"Tube House" and "Neo Tube House" in Hanoi: A Comparative Study on Identity and Typology

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Abstract

Among Hanoi's different housing forms, the traditional "Tube house" in Hanoi's Old Quarter (built before and in the 19th century) and the modern "Street house" (built after the Vietnamese Economic Reform in 1986 and called the "Neo tube house" in this paper) are the 2 dwelling forms that have certain similarities as well as basic differences. Yet, they have never been compared in any previous study. Though the "Tube house" has been extensively studied so far, there are still little-studied aspects such as identity and characteristics. Moreover, "Neo tube house", despite its dominant appearance in contemporary urban fabrics of Vietnamese big cities, has not been adequately studied so far, though it was sometimes criticized in Vietnamese architectural and urban debates. Therefore, this paper aims to primarily study these 2 forms in terms of identity, characteristics and typology with my own pictorial proofs, and then interpret their relationship as well as compare them on those aspects to draw urban development lessons.

Keywords: tube house; neo tube house; identity; typology; Hanoi

1. Introduction

Hanoi is the most ancient capital city in Southeast Asia with almost 1000 year history. It has been gradually urbanized and developed up to the current state with seven different architectural areas in total. (Fig.1.):

Fig.1. Master Plan of Hanoi
Showing Different Architectural Areas

(I)Imperial citadel;
(II)Old quarter;
(III)French quarter;
(IV)Neighborhoods
built before 1986;
(V)Private housing
built after 1986;
(VI)New urban areas
built recently and
(VII) less urbanized
areas. Except
Imperial citadel,
all other areas are
mainly residential
ones.

Among these
housing forms, the
(II) traditional "Tube

house" (TH) in Hanoi's Old Quarter (HOQ) built before the 19th century and (V) the modern "Street house", here called as "Neo tube house" (Neo-TH) built after the Vietnamese Economic Reform in 1986 are the two dwelling forms that have some certain similarities as well as basic differences. Yet, they have never been compared in any previous study so far. Moreover, zoning in Fig.1. is just relative. In fact, "Neo-THs" are scattered all over the city as a dominant dwelling form in all Vietnamese big cities. However, this form has not been adequately studied so far, though it was sometimes strongly criticized in Vietnamese architectural and urban debates.

Therefore, this paper aims to take an initiative in studying these two dwelling forms in terms of identity,

Fig.2. Sketch of TH Group & an "inserted" Neo-TH (Top Left);
Image of a Traditional TH Group in Hanoi's Old Quarter (Bottom
Left) vs. Image of a "Neo-TH" Group in a New Area (Right)

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characteristics and typology, and then put them into comparison to draw urban development lessons.

2. Previous Studies

The first form, traditional TH, has been extensively studied since early 1990s by different domestic and foreign research groups as well as individual scholars, some of which I was involved in or independently undertook. Highlights of those many studies were printed in my two previous papers (Ref.11, 13). Yet, for a convenient reading of this paper, most important studies are listed again in the reference section.

For the second form, Neo-TH, there is not much academic literature about this form. However, some simple studies are also listed in reference section.

As far as I know, there is no previous study closely comparing these two forms, so my study could be an initiative.

3. "Tube House" vs. the Similar

There is no official definition of "tube house", though it is commonly spoken in Vietnamese as "*Nhà ống*" (lit.TH). In Vietnam, only HOQ and Hoi An Ancient Town used to have and still have "*Nhà ống*". Most common claims identify a TH by its physical tube form, which means that the length must be much longer than the width, commonly at least 5 times (preferably over 10 times). Another definition that I agree with also identifies a TH by its physical tube form, plus one more identifying point regarding the main structure, that it should be structured by alternate mass-void composition.

In the integrated field of architecture and urbanism, there are several confusing terms relating to similar dwelling forms. So in this paper, let me compare the term *Tube house* with two similar forms: *Shop house* and *Street house* ("Street" here indicates main street with various activities, commercial-functional, and does not indicate barely circulation-functional roads).

- *Tube house*: Mainly indicates the particular physical tube form of the house.
 - *Shop house*: Mainly indicates the dominant commercial function of the house.
 - *Street house*: Mainly indicates the interrelation between the house and its environment (the street).
- So a house can be called in different ways. However:
- *TH* must be a *Street house*^(*) and could be but may not be a *Shop house*.
 - *Shop house* must be a *Street house*^(**) and could be but may not be a *TH*.
 - *Street house* could be but may not be either a *TH* or a *Shop house*.

^(*): *TH* here does not include houses, which have a tube form, yet do not have a main-street access.

^(**): *Shop house* here does not include houses, which

Fig.3. Interrelation among Tube House, Shop House and Street House

have front shops, yet do not have a main-street access.

In short, this interrelation can be illustrated by Fig.3.

4. Hypothetical Evolution of Traditional Tube Houses

The evolution of TH settlement in HOQ was commonly hypothesized by various Vietnamese scholars and officially published in a number of publications (i.e. "Preserving Hanoi's architectural and landscape heritage", Ref.7, pp.19).

However, in my opinion, there are a couple of features that can be demonstrated to make this hypothesis clearer. First, in this widely claimed and commonly quoted hypothesis, there is no supporting documentation and/or any other form of proof, so it is not as convincing as it could be. Second, this illustration mentioned nothing regarding possible application of traditional rural housing wooden structures. Only few previous studies mentioned that "earliest urban settlers probably applied the traditional wood technology smartly into new urban context".

I personally agree with this hypothetical statement, and thus, intentionally searched for more "evidence", and eventually found some very precious old photos as clues of old states. Then, I made my own 3D-CAD models of different stages of development, and

Fig.4. New 3D-CAD Illustrated Hypothesis (by the Author) of the Evolution of HOQ (cum TH Neighborhood) Left Column: Evolution Process, Right Column: Found Old Photos

that could Prove the Corresponding Stages.

(1): Rural house's minimum structure (main and sub-houses)

(2): Typographical context when earliest rural migrants came

(3): Ancient-foot path was bricked and simple shop houses were built along the road

(4): Road became urban street; houses were built up by filling up façade and expanding inwards street block; water surfaces were filled up; the area were populated.

Fig.5. New Illustrated Hypothesis on Application of Traditional Rural House Wooden Structure Wisdom to Urban TH (by author)

combined the models with old photos into an all-in-one illustration as seen in Fig.4. Now let me briefly explain the illustrated hypothesis of TH evolution (Fig.4.) as follows 1. When rural migrants settled down in HOQ, they applied traditional rural housing type (No.1) into indigenous urban context (No.2) with some modification by building a shop at front (to produce and sell products, No.3). When the settlement was populated, especially after a new feudal governmental act had been given out to tax shops by their front widths, the front parts were made much smaller (i.e. only 2.5-3 meters wide), and vacant lands among houses were fully built up. At last, when street façades were fully filled up, the houses were expanded inwards [by alternate mass (rooms)-void (yards) composition], making them gradually longer and finally shaping up the tube form with total lengths up to 50-100 meters (No.4).

The process is described more in the figures' caption.

5. Characteristics of Hanoi's Traditional Tube House

Fig.6.-top presents a street block's layout (Hang Bo St., Thuoc Bac St., Lan Ong St., Hang Can St.), in which THs face 4 streets of 4 orientations. This block was fully built up, so backs of longest houses meet up at the core. Dark areas indicate the scattered inner yards.

Fig.6.-bottom shows a typical TH plan and section. Please note that there is no tube house still remaining in the original structure now, so Fig.7. introduces digitally restored drawings of another traditional TH (my previous project at 47 Hang Bac St., Ref.11,13)

Previous literature has demonstrated simple statements of TH's characteristics that were neither adequately explained nor systemized.

Theoretically, a dwelling form is characterized by functions, building techniques, materials, residents' lifestyle and activities, etc. In one of my published papers (ref.11), I already generally described functions, lifestyle, ownership...In this paper, I just briefly mention them in Tab.1, and mainly focus on physical form, spatial composition and materials. In order to easily understand TH's characteristics (cum core values), I used analytical diagrams (In fact, TH neighborhood was developed in a much more "organic", "natural" way, see Fig.6.-top). Studying this form signals a sustainable housing model with a system of positive characteristics as follows:

5.1 TH has great eco-sufficient spatial composition ²:

Traditional TH has a great eco-sufficient spatial composition that perfectly allows natural ventilation and lighting (Fig.8.). Technical proofs for this feature

Fig.6. Layout of a Street Block Showing THs of 4 Orientations (Dark Areas: Sky Yards) & A Typical TH Plan & Section (Bottom)

Fig.7. New Virtually Restored Project at No.47 Hang Bac St. (By The Author): 2f Plan, Master Section, 3D Model Street-view Montage & Bird-eye View of House Group (Period Before 1954)

Fig.8. Tube House's Eco-sufficient Spatial Composition
Top: Plan; Bottom: Master Section;
Mass: Built Blocks; Void: Inner Yards;
Dark Arrow: Natural Wind; Light Arrow: Natural Light

was also previously done and published by a research group (Ref.15). This is a good lesson for modern architecture, especially in this era of energy crisis.

5.2 TH has smart expandable spatial composition:

Fig.9. shows two possible ways to expand the mass spaces (inner sky yards).

This could happen when the house was getting populated (rising number of family's members, families, new occupants) or when new demands arose.

Option 1: Expand the land plot inward

Option 2: Build up the void spaces partially

Fig.9. TH Smart Expandable Spatial Composition
Top: Plan; Bottom: Master Section;
M: Mass (Built Blocks); V: Void (Yards); Exp.: Expanded

For option 2, it is strongly encouraged to expand only partially the voids, not entirely, in order to keep good natural ventilation and lighting. Moreover, if the voids are to be built up partly, it is highly suggested to be built on the same side, so that straight circulation and cross natural ventilation can be maintained.

5.3 TH has eco-sufficient house-group composition

One of particular features of HOQ's TH neighborhood was that, even when next-door houses' masses were not of same sizes or positions (Fig.10.), the entire system could still keep good natural ventilation within the houses and among houses, creating a self-regulated micro-system climate and preventing the heat from entering the house during summer. This is thanks to rather synchronized structures of the houses (alternately Mass/Void/ Mass/ ...).

By reflecting this feature of the traditional TH into current Vietnamese big cities (See section 9), we can realize the failure of "Neo-TH" groups in making a self-regulated micro-climate system due to either full

utilization of land (no "void") or disconnected and scattered voids (inner yards or air wells).

Fig.10. Diagram of a TH Group (Houses Not Aligned) Showing Mass/Void Composition & Spatial Connection of Open Spaces

5.4 TH is massively constructible & customizable

As we can see, traditional TH basic structure consists of similar (or even identical) modules (Fig.11., Fig.12.) Therefore, building up the neighborhood massively is possible by multiplying the core module using the same wooden structure. Moreover, this module is also customizable in some particular dimensions to fit the house masters/owners body sizes. Therefore, we can conclude that the traditional TH's structure is very simple, yet very smart and advanced.

5.5 TH has human-scaled façade, cozy townscape and micro-universal enjoyable inner yards

Low-rise is a typical characteristic of wooden & brick-wall static structure like TH (see more in Tab.1). Its 2-storey façade allows perfect audio-visual communication between the residents with people from the street (sometimes even from the opposite street side), so it is very human-scaled. And as a result, a series of cozy human-scaled facades certainly build up a cozy human-scaled street/townscape (Fig.13.).

5.6 Compared with modern forms of same density, TH is more advanced in terms of community connection, energy usage and flexibility of change

Let's study on a sample of TH group, i.e., five THs, each TH has three 2-storey built modules (M=Mass) and two inner yards (V=Void). Theoretically, if we keep the same land use percentage, density and proportion of Mass/Void, and just change different

Fig.11. TH's Structure Massively Constructible & Customizable

Fig.12. A Core Module (3D Model of 47 Hang Bac House, Left) and Archival Photo of its Remaining Wooden Structure (Right)

Fig.13. TH's Human-scaled Façade & Enjoyable Inner Yards
Black Arrows: Noise; White arrows: Heat

Fig.14-a. Typical Traditional 2-story TH Settlement
(No Common Yard; Yards are just Common within a House)

Fig.14-b. Spatial Arrangement of
a 2-story Mansion with a Small Common Front Yard

Fig.14-c. Spatial Arrangement of a 4-storey Mansion
(Front 2-story, Back 4-story) with a Bigger Common Yard

Fig.14-d. Spatial Arrangement of a 6-story Mansion
with the Biggest Common Front Yard

spatial arrangements, spatial arrangement variants can be diagramed as follows (Left side: Master plans or house group's layouts, right side: 3D perspectives).

By a simple comparison we can conclude:

- *Land use*: At a glance, the 4th model (Fig.14.-d) seems to have the biggest open space and the 1st variant (Fig.14.-a) seems to have the smallest open space, yet actually all variants have completely equal numbers of "Masses", "Voids" (simply by counting).

- *Life style*: Inhabitants in 1st model live closest to the ground and have 2 social connection modes/levels: (1) *in-house* among households via common spaces; (2) *neighborhood* among all neighbors via the Street space, thus very community oriented. In other models, the 1st mode/level is usually not supported or working.

- *Sustainability*: Inhabitants in 1st model have most sufficient natural ventilation and lighting, so it consumes the least energy and produces the least emissions, so this spatial arrangement may be most sustainable.

6. "Neo-Tube House" in Hanoi Old Quarter

6.1 TH massacre and newly arisen "Neo-THs"

Under strong urbanization and modernization processes within the last two decades, many old THs in HOQ (esp. those over 100 years old) were massively torn down for new commercial constructions (Fig.15.). Besides, many others partially fell down or were seriously downgraded and much modified. This is a big loss of cultural properties.

Fig.15. A TH Located Right at Gateway Square into HOQ (Arrow) is being Reconstructed Possibly for Commercial Use (2006)

Fig.16. New Arisen Neo-THs in HOQ (2006)

Moreover, some newly built or rebuilt houses have critical unaesthetic architectural style ("no-style", "free-style", eclectic, "false style"...) and big built volumes that violated construction regulation in HOQ (Fig.16., Fig.17.). As a result, the quarter has been drastically and negatively changed, causing critical urban problems that press more on the vital task to preserve the quarter (See more in my paper: Ref.11).

6.2 Good TH rebuilding: 30 Hang Than St. project

This house was rebuilt in late 1990s and followed a totally new design of a traditional influenced style. Therefore, though it does not present typical tube house structure or details, it can still be called a good tube house reconstruction project, and thus represents a new trend of what I call "traditional design" (Fig.18.).

7. "Neo-Tube House" in Other Non-historical Areas

What I call "Neo-tube house", also commonly called as "Street house", came into appearance in big Vietnamese cities after Vietnamese Economic Reform in 1986 and soon became dominant. This kind of tube house has both a "tube form" layout (the length is

Fig.17. The 27 Hang Be St. Private Hotel in HOQ Built with Illegal "Lobbied Permission" on a Big Tube-form Plot: Proposed "Compromised-solution" Design (Left) by the Architect (Arch. To Kien) & Realized Building by the Owner Followed the Owner's Favorite Style of What-he-called "Classic Luxury French"(Right)

Fig.18. Reconstructed Newly Designed House at 30 Hang Than St. (Arch. Ho Thieu Tri & Associates): Façade, Inner Passage & Interior View of Old Motif Wooden Door Toward Front Street

much bigger than the width) and a "tube form" façade (the height is much longer than front width).

In Vietnamese language, this type of house is called by different ways as mentioned in section 1. Called by the context with the surroundings, its name is "*Nhà phố*" (lit. Street house). By physical layout, it is named "*Nhà lô*" (Lô is an imported word from the French word lot, means a lot, or a plot or a land portion). In financial terms, it is called "*Nhà dân tư xây*" (lit. Self-financed self-built house). "Neo-THs" are located all over new parts of the city (either spontaneously or in compliance with governmental city planning) along a main street or even along small alleys. In the case of main streets, most of the front spaces are shops, garages and/or offices for rent; the rest are either just for dwelling or any other rental form (office, workshop ...). Very few street-fronted houses are just residential. Some housing areas have no common aesthetic harmony due to diverse styles and volumes, making a chaotic fabric. They were then strongly criticized and less built (Fig.19.).

As far as I have searched, there has been no previous study so far that either compared traditional TH with "Neo-TH" or mentioned/shown/interpreted/ proved any relationship between them. Therefore, in this paper, I aim to primarily interpret some initial analyses of this relationship.

Fig.19. Panoramic View (2007) of a New Arterial Road Lined Up by Diverse "Neo-THs" (Near the Most Booming Area in Hanoi)

First, if we look at Hanoi's urban context, we can find a continuity of urban growth, and thus, the latter dwelling forms shall be influenced by the former ones.

Here are some similarities of the two forms:

- Possessing an attached settlement pattern
- Possessing a "tube form" layout
- Usually possessing one or more inner yards as natural lighting and ventilation resources
- Possessing a direct street access
- Land plots are divided in narrow widths to have as many street-front facades (for shops) as possible
- Street/Sidewalk as community/social connection space

8. Typology of "Neo-Tube house"

In terms of typology, basically we can classify the "Neo-TH" by 2 ways: (1) by morphology and (2) by number of open sides.

First, if classified by morphology, basically we can have 4 types: (1) full-plot built, (2) partial-plot built, (3) full-height built, and (4) partial-height built. These 4 types can be mixed to create many variants (hybrid types). For example, Fig.20. shows 6 variants developed from the 4 above types.

As we can see, from traditional tube houses, due to modern and especially commercial demands, houses are being built upward (multi-storey) and inner yards are being minimized, even fully filled up(100% mass).

And since the houses become multi-storey, inner yards consequently become "sky-wells" for just very limited natural lighting and ventilation. The heights of the houses can be either controlled by construction regulation, or sometimes uncontrolled (so many owners build their houses as high as their financial capacities allow for maximum commercial benefits).

Second, if we classify the "Neo-TH" by number of open sides, we have 3 basic types as shown in Fig.21. With regards to popularity, type 1 is most popular while type 3 is least popular (e.g. house group's ends).

Fig.22., Fig.23., Fig.24. shows examples of Neo-TH group's layouts (perpendicular and non-perpendicular to the street). These street-front groups consist of houses of different types, different module size (widths, depths, compartments) and there is almost no common rule in the designs, because most of the houses are "order-made" up on the owners' needs and "aesthetic tastes", other houses even have no design at all (the owners did not hire any architect, just built the house the way they like). The diagrams also clearly prove

Fig.20. Typology of Neo-TH Classified by Morphology
 1. Full plot/full height; 2. One skywell/full height;
 3. Two skywells/full height; 4. Full plot/single-step façade
 5. One sky-well/multiple-step façade;
 6. One front yard/one sky-well/full height
 Light arrow: natural lighting; Thick arrow: natural ventilation

Fig.21. Typology of Neo-TH Classified by No. of Open Sides
 (Open to Streets, Alleys or any Open Space)
 1. One-side open 2. Two-side open 3. Three-side open
 (Dark: the Neo-THs; Grey: next-door houses)

how this kind of settlement with few scattered little sky-yards fails to create an eco-sufficient system as that of the traditional TH settlement.

The critical problem of this kind of dwelling form is that: unlike traditional tube house, the "Neo-tube house" neighborhood has:

- chaotic common façade, thus chaotic townscape
- low density (usually one house has only one household/family with dropping number of family members), thus land use is insufficient.
- scattered inner yard(s), so whole neighborhood can't make an entire self-regulated eco-sufficient system as traditional neighborhood did/does.

Fig.22. "Instant Façades": New Streets Opened Crossing Existing Settlements in Different Orientation, "Swallowed" Old Façades, so "Instant Façades" are Being Made for Shop Hiring (Left: No Corner is 90 Degree, Right: "Super Slim" Houses!)

Fig.23. Example of a Typical Neo-TH Group's Layout (Mixed, Diverse Module Sizes and Shapes)
 Fig.24. A Newly Opened Street Crossing a Neo-TH Group in Different Orientation, so New Chaotic Façades must be made

Fig.25., Fig.26. show samples of a new Neo-TH group and a single house, to which supports from management and architects helped making the situation better.

Fig.25. A "not-too-bad" Neo-TH Group (built under some common construction regulations) by a new arterial road nearby Trung Hoa- Nhan Chinh New Urban Area (Hanoi)

Fig.26. Sample Design of a Street House for Office+Dwelling (Arch.To Kien & Arch. Truong Ngoc Lan): Plot: 5mx19m; GF: Car & bike parking; 1F-2F: Office; from 3F up: Dwelling

9. Comparison of identity and characteristics of the traditional Tube house and the "Neo-Tube house"

Table 1. and Table 2. show detailed comparisons between the 2 forms in terms of identity and characteristics. Through Tab.1, we can see that they must have some similarities (No.2,3,5,6,13) that show an influential relationship. Yet, they have some basic differences (the rest rows), some of which explain why Neo-TH fails to acquire positive features of traditional TH. For instance, Neo-TH's tube-form façade (No.4) causes un-human-scaled fabric; its few households, residents (No.13,14) shows a land use inefficiency. And the social connection and lifestyle also change negatively (No.17,18) as many houses are for

Table 1.Comparison of Identity of Traditional TH and Neo-TH

	Type	Traditional TH	Neo-TH
1	Construction period	16-19 Centuries	From late 1980s
2	Settlement pattern	Attached	Attached
2	Average plot size	3.5m x 35m	4.5m x 20m
3	Tube-form layout	Yes	Yes
4	Tube-form facade	No	Yes
5	Street access	Yes	Yes
6	Front shop	Mostly yes	Mostly yes
7	Front yard	No	Mostly no
8	Inner yards	Yes	Yes/No
9	No. of storeys	1-2	3-5
10	Spatial structure	Multiple alternate built groups -yards	Mostly single mass built group
11	Building materials	Ceramic roof tiles, wood beams, brick walls, plaster	Rein.concrete bearing frame, brickwalls,plaster
12	Technique, process	Manual, multi-phase	Manual, mono-phase
13	Functions	Commercial + dwell.+(workshop)	Commercial + dwelling
14	No. of households	Mostly multiple	Mostly single
15	No. of residents	Ca.10	Ca.3-7
16	Ownership	Multiple/Single	Single
17	Social connection	In-house & Street	Street (limited)
18	Life style	Community-oriented	Fairly isolated

Table 2.Comparison of Characteristics of Trad. TH and Neo-TH

	Type	Trad. TH	Neo-TH
1	Good eco-sufficient spatial composition	Yes	No
2	Smart expandable spatial composition	Yes	Limited
3	Eco-sufficient house-group composition	Yes	No
4	Massively constructible & customizable	Yes	Yes
5	Human-scaled façade (cozy streetscape)	Yes	No
6	Micro-universal enjoyable inner yards	Yes	Limited
7	Street as community connection space	Yes	Yes/No

commercial hire. Table 2. explains more of Neo-TH's failures, some of which were explained earlier in this paper.

10. Conclusion

Although the traditional TH in HOQ and the "Neo TH" built after 1986 have many obvious differences (eras, functions, techniques, materials, lifestyles, ownership...), this paper has shown that they must have similarities and an influential relationship.

The paper took 3 primary approaches: (1) studying identity and characteristics of traditional TH, (2) studying typology, identity and characteristics of Neo-TH, a dominant and badly criticized form in Vietnamese big cities recently (in the case of Hanoi), (3) interpreting the 2 forms' relationship and comparing them on those aspects to draw urban development lessons. From this study we learn that:

- Traditional TH showed signs of a theoretical housing form that possessed invaluable characteristics such as "eco-sufficient", "tight community connection" (2 levels), "human-scaled architecture and cozy townscape"... These are particularly desired in our modern era, especially when global energy crisis has become more critical.
- Neo-TH, except for its positive private commercial sufficiency, convenient financing and privatization, showed many negative aspects such as land-use insufficiency and chaotic townscape.
- Comparison showed failures of Neo-TH model in acquiring positive characteristics of traditional TH.

- Lastly, this paper overall showed a lesson in the essence of studying plus applying traditional wisdom in modern contexts, and the vital role of good urban development strategies and management toward sustainability.

Notes & Figure Sources

1. Similar description was printed in one of my papers (Ref.11, pp.457). Yet, to read this paper conveniently, I summarized it again here
 2. This kind of identity was actually mentioned in several previous studies (i.e. Ref.4,15), yet I mentioned here to complete the system of characteristics, and also made a new illustration for a better visualization and a brief verbal explanation.
- Fig.1.,3,4,5,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26: To Kien
 Fig.2.-top left: From the webpage www.hanoi2010.org
 Fig.2.-bottom left: From the website <http://nguyentl.free.fr>
 Fig.2.-right: To Kien
 Fig.6.: Ref.4, pp.553-554
 Fig.10.: Bui Thanh Viet Hung, "Renovating tube houses in the Hanoi's Old Quarter under principles of sustainable development", International Conference on Sustainable Architectural Design and Urban Planning, Hanoi Architectural University, May 2007, Hanoi

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