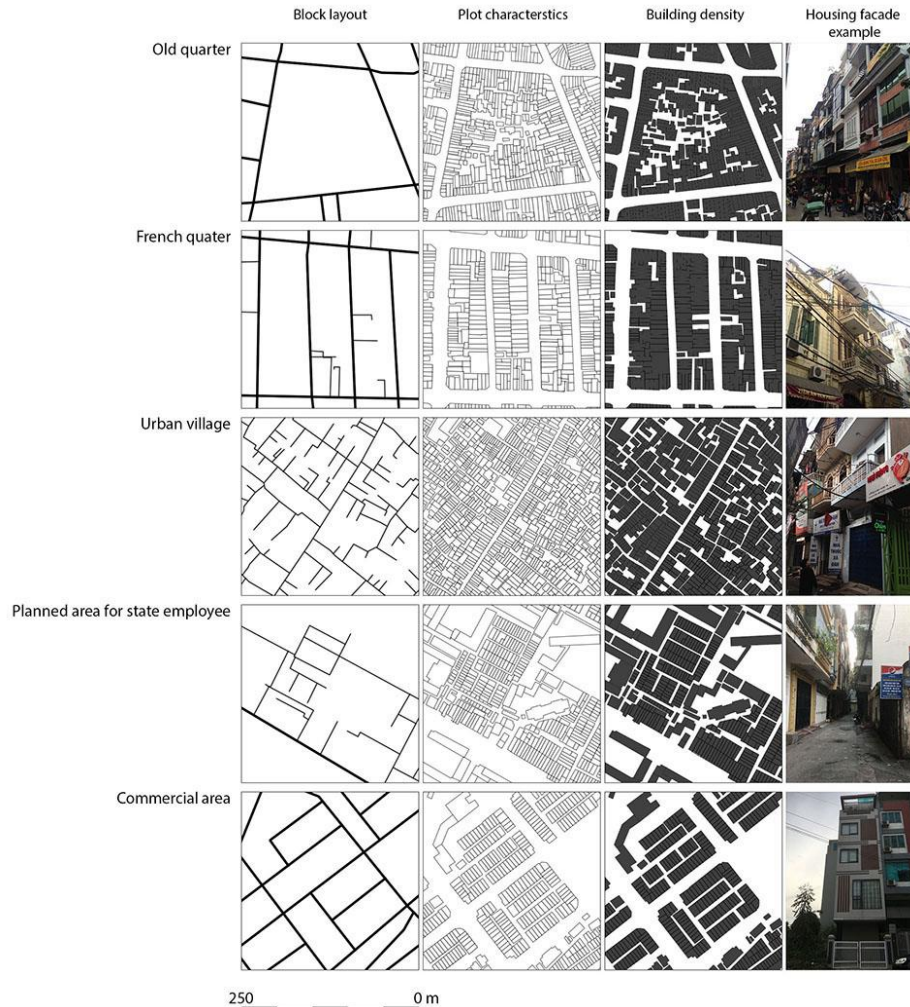

Figure 4: Overview characteristics of contemporary self-built housing in urban areas since the economic reform (Drawn by Ngo Kien Thinh)

First, due to change of built environment, land is considered to be a type of commodity[23]; therefore, the urban housing plot is expensive and most families can only afford a small plot. The only way to create more living space is to increase building area and to extend the house vertically. Regarding to building regulation, the building could cover most part of land if the plot size is too small (Table 1). As a result, the building is generally constructed with multiple stories and covered the plot[24].

Table 1: Maximum net density of land plot for housing construction[25]

Land lot area (m2)	<50	75	100	200	300	500	>1000
Maximum building density (%)	100	90	80	70	60	50	40

Secondly, the relationship between commercial area and living area are still popular in Vietnam because it supports local needs[26]. The commercial spaces help to maximize the income of house owners. Given the close relationship between living spaces and commercial spaces, any space inside the houses that is not used as living space would be transformed into a commercial area with small modification. Thus, if the family has good finance and the house is located in main streets, house owner would build the house as large and as high as possible to maximize commercial benefits[27].

In term of spatial organization (figure 5), the major spatial change for contemporary houses is a disappearance of courtyards. In traditional houses and French town houses, courtyards were frequently used to separate different living spaces. According to traditional rules, the living space was consisted of two parts: the main family living spaces and the supporting spaces. The supporting spaces, including kitchen and toilet, were located far away from living components in order to reduce the impacts of smoke and smell. On this account, the kitchen and toilet were regularly situated at back side of building, and those spaces were separated from other living spaces via a courtyard. However, in the contemporary house, a kitchen and other supporting spaces are directly attached to the main living spaces.
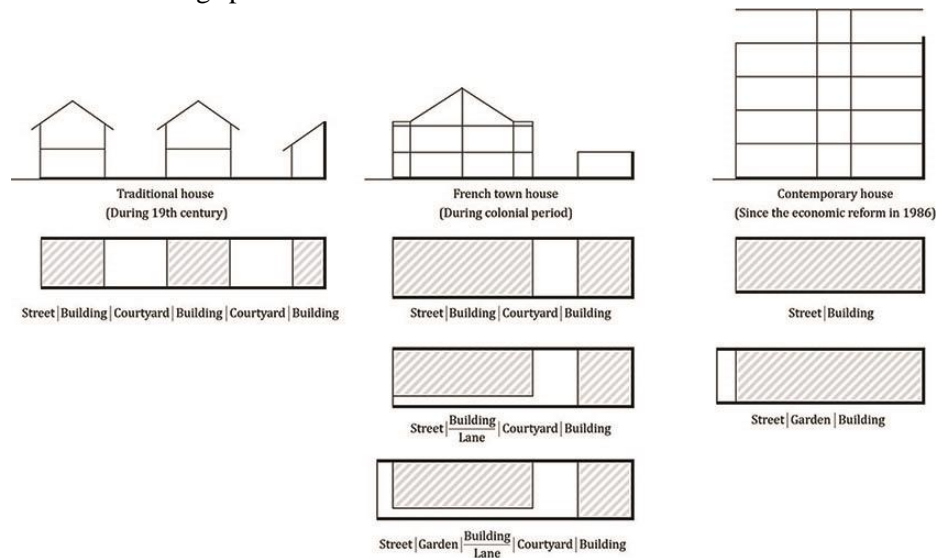

Figure 5: Architectural characteristics of urban house forms in different built environment (Drawn by Ngo Kien Thinh)

To explain these changes, it is suggested that the layout of self-built housing have reflected users' contemporary social structure and living styles. Three main reasons for spatial changes are as follows:

Firstly, the change of social structure led to transformation of housing forms. During the feudal and colonial periods, urban houses were always built by middle class, who normally had several servants [28]. Domestic work was always carried out by a maid named "*Con Sen*". By contrast, since the socialist regime started in 1954, the responsibility for domestic work shifted to family members.

Our case studies demonstrated that (figure 6), after the reform, the kitchen is directly connected with other living components to provide more convenience.

A	Ancestral Altar	K	Kitchen
B	Bedroom	LR	Living room
CF	Commercial function	S	Store
DA	Drying area	T	Toilet
DT	Dining table	WS	Working space
G	Garage	Y	Yard

Figure 6: Examples of contemporary self-built house plans after the economic reform (Drawn by Ngo Kien Thinh)

Secondly, the development of technology and home facilities led to new requirements for living spaces. Within new living styles, modern facilities such as gas and electric stoves have replaced traditional fire stoves. Subsequently, the cooking activities became more convenient with reduced effects of smoke and smell. Besides that, the new living styles have also encouraged people to use electric devices such as electric fans, sufficient lighting and air conditioning to achieve comfort. Thus, the courtyard's role to create a boundary between supporting spaces and living spaces and for ventilation and natural lighting turns out to be less important with new living styles.

Thirdly, the family social life has changed rapidly resulting in increasing requirements for private spaces. In the traditional society, housing played a significant role for family activities and a number of open spaces were used to support traditional living styles. By contrast, people seemingly spend less time for family activities at home today, particularly the case with young people. People now spend longer time outside home to work or study in the daytime. Moreover, there is an increase in leisure and personal goods such as televisions, computers and phones that offer more alternatives that encourage use of private spaces. As a result, there are increasing requirements for more private rooms in a house rather than public space. Courtyard has become less important in design. Consequently, small sky-wells in staircase area have taken the functional role of the courtyard for ventilation.
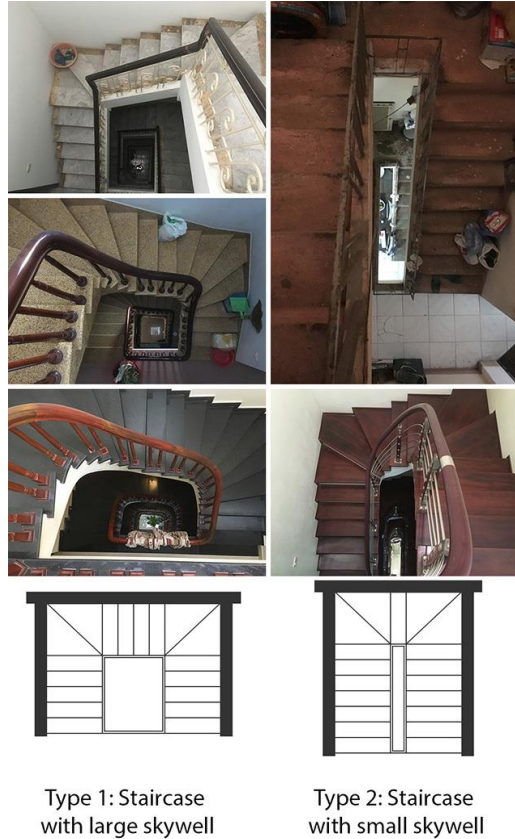
Type 1: Staircase   Type 2: Staircase
with large skywell   with small skywell

Figure 6: Different types of sky-well in contemporary self-built housing (Images by Ngo Kien Thinh)

Despite various changes in form and spatial organization, living styles of Vietnamese are still based on traditional customs. Due to various kinds of traditional activities, it is not surprising that with every Vietnamese family, no matter whether the house is large or small; the location of ancestral altar is one of the most important spaces in the houses. Thus, the ancestral alters always located in the highest place in the house or in the cleanest area in the living room[29]. Moreover, the arrangement of ancestral altar is significant because it influenced the arrangement of other furniture, such as the direction of bed.

Figure 7: Ancestral altar in different Vietnamese ceremonies (Clockwise from top left: Wedding event, Kitchen's god festival, death anniversaries and normal time)

CONCLUSION

In conclusion, this paper had critically examined the evolution of urban self-built housing in three periods in Hanoi: the traditional urban neighborhood period (during the late nineteenth century); the colonial period (1887 to 1954) and the period after the economic reform in 1986. A number of aspects, including: form, function and spatial layout were analyzed. In this study, it was argued that self-built houses have retained and involved two social-cultural aspects throughout history. First, houses have kept commercial spaces wherever is possible. Areas in the houses dedicated for commercial activities are normally at ground and facing public streets. Secondly, spatial arrangements have been designed to prioritize owners' needs in daily life. Notably, those priorities have been changing throughout history: for example, courtyards in today's houses are less important compare to those in the past. The reasons for the disappearance of courtyards include the restriction on building plot, increasing requirement of family spaces in each house, and advanced technology such as air-conditioning and kitchen facilities that became available in normal people's homes.

The findings, therefore, will be beneficial to designers, architects and planners to aid them in understanding how to integrate traditional forms, expressions and ideas into contemporary designs. The process of modernization may be associated with design evolution. There are changed relationship between supporting spaces and living spaces in traditional and contemporary house respectively. New design needs to consider the importance of cross-blending of the contemporary and traditional concepts in Vietnam. Besides that, the architect should consider the use of courtyards or other open spaces in the process of design to create a sustainable environment. In

addition, a concept of home is strongly related with ritual activities; thus, the room with the ancestral altar still plays a critical role in creating the identity of Vietnamese housing.

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