

## A Critical View of Tube-House Architecture on Urban Type in Vietnam

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### ABSTRACT

Hanoi is the largest city in Vietnam. It is a political and socio-economic center, where attracting planners' and environmentalist's interests. Nowadays, Hanoi has been facing problems of rapid urbanization like many major cities in developing countries. Major commercial activity and pressure occur on almost all streets of the Ancient Quarter and causing local housing issues in a different socio-economic context. This paper aims to provide a deep view of housing issues and tube-house heritage in Vietnam referenced shop-houses in Singapore, Thailand, and Malaysia, respectively. The research used methods collecting primary data (observation, purposeful discussion) and secondary data to clarify factors, which are related to tube-house in the Quarter. It also presents the findings of such developmental history of tube-house, its typical structure, composition, and construction method as considerably important foundations for conservation activities. To enhance conservation strategy and improve "spirit" protection of Ancient Quarter for a better living environment to the year 2025, a framework for tube-house preservation covering "Inside-to-Outside" approach is proposed accordingly.

**Keywords:** Hanoi Ancient Quarter, Inside-to-Outside, shophouse, tube-house, urban style

### Introduction

Hanoi is an ancient city, which is over 1010 years old (1010–2021) and has an interesting structure based on both the local architecture and French colonial architecture. Total area of the inner city is about 40 sq.km consisting of seven districts. The old city in Hanoi usually is being called as "36 Old Street Quarter" or the Ancient Quarter that is located in the center and belongs to Hoàn Kiếm district.

The Quarter is former commercial center that plays an important role in developing economy of Hanoi. All activities are occurring on almost all streets of this specific area. It is of great national and international interest due to its unique heritage:

One of the area's most prominent features is the concentration of valuable historical buildings and sites, including

interesting urban vernacular houses. It is a kind of living museum, a very important part of national heritage. Besides the historical and architectural vestiges, the area is evidence of a pattern of urban settlement in Vietnam's history (Phe & Yukio, 1990).

Tube-houses, located in the Hanoi Ancient city and built nearly 100 years ago, are predominant here. Many households share large tube-houses, which typically have a subordinate area for a kitchen and toilet and a small courtyard. These houses are normally divided into small rooms, often dim and humid due to lack of light and fresh air. Its internal infrastructure, with a shortage of clean water and a stagnant sewage system, is quite old and overloaded. There are lacking space to dry clothes and outdoor space for leisure activities. Local residents commonly make great efforts to improve and enlarge small spaces by illegal occupancy.

There are many old tube houses, which are place for families of three generations with ten people in a 6,0 sq.m space (Dinh Truong, Lan Nhi, 2021). Due to lack of living space, these families commonly tried to expand public areas by attaching new structures into the old buildings, such as the attic, temporary stores to meet the family's demand. For this reason, tube-house architecture has been changed and distorted from inside to outside of old buildings regrettably. With those attachments, phenomena of building collapse, such as building no. 56 Hang Bong happened in 2<sup>nd</sup> July 2019 (Anh Duong, 2019), warned unsafety of these tube-houses under strong urbanization process and economic re-development after the Covid-19 pandemic recently. Therefore, old and original tube-houses, its characteristics seem to be replaced and disappeared if there are no conservation solutions for particular cases urgently.

Local residents come from various social strata and include cadres, state officials, retirees, craftspeople, and traders. Some households are tenants of state-owned houses. They pay a very low that has remained virtually unchanged since the 1950s (Peter & Pham, 2000).

Regarding unique characters of the ancient streets, Hanoi People's Committee has issued strict regulations on building renovation. Many households want to renovate their homes, using their own money for repair and improvement. Those approach is not easily accepted by currently complicated administration, even though it is cheaper than following the complicated procedure of Hanoi Ancient Quarter Management Department. Consequently, many households have simply accepted living in bad conditions. On the other hand, few households are able to rebuild or renovate their houses, which are privately owned. The remaining households spent money on small repairs improving toilets, kitchens, courtyards, roofs and doors, or walls. However, the households must obtain agreement from their neighbors to do improvement because of strict construction regulation rather than conservation rules from local authorities.

### Research methodology

The research method is focused on collecting primary data (observation, purposeful discussion) and secondary data (journals, articles, books, and implemented projects for Ancient Quarter). Then, data analysis was carried out to understand factors of architecture (AKI), local behavior to functional space, user interaction, city planning, socio-culture, and policy affecting tube-house in the Quarter. Finally, findings become foundations for

later recommendations of tube-house conservation and development in a framework.

## Housing and existing situation

### *Urban housing issues*

Housing is central argument in urban issues because everyone needs shelter to live in as well as connecting people with a wide range of social, economic, political, and physical aspects. People are living in houses; thus, housing reflects their lifestyle and cultural habits. People work hard, try hard and fight hard to have shelter. Residential land makes up the majority of land use in any city; therefore, the physical quality of the residential environment represents the quality of life in the city. Housing thus is an important physical matter in fact.

### *Housing issues in Hanoi*

Housing has always been a pressing and the most difficult issue in the socioeconomic and urban development agenda in Hanoi city. Its problems are housing degradation, housing shortage, poor residential environment, unpleasant visual images, weak housing management, housing injustice, informal housing production, and informal housing market.

These problematic housing issues in Hanoi today are logical consequences of a complicated and constantly changing process of housing provision in a different socio-economic context. Therefore, without historical and holistic perspectives, housing issues in Hanoi cannot be understood thoroughly. These are missed opportunities for rational and realistic resolutions to be developed.

There are some types of houses that fall into following categories in the precinct [2]:

- privately owned and occupied houses;
- privately owned rental houses;
- house for rental belonging to the State and being controlled by the Housing Enterprise of the District;
- houses built on illegally occupied land;
- houses built on land leased and controlled by State agencies.

Regarding this category, some areas originally consisted of long brick-buildings with tiled roofs and same layouts – a living room, yard, and kitchen. Two families shared a bathroom for washing, but there was only one communal

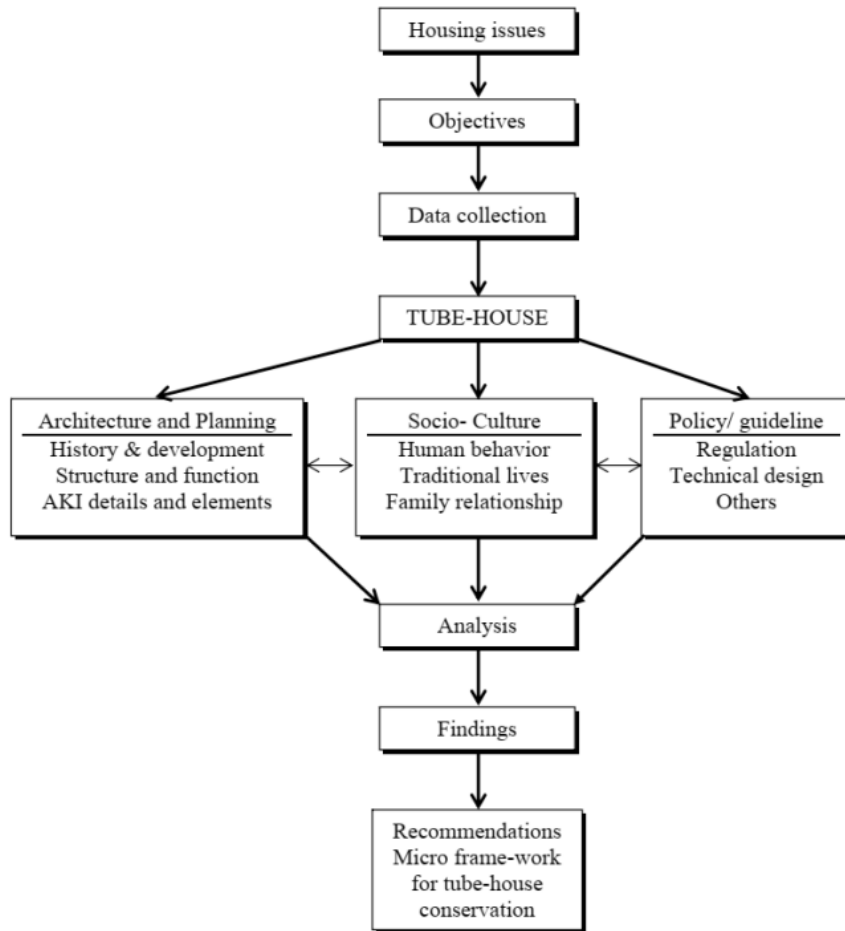


Figure 1: Research flow chart

toilet for the whole area. Over the past 30 years, these areas have completely changed. The distance between buildings is now a narrow path with 1,0 - 1,5 meters wide. Along the main roads, there are two to three - stored houses of various sizes, structural designs, and qualities of building materials. The former 12-meter-wide road is now narrow down to 3,5 - 4,0 meters wide. It shows households carried out some forms of construction. The most common tactic was to enlarge their apartments beyond the allotted area to create more space for private usage, sale, or rental. This enlargement was definitely illegal, and they had to pay fines actually. Thirty percent of the houses now have two- to three-stories; most are built on vacant land occupied illegally and sold to newcomers (Phe, 1988).

It is be noted that while considerable efforts went into encroachment on open-land either to create more space for the households or for sale. On the other hand, only small repairs were done to the original living space (for instance, tiling the floor or putting on a new door). Even less was done to improve the kitchens and toilets. The

reason behind is overloaded infrastructure that discourages later improvement.

Many people in the precinct occupied land illegally, built houses, and sold them to other. Consequently, most old blocks of houses are now surrounded by newly built ones of various designs. Few interior improvements have been made. This result is typical of spontaneous irregular urban housing in Hanoi.

**An overview of Tube-house in the ancient Hanoi**

Most houses in the study area were built in the late XIX century or at the beginning of the XX century. The majority of houses are named tube-houses, with frontage from 2,0 – 4,0m and depths varied from 20 to 50 - 60m. Numbers of floors are used to take refuge during storms and flooding.

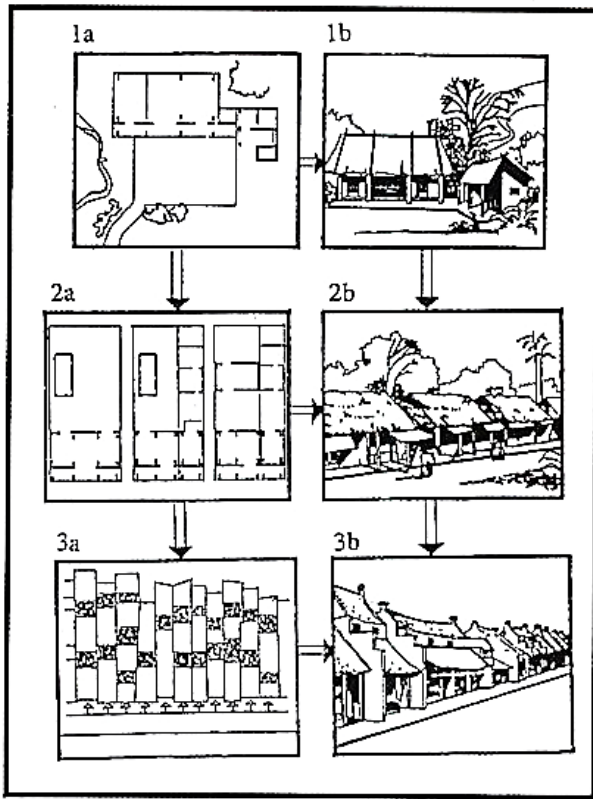
Improving housing conditions always is a problem, especially when it doubled task of conservation after the area





**Giả thuyết về sự phát triển nhà ở trong khu vực phố cổ Hà Nội**

- 1a, 1b Nhà ở nông thôn
- 2a, 2b Nhà ở kết hợp buôn bán hay sản xuất thủ công trong khu phố cổ
- 3a, 3b Quá trình phát triển đường phố



**Figure 4:** The hypothesis of development of houses in ancient Squarter of Hanoi

- 1a, 1b: Rural housing type
- 2a, 2b: The houses are built in a row to sell and produce goods in “36 street and guilds” quarter.
- 3a, 3b: Evolution into an urban street

Source: IAR-MOC, 1999

**Shophouse patterns in Asian countries**

**Understanding the shophouse in Singapore**

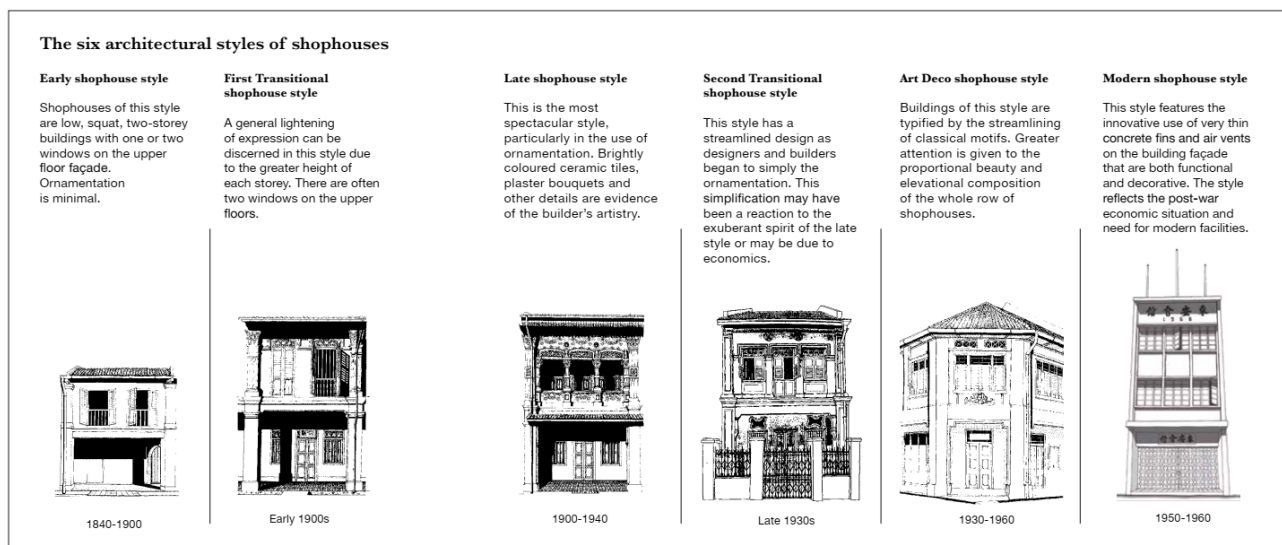
The shophouse is a pre-industrial form of urban unit and was a characteristic building type of 19th and early 20th century Southeast Asian town, cities and commercial centres. Traditionally, the shophouse provided facilities for business premises on the ground floor and residential accommodation on the upper storeys. Variation in shophouse floor plans results from differences in the size and depth of the original plan plots. There are six architectural forms of shophouses (ranging from 1840 and 1960), and five variations in shophouse have been identified: shophouses (1) with forecourt, air well, and rear court; (2) forecourt, two air wells, and without rear court; (3) forecourt, without air well and with rear court; (4) without forecourt, with one air well and with rear court; and (5) without forecourt, without air well and with rear court abutting rear boundary wall.

**Shophouse in Bangkok, Thailand**

According to Sachakul (1982), a “residential shophouse” is single-family dwelling, which has production or income-earning as a secondary function. A “commercial shophouse” has a business as the primary use while the residence is secondary.

**Residential shophouse**

The wives and grandparents as well as other family members share responsibility in household activities. The



**Figure 5:** An example of shophouse forms

Source: URA, 2020

businesses vary from food shop, coffee stand, selling of daily supplies, to some personal services such as dress-making, sewing, mending etc., The front porch of the house is usually used for selling business. In many cases, the family part of the house also contains space, which may be used as a workshop, with a view of the front door and the street. This allows the housewife to have maximum control over different kinds of activities which she undertakes inside the house while having visual access to the front door and street. Home furniture and materials used in home production are stored within all available space. In the community, these residential shophouses are not only places of business; they are also place, where social interaction among community members take place.

*Commercial shophouses*

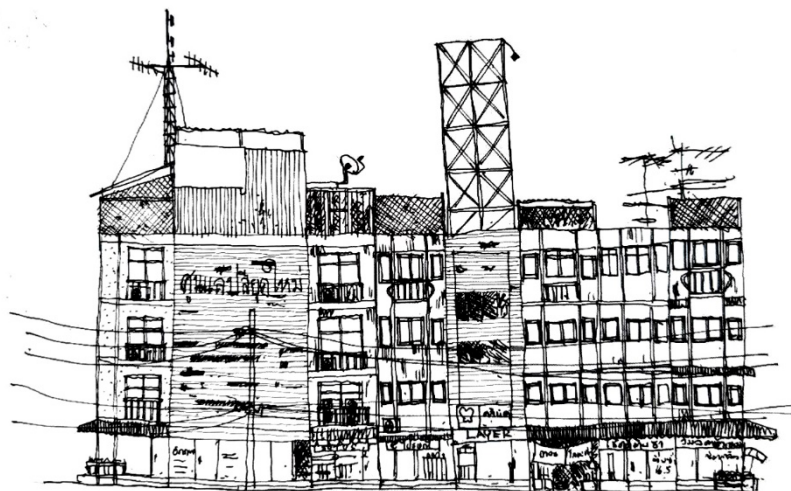
It has played an important role in the Thai urban scene for more than a century. Many of the early shop-houses were one- or two-stories height and took on various Chinese characteristics (curved gable ends of the roofs, glazed ornamental tiles, and stucco decoration). Gradually these Chinese styles gave way to more European features. Due

to the climatic condition, the colonnades or continuously covered pedestrian way however were utilized to protect the pedestrian against the heat of the tropical sun as well as the torrential monsoon. These forms of shophouses were mostly owned by Chinese and European merchants.

From a business standpoint, a commercial shophouse is an ideal unit for family-type business because the family who lives on the upper floors can spend as much as they need on the business on the ground floor and rental area with full control of them over time. Almost all commercial shophouses have been built along the streets, roads or alleys, especially in commercial districts.

***A typical Court House in Malacca, Malaysia***

The length of the house, including the “five-food-way” is 1,5m, is approximately eight times its 60–80m width, with a floor-to-ceiling height of around 4,42m. Despite the punctuation of three open courts, at various points of the house, it is inadequately considered as some of the rooms are poorly lighted. According to the reminiscence



**Figure 6:** The shophouses in Kasetsart, Bangkok  
 Source: Davisi Boontharm, 2007

of the occupant, the back of the house used to sit on stilts, which were driven into a trap door on the floor for the occupants to dispose of their garbage during high tide. Today, modern convenience and improved urban facilities have replaced this function of the house, and the seabed has been reclaimed.

### Tube-house characteristics

#### Architectural features

Similarly, tube-house, containing all its variations, is the typical form in the 36 Old Streets Quarter. The fronts facing the street are narrow, and the plots are extremely deep. A tube-house is a complex of built spaces lined up each other, connected by courtyards. From the beginning one tube-house was built for one family, who had a shop in the front, linked by a courtyard to the living space, followed by a “wet” courtyard, and kitchen and toilets at the end. If the house belonged to a rich family, the number of courtyards and living spaces was greater.

The number of people living in single tube-house today is uncountable. The shop is still in the front and the toilet is most often at the end, but the living space is divided into smaller parts and each family has rarely built their own kitchen and storage as close as possible to their home.

The architecture is additive in the real sense; there are rooms or objectives added all the time in the Quarter.

#### Inner space and using function

In tube-houses (figure 7, 8) ownership is the factor that makes layout-pattern different. About 46,5 percentage of public-owned houses (Peter & Pham, 2000) are shared by several families following the principle of using the maximum amount of space at the expense of privacy from other families and other family members.

The private-owned houses are occupied by extended families, in some cases of three or even four generations. The layout of these houses follows a common pattern. More important members of the family have their room closet to the front of the house. In the past, from front to back of each house, the different parts used to arrange different functions.

In majority of the houses, there are two or three courtyards. Usually, one called inner courtyard, attached to the living room, and used as a place for relaxation, with plants and other decorations. The second, called the outer courtyard or “wet” one, is combined with other utilities such as the kitchen, storage room, toilet, etc. In Layman’s term, designed courtyards of typical

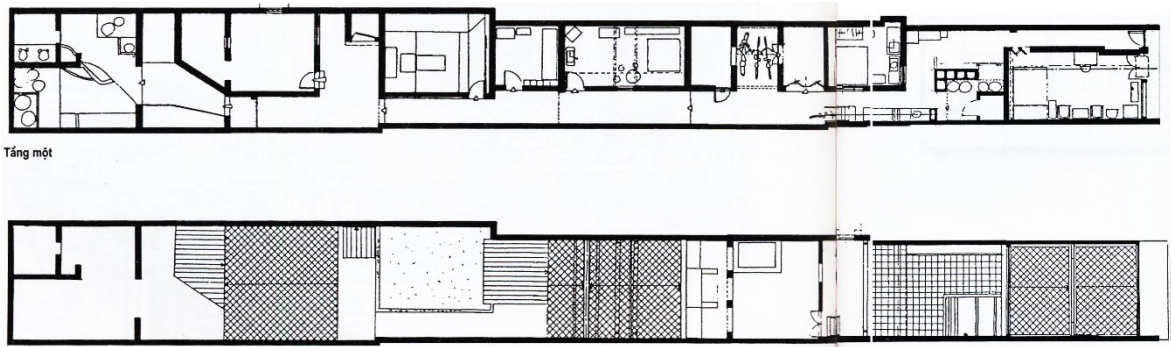


Figure 7: Ground and First floor of tube-house, Hang Can street

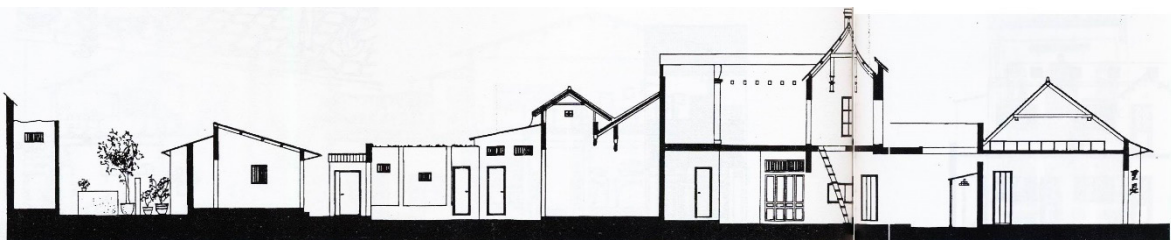


Figure 8: Section, Hang Can street  
Source: IldeFrance & HPC, 2003

tube-houses were very good places to ensure best living condition within adequate standards in tropical countries as Vietnam and to create particularly necessary spaces for residential demand.

Nowadays, these mixed functions are one problem that currently caused bad conditions. Thus, reconstructing courtyards may be an alternative for solving many problems and changing living conditions better for communities. For courtyards, supposing: (1) to be ensuring natural through-ventilation system; (2) a space for outdoor activities and it serves as a place of relaxation with decorative plants or; (3) even become a reserve space for further development. However, to ensure inner ventilation, both courtyard and corridor are very important factors for this traditional house of Ancient Quarter.

### **The corridor**

As we know, the atmosphere in old streets is formed by the difference between the lively street and the calm courtyard. An important link between the street and the courtyard is the corridor. The corridor was added to the traditional structure to make the structure fitting the changing demands. The corridor made it possible for more than one family to live in the tube house. It is a delicate solution to the problems caused by sharing. Moreover, the main function of the corridor is communication. Interestingly, when the measures of the corridor increase then usage functions also increase. It becomes a storage of things like bikes, goods, and just junk.

Stoves for cooking are not usual to find in the corridor. If the fuel you use in the stove is wood or charcoal, the smoke becomes black sooty. Condensation caused by hot air meeting cold surfaces will raise the humidity even more. The moisture from cooking and condensation together with soot, which is good nourishment, will provide an excellent condition for mould growth. Too wide corridors are also giving opportunities for the motorbike driver to drive all the way from the street to the courtyard and it may be disturbing for neighbors by making noise pollution.

### **Materials**

Traditional types of houses can be recognized by the presence of certain characteristics. During the 19<sup>th</sup> century, building materials came to include wood and bricks for the walls and structure and hand-made tiles for the roof.

### **Roofs**

The traditional tube house has a sloping roof parallel to the street the sometimes extends as a thatch canopy over the sidewalk. The roof tiles have the shape of fish scales and flat terra cotta tile. At the two ends of the rooftop, there is a protecting rectangular volume called the "roof pillar".

### **Other details**

The common walls between houses are bricks covered by roughcast and extend 1.5m to 2.0m in a stair shape from the roof. These common walls have a practical function in that they prevent the spread of fire, while aesthetically, they break the the street's monotony.

This type of tube house has one or two storeys and an attic. The street façade is composed of solid wood panels removed and used as shop stalls during the daytime. At the attic level, there is a little door with dimensions about 40cm x 40cm or 40cm x 60cm. The interior doors are such folding wood screens.

### **Construction method**

The houses are often made of a timber frame construction, supporting the roof; thus, it allows the walls to be made of different light materials. The floor is made of stamped earth or of stone and it is raised above the ground (20- 40 cm) to protect from moisture. This family altar is placed on the northern wall of the middle room. The rooms follow the division of the roof trusses, which sometimes carry painted or carved decorations, and can be seen from inside the room. Its kitchen is a spatial separation to protect the living rooms from heat and fire. Those buildings consisted of main rooms are allocated around a courtyard. It is used for social activities and work such as doing the laundry, drying the rice, and preparing the food.

Before conducting ground-breaking ceremony, one ought to have a geomancer who is fixable for the spot and the orientation of the future dwellings (*định phương lập hướng*) and timing, where construction works should be started. For brick houses, one raised at first two bare walls, then fixed the ridge- piece; after that, a small feast was made for carpenters that scarified it to their Patron saint and were given by a bonus. When the house was built, one organized an inauguration feast (*làm lễ khánh thành*). As a matter of fact, the Vietnamese mason is also



a sculptor, mosaicist, and painter. The carpenter is also a cabinet-maker and wood sculptor.

**Frame work and major recommendations**

Following UNESCO (1988), the conservation and restoration techniques are “bottom-up” approach and orderly work on (a) foundations; (b) facades (internal); (c) roofs; (d) floors and interior fixtures (doors, revetment, fire-places, staircases, toilet fixtures, lighting, etc.). Regarding the research, the preservation and restoration of wooden buildings (Masaru, 1972) in Japan, however, are being initiated as a “top-down” method from the roofs; framework of buildings; floors and foundations; painting respectively; as Melbas rot, insect and fire control. Each approach is applied in a certain situation based on factors contributing to the deterioration of buildings (or tube-house). For example, those factors are bad repair and faulty restoration; natural and man-made

damage; intrinsic causes (nature of the ground, defects in the actual materials, buildings defects), extrinsic causes (physical, chemical and electrochemical factors, action of man...). For wood, brick structure of tube-house and current situation of the Ancient Quarter, a special alternative cost- effective approach (Van & Alfred, 1990) is very necessary as to enhance conservational process more effectively and efficiently.

**“Inside-to-Outside” approach**

The “Top-down” approach is commonly considered as a method for restoring physical buildings. In this case, to protect “the spirit” of tube-house, family position has been extremely important to maintain and enhance traditional values of neighbouring relationship and Hanoian. Therefore, the “Inside-to-Outside” approach begins with family potentiality of labour, finance, and sub-conscience of culture and conservation.

**Framework for “Inside to Outside” approach**

Works	Layer 1 Households	Layer 2 Local authority	Layer 3 Consultancy/Developer	Layer 4 Businessman	Phase/time
Local authority	<ul style="list-style-type: none"> <li>Conduct pilot projects in public owned houses</li> <li>Encourage other pilot projects in private owned houses</li> </ul>	<ul style="list-style-type: none"> <li>Reform regulation, organization, performance</li> </ul>	<ul style="list-style-type: none"> <li>Make a list of conservable tube-houses,</li> <li>List traditionally intangible values, places inside selected tube-houses</li> </ul>	<ul style="list-style-type: none"> <li>Invite developer and businessman</li> <li>Encourage producing traditional goods, items</li> <li>Incentive policies of taxes, administrative services</li> </ul>	
Households	<ul style="list-style-type: none"> <li>Establish living standard, quality of life and future development</li> </ul>	<ul style="list-style-type: none"> <li>Help community</li> <li>Select tube-houses to reserve</li> </ul>	<ul style="list-style-type: none"> <li>Setup objectives of conservation, restoration</li> </ul>	<ul style="list-style-type: none"> <li>Identify business purpose in specific location</li> </ul>	I - Objectives 1-2 weeks
Step 1	<ul style="list-style-type: none"> <li>Meeting, discussion</li> </ul>	<ul style="list-style-type: none"> <li>Participate in the meeting</li> </ul>	<ul style="list-style-type: none"> <li>Guide a discussion framework for HHS</li> <li>Provide full info, details, materials of their tube-house and valuable Places, things and intangible values</li> </ul>		2-4 weeks
Step2	<ul style="list-style-type: none"> <li>Select valuable tangible, intangible things among HHS for conservation</li> </ul>	<ul style="list-style-type: none"> <li>Provide relevant laws, regulatory materials for the meeting</li> </ul>	<ul style="list-style-type: none"> <li>Research history of tangible, intangible items</li> <li>Consult families about conservable items following a list of completed tube-house’s elements</li> </ul>	<ul style="list-style-type: none"> <li>Research previous goods selling in this tube-house</li> <li>Propose new products</li> </ul>	4-6 weeks
Step3	<ul style="list-style-type: none"> <li>Limit number of persons in each households (2 out of 1 family)</li> </ul>	<ul style="list-style-type: none"> <li>Prepare re-settlement plan to reduce population in each tube-house</li> <li>Prepare procedure of doing “red book” – land use right certificate</li> </ul>	<ul style="list-style-type: none"> <li>Assist families to make architectural and technical, drawings</li> <li>list necessary works of conservation following participatory capacity of families</li> </ul>		II - Survey 1-3 weeks

Works	Layer 1 Households	Layer 2 Local authority	Layer 3 Consultancy/Developer	Layer 4 Businessman	Phase/time
Step4	<ul style="list-style-type: none"> <li>Negotiate, assign task of building and conserving</li> </ul>		<ul style="list-style-type: none"> <li>Propose logical and scientific conservation methods for reality</li> </ul>		1–3 weeks
Step5	<ul style="list-style-type: none"> <li>Involve conservation works and restore typical places of Hanoian in parts of tube-house</li> <li>Fund labors, workers</li> </ul>	<ul style="list-style-type: none"> <li>Fund inside/outside infrastructure and social services</li> </ul>	<ul style="list-style-type: none"> <li>supervise building, preserving, restoring process</li> </ul>	<ul style="list-style-type: none"> <li>Fund materials for re-building, preserving and replacing building details</li> </ul>	<div style="background-color: black; color: white; padding: 5px;">                     III - Implementations 1–3 weeks                 </div>
Step6		<ul style="list-style-type: none"> <li>Enact incentive policies for those businesses (special taxes)</li> <li>Disseminate information of pilot projects and regulations in the tube-house</li> <li>Establish a hot telephone-line to keep frequent contact with HHS</li> </ul>	<ul style="list-style-type: none"> <li>Cooperate tourist units to organize tube-house tours and show their traditional lifestyle</li> </ul>	<ul style="list-style-type: none"> <li>Run business activities with traditional products</li> <li>Keep contact with local authority</li> </ul>	
Consultant Developer			<ul style="list-style-type: none"> <li>Define fully important tube-house components that need to be preserved</li> </ul>		
Businessman				<ul style="list-style-type: none"> <li>Conduct marketing research</li> <li>Research types of goods</li> <li>Define items for investment</li> <li>Design traditional examples</li> <li>Set up business plan</li> </ul>	

**Motivation for participants**

Why do families and partners involve this conservation program? What benefit can they obtain? Here is usefulness they can meet in different layers.

Key actors	Beneficiary
Layer 1: <b>Families</b>	<ul style="list-style-type: none"> <li>be granted “red book” for land use right.</li> <li>family members will be resettled to new HDB projects and jointed low fair within bus service programs for their daily commute connecting Ancient quarter to new re-settlement.</li> <li>continue running businesses in tube-house and the Ancient Quarter.</li> <li>participate in city tours at tube-house and develop family economic themselves.</li> <li>be supplied good public services in administrative procedure, water and electricity etc from providers.</li> </ul>
Layer 2: <b>Local authority</b>	<ul style="list-style-type: none"> <li>manages and preserves valued buildings in the area.</li> <li>coordinates tours to implement academic workshop and professional forum and discussion at preserved tube-house.</li> </ul>

Key actors	Beneficiary
Layer 3: <b>Consultant/ developer</b>	<ul style="list-style-type: none"> <li>develops successful tube-house projects to others.</li> <li>improves quality of life and protects environment, micro climate in tube-house.</li> <li>enhance economic development in ancient quarter by encouraging tourism industry instead of strong trading and commercial activities.</li> <li>builds a data base and library of buildings to serve managerial and research purpose.</li> </ul>
Layer 4: <b>Businessmen</b>	<ul style="list-style-type: none"> <li>discovers structure, components of original tube-house and real social lives.</li> <li>consults both local authority and families following designs and guidelines as a main work.</li> <li>consults foreign investors and does international collaboration in research and preservation.</li> <li>receives official license to design ancient buildings in Hanoi city.</li> <li>markets and advertises their products to local and foreign customers.</li> <li>trades traditional good without taxation in 2 years.</li> <li>builds up their “Logo” through city tours and other media system.</li> <li>sticks trading name into the buildings as sponsors or honourable conservationists.</li> </ul>

## Conclusions

This paper was designed to investigate structures of tube-house, its functions and conservation policy and techniques in the urban context of Hanoi and Ancient Quarter. It was found that development history of current tube-house explained architectural and structural changes, good families' relationship and so on. Indeed, tube-house's features and architecture created differences of 36 Old Streets Quarter with other Asian towns such as Singapore, Thailand and Malaysia. However, people awareness and regulation limited conservation process not only for tube-house but also for whole area. Therefore, this study proposed a framework and appropriate solutions through "inside-to-outside" approach contributed for preserving tube-houses as a new lesson learned for shophouses in Asian cities and improving local community's knowledge of conservation works following low-cost methods. Nevertheless, due to limitation of time, the research did not cover all happening issues of tube-houses. So, some recommendations for further studies are made to solve remaining problems by different approaches accordingly.

## Competing Interest Statement

The author has read and approved the manuscript and takes full responsibility for its contents. No potential conflict of interest was reported by the author.

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