

Urban design study for Tu liem district – Hanoi City

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Abstract

Hanoi is the capital city of Vietnam. To prepare for its future development up to the year 2020 and beyond, a new Master Plan was studied and approved in 1998, in which the biggest change is the Preliminary Plan for Hanoi New Town (HNT) prepared by Bechtel on the request of Daewoo Group. Tu-liem (the case study) is one district among total nine districts in HNT but its location is adjacent to the existing Hanoi, south of the Red River; while the other eight districts are on the North bank.

How should Tu-liem be formed in order to have functional and aesthetic values? How can it be linked to the existing Hanoi in terms of tangible aspect say the infrastructure-link and intangible aspects, say the townscape characteristic and identity of the city?

Somehow to answer these questions and to propose a proper way for the development of Tu-liem, this study is essentially proceeded as follows. First, current condition of the existing Hanoi was evaluated with an emphasis on the characteristic of the town. The evaluation reveals that among special features, the existence of a larger number of lakes stand for the strong physical distinction of the city, and lakes have significant role in various aspect of urban life. Second, the brief content of the '98 Master Plan, the Preliminary HNT Plan and the set of its planning and design principles are discussed to see to what extent they are workable and appropriate with the local context. It was found out that the design principles and the HNT Plan appears advanced in term of urban functions distribution and activities distribution, but fail to use land efficiently in mega-scale and fail to retain the townscape characteristic of the long historical Hanoi.

Finally, The outcome of the thesis is the recommendation of sets of design principles for Tu-liem. These concepts and principles were composed by clarified advanced planning and design theory of HNT Plan, transplant some characteristic of Hanoi and utilized development potential and urban design sources of the Tu-liem site itself. A network of lakes was introduced to the district, individual lakes will represent each development units: district center, neighborhood... The streetscape, the customary street's activities are also retained in the new development

1 INTRODUCTION

1.1 Rationale

The original driving force of this study was the concern about the urbanization occurring in cities in general, and in Hanoi City in particular. Rapid urbanization induces drastic progression in the economy, does effect the urbanites in all facets of life: material, social, physical, psychological conditions and so on, in both positive and negative manners. However, one factual matter is that the qualities of life latent in our old cities, those innate in or accumulated through time may lose in this rapid urbanization.

Hanoi is one city in that circumstance. Though Hanoi has not yet experienced rapid urban transformation like other countries, the new Master Plan couple with the HNT Plan has cast a vision of change. Thus it is meaningful to understand the old Hanoi and the orientation of changes simultaneously, understand the city's qualities and characteristic and find the way to transplant them in its future development.

1.2 Objectives of the study

1. To comprehend the development process of Hanoi Urban area from its formation up to now.
2. To obtain an understanding of the current urban situation evaluated from the perspective of Urban Design, so as to identify and highlight the qualitative features and physical identity of the city
3. To comprehend the planning solution proposed for future development of Hanoi embodied in the '98 Master Plan and the HNT Plan.
4. To propose design concepts and principles for Tu-liem taking into account the outcome of three previous objectives.

1.3 Composition of the study

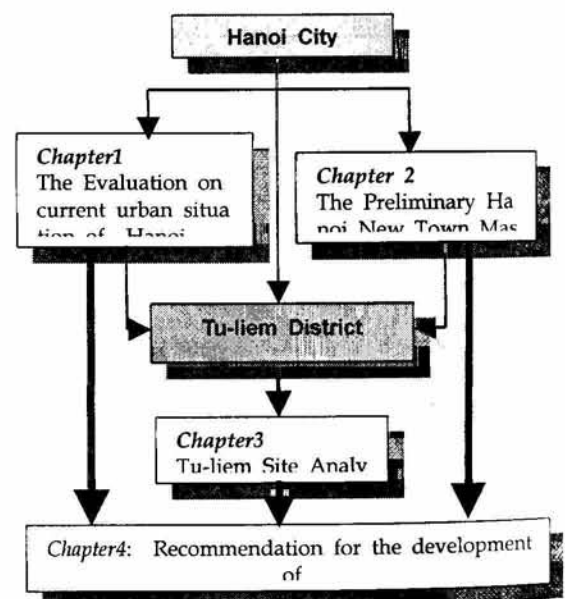
The study was presented by 4 chapters

Chapter 1 : The chapter's substance is an evaluation of the overall urban panorama of Hanoi from Urban Design viewpoint. At first, the theoretical method was establish by identifying the collection of Urban Design elements and their qualitative dimensions, then current scenery of Hanoi was evaluated in each element one by one consecutively. At last, this chapter served a considerable space to discuss about lakes and their significance in various aspects - the natural element regarded as identity of Hanoi

Chapter 2 : This Chapter presented the essential content of the 98'Master Plan, planning content of the Metropolitan Hanoi - an essential part of the '98 Master Plan. The brieft content of the Preliminary Hanoi New Town Master Plan was also explained in this chapter with the emphasis on the concepts and principles in organizing the community and physical urban space of its.

Chapter 3: This chapter presented the result of the survey on Tu-liem site. It included description of the existing land uses, physical and social condition, and existing infrastructure of the site. It also identifies the development potential, constraints and sources for urban design

Chapter 4: As the outcome of the study, a recommendation for the development of Tu-liem comprised of two sets of design concept and principles at district and neighborhood level was proposed. The recommendation was composed by clarifying advanced planning solution of HNT Plan, the characteristic and physical identity of Hanoi and the potential as well as source of Urban design of Tu-liem site



1.4 Method

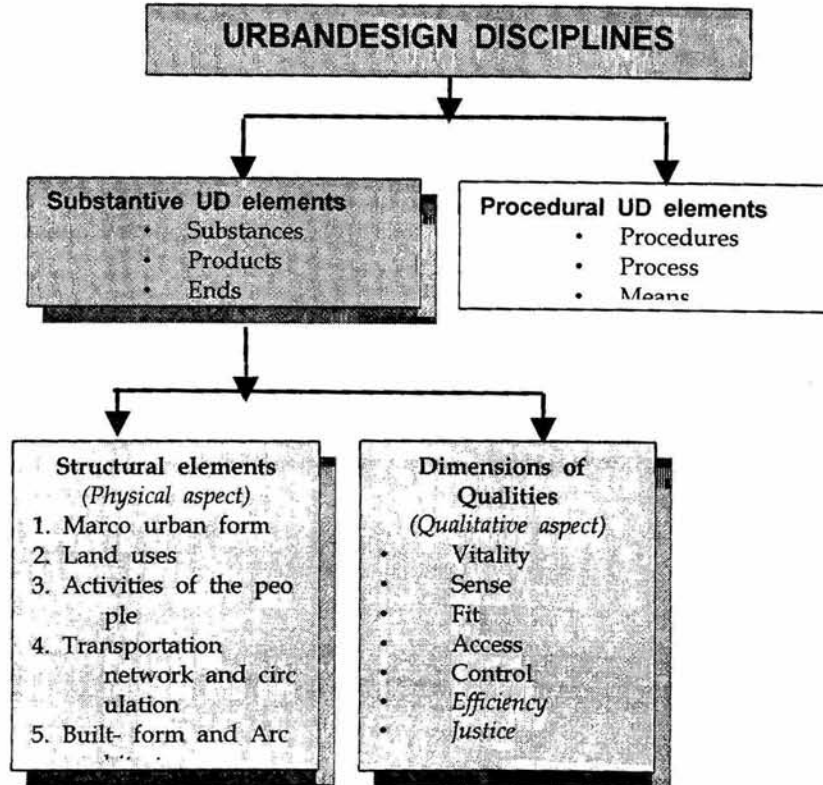
The study was carried out along two dimensions. One attempts to look at urban area at a wide scope approaching toward smaller and smaller scale. The overall structure of city was grasped, then the constitution of structural components was also perceived. The other dimension looks at urban area from a small scale approaching up. In this, city is considered as a multiple of intimate, fancy places and spaces where people love, enjoys, and memorize. The meeting point of these two dimensions is *district* with its role, within the city's structure; and *district* with its owned constitution of functional, enjoyable spaces and places.

Tu-liem was studied based on the above orientation. Two qualitative methods were employed. The first is to collect and analyze concerned document and literature, including document about development history of Hanoi, the consecutive development plans of the city from 1954 to the currently valid one - '98 Master Plan, particularly the Preliminary HNT Master Plan. The second method is to observe, then evaluate real urban built-form and human interaction to it. This method was used to evaluate the built-form of the existing Hanoi. In parallel, the survey on the actual Tu-liem site was also done including collecting data, picturing and mapping.

2 THE EVALUATION ON THE CURRENT URBAN SITUATION OF HANOI CITY- THE CITY CHARACTERISTICS

2.1 Theoretical basic and Evaluation method

Urban Design Discipline consists of two sets of elements: *Substantive elements* and *Procedural elements*¹. The first set pertains to (1) the structural elements of the built environment, the



physical determinants of form, or in other words, the working vocabulary with which the "pattern language" of the city is structured. It also pertains to (2) the qualities of these elements,

or the expected ends that motivate all the designed efforts. Within the frame of this study, the *Set of Substantive elements* was focused

This set is once more divided into two subsets

Subset 1: is the collection of structural elements of the built environment², include (1) Macro Urban Form³, (2) Land use, (3) People's Activity, (4) Built form and Architecture, (5) Road network and Circulation, (6) Pedestrian and (7) Open space⁴.

Subsets 2: is about qualitative issues ⁵(or the expected ends) including five "dimensions of performance" of the built environment (Kevin Lynch, 1981): (1) Vitality, (2) Sense, (3) Fit, (4) Access, and (5) Control ⁶.

The evaluation method:

Applying the above theoretical basic, the evaluation work on the current urban picture of Hanoi City is going to cover all the structural elements in the first subset sequentially, under the light of the dimensions in the second subset.

2.2 The general outcomes of the evaluation

Hanoi city assumes the shape of a semi-circle covering about 85 squares kilometers. It is located in the Red river delta, within a net of lakes and canals. The river has long been a barrier against the city's expansion northward.

Generally, land-use categories break down into residential, institutional, service and commercial, industrial and open-space. But without zoning tool, the city have very high grade of mix land-uses, high density, high site-coverage but low rise. Commercial use seems to be ubiquitous since a larger number of people involve in retail and services activities on streets. This social drama is complemented by the participation of informal sector such as the retired who do peddle, the children who polish shoes and deliver newspaper, the unemployed or underemployed who do casual work, or farmer bring vegetable and agricultural food into city.

Urban space and built-form in Hanoi have a number of distinctive features. Those are the sense of familiarity and intimacy to human feeling, the fitness of nature, built-form and human behavior, a human scale urban space. *Architecture* in Hanoi is low-rise, mid-rise structure with diversified styles. Typical local architecture is row houses of shop-houses. Cutting along the length of a typical shop-house, there seem to be a smooth transition from public to private space.

In short, Hanoi is said as a very human scale city.

Road network and Traffic circulation in Hanoi are both rather backward. Road network is an organic net, formulated by ring road and radial roads. Major means of transportation are private two-wheel vehicles. Public buses covers as little as 2% transit demand. Various vehicles share the same road lane. This fact, couple with ineffective traffic management make moving as a nuisance and danger to citizens. Besides, there is no adequate provision for vehicle-parking

Open space has some special features. Typical type of open-space are natural lakes, ponds, small rivers, parks and gardens. Unlike western cities where squares, plazas with the sense of enclosure are important open-space, In Hanoi, natural landscape of water bodies surrounded by greenery with the sense of vast and openness own equal significance.

Since open space is special and eligible to stand for the identity of Hanoi, their characters and significance are going to be presented as follows.

2.3 Lakes – the and their significance

Water is a vital factor in human's lives; the existence of water can be found in many cities in

the world. The speciality of water element in urban space of Hanoi is the ubiquitous morphological form of it: lakes and ponds. Peoples who visted Hanoi recognize that Hanoi is the city of lakes. The significance of lakes reflects in various aspects of urban life.

Historical significance

In the old time when immigrants comes to live in Hanoi, instead of filling up the existing water bodies, they settle down into villages nearby or clustered around the lakes, and exploit the water resources for daily lives, productivity and transportation. Therefore, these lakes - the gift form the NATURE have been existing and binding to the people's lives through out the history.

Lakes function as disaster-prevention

The lakes and ponds have long time been and are being important aids in draining water. According to the "Report of Planning of Green Space and Water Surface System for Environmental Improvement for Hanoi Capital Region" - studied by the Urban & Rural Environmental Study and Planning Center, NIIURP, MOC in 1994, all the lakes and ponds in Hanoi function as rainwater detention⁷. Though they are not the cure all for flooding disaster, they are preexist, low cost and instant medium.

Ecological significance of lakes

The Study on Green and Water surface Environment in Hanoi City revealed that water can lower the air temperature in summer 2-4o C, can increase the humidity 5-12% and can decrease the heat of sunray 2-4.5 %⁸. Besides, the water bodies execute ventilation and circulate the cool air from them toward the city and the hot air back. In such a tropical climate like that of Hanoi city, particularly in summer, staying near by the lakes, under the trees' shadow, receiving a cool and fresh air flown over body is a great pleasure that one can't get from anywhere else. In addition, these lakes are also part of a grand Eco-system in the sense that they are territories of different species, saying turtle, fish, and bird ⁹.

Aesthetic significance

Water surface has a traditional role in assisting architecture, built environment in creating



Figure 1
" Viewing lakes as elements of nature, we can see that they devote to Hanoi an unspoken charm; the sense of nature" - Hoan Kiem lake-
Photo: Hoang Minh 1999

landscape and aesthetic qualities in human's settlements. In Hanoi City, at first, the lakes themselves are important landscape; at second, they are also an inseparable structuring element of the traditional architecture. Viewing lakes as elements of nature, we can see that they devote to Hanoi an unspoken charm; the sense of nature, the remarkable contrast between the vastness of water surface and the dense of built-up areas (fig. 3).

Looking at lakes as a vocabulary of architectural language, they have been existing in parallel with the development of Hanoi as an inseparable architectural element.

Lakes function as important leisure and recreation zone

This function is considered as the most significant functions of the lakes in the urban life. Having mentioned before, lakes are the most popular open space in Hanoi where most of the people love. The Hanoians love their lakes very much because of the beauty, the naturalness, the easy accessibility of lakes, and the comfort they provide. People go to the lakes when they have free time, after their work, enjoying the cool, fresh air of water (fig.3.16); They go to the lakes in the early morning for morning exercise and go there in the evening for quite moments. They go there alone, or with friends, in all four seasons (fig. 3.17). They have to pay nothing for being with lakes. The Hanoians prefer spending their time with lakes rather than staying indoor (fig. 3.18). Further more, some special lakes like Hoan-Kiem Lake and West Lake are usually used for public and cultural activities, for example fireworks, festivals, sport contests, music performances and so on (fig. 3.19). Recently, construction wave in the city has risen up. Constructions have sprawled lake-ward for better environmental condition and better chance self-expression. The real estate around lakes becomes more important and attractive to investors. The activities around lakes thus, become more energetic

Symbolic meaning

From the above discussion, we acknowledge the significance of lakes in all aspects. From any viewpoint, say historical, ecological, economical, urban functional or aesthetic, lakes are necessary and important. The image of lakes thus always exists in the people's soul, in poem, music and painting, in traditional architecture, in urban design and urban life. Their presence has become an identity of Hanoi City a symbol of Hanoi.

The variation in the significance of lake's

Lakes generally exist over Hanoi. However, the collection of lakes happen to have a hierarchy in roles and significance. Some lakes have dominant position and more important than others. Hoan Kiem, Thuyen quang, West lake are important at city level while other lakes are important at smaller scale, district or neighborhood level. The significance of lakes varies depending on their locations, historic conditions, degree of functional buildings and uses cluster around, their accessibilities and design.

Though varying in significance, all lakes are important and loved by the people; the images of lakes can be employed in urban design as representatives of cities, district, neighborhood at different scales of developments. This finding will be used later in the recommendation as a device maintain the physical identity of Hanoi city.

3 THE '98 MASTER PLAN AND THE PRELIMINARY HNT MASTER PLAN

This part will provide the essential content of the Master Plan of Hanoi approved in 1998 and the brief content of Preliminary Hanoi New Town plan, prepared by Daewoo and Bechtel with the emphasis on the design concepts and principles.

3.1 The '98 Master Plan

The '98 Master Plan defines a strategy for organizing future growth of the Metropolitan Hanoi. It has been prepared by the collaboration between the Vietnamese side including the HPC and MOC and the foreign side - Daewoo and Bechtel. It includes (1) the General Plan For The Metropolitan Hanoi (excluding the Hanoi New Town project area) done by the HPC and MOC; and (2) the Hanoi New Town Plan (including Tu liem area), done by Daewoo and Bechtel.

The '98 Master Plan is conceptually illustrated in fig. The Land use norms is shown in table 1.

The plan stipulates development controlled areas where the townscape of the Old Hanoi will be preserved from urbanization and development incentive areas where urbanization will be channeled in.

Urban centers are categorized in to five types hierarchically - development center, specialized center, district center, sector center, neighborhood center. There will be five development centers:

- Old Hanoi : historic center containning political, cultural and administrative functions
- Tu-liem: multi-functional center
- Phuong -truc: CBD abnd financial center
- Co-loa- historical and tourism center
- Gia-lam: industrial center

Circulation system: The Integrated Circulation Plan includes 4 major elements

- + Regional Highways, Expressways, Arterials
- + Bridges
- + Railways
- + Air Transportation

Industrial zones: The currently existing industrial areas will be upgraded or replaced at other places in accordance with the overall development plan. Meanwhile, new industrial concentrations will be developed at Soc son, North Thang-long, South Thang-long, Sai-dong A and B, Dong-anh and Gia-lam. Moreover, some small, clean, and high-tech factories can be located alternately within residential domains.

Greenbelt: Surrounding all of Hanoi will be a green belt of approximately 1 to 5 km wide. The green belt will be a restricted development zone intended to prohibit urban sprawl and protect agricultural land surrounding Hanoi¹⁰.

3.2 The Preliminary HNT master Plan

Location and size:

	'98 Master Plan
Total area	250.000 ha
Population	2.5 million
Average area per person	100m ²
Transportation per person	25m ²
Openspace per person	18m ²
Public welfare per person	5m ²

Table1. '98 Master Plan - Land Use Norms

The Conceptualization of the Intergrated Hanoi General Plan

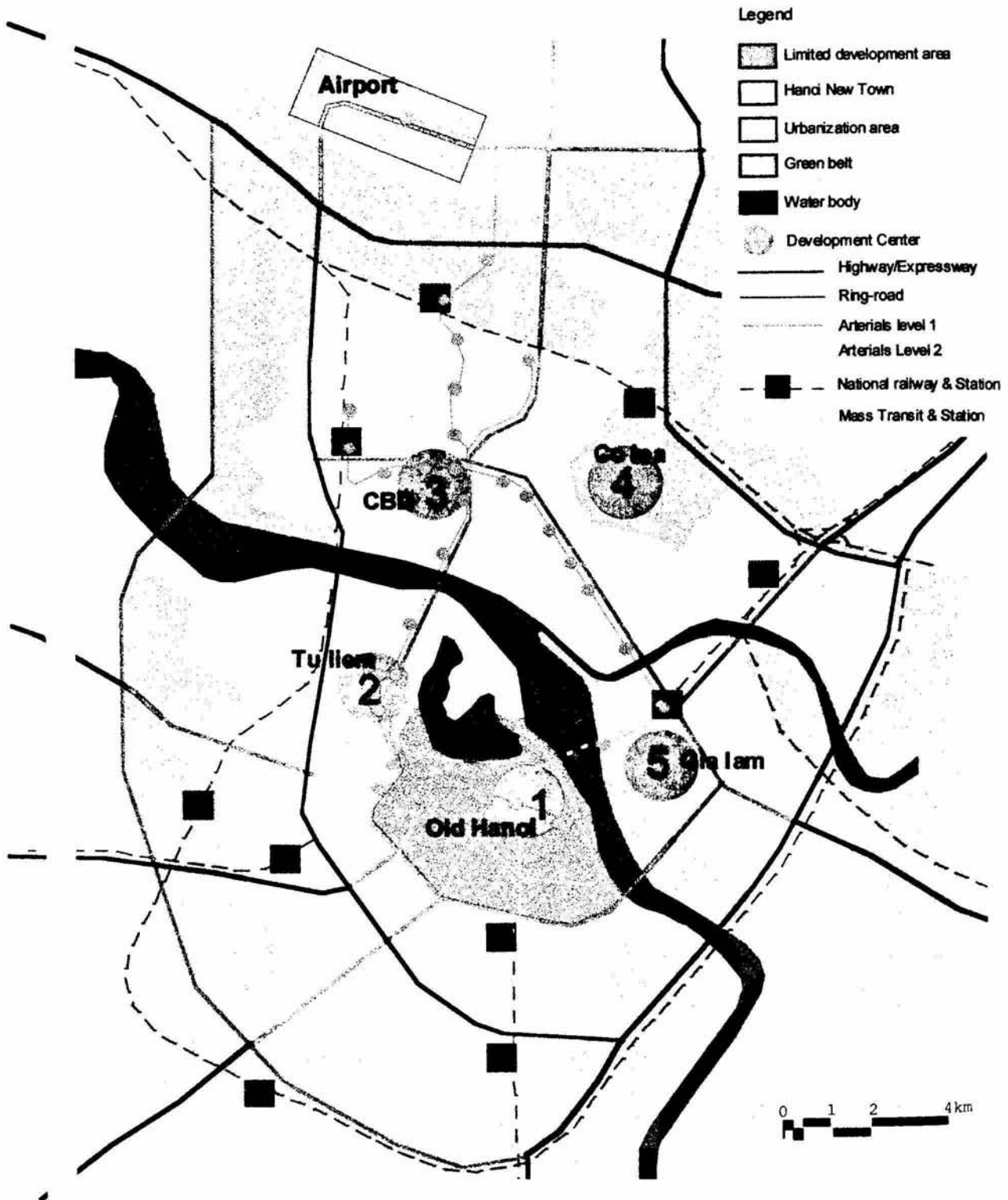


Figure 2. The Conceptualization of the Intergrated Hanoi General Plan, Redrawn by the author

HNT consists of two parcels-totalling 9,886 hectares including existing villages and flood-plain. Bigger parcel is in Dong-anh, north of the Red river. Smaller one is in Tu-liem, south of the river and close to the old Hanoi.

Partnership:

HNT project represents the shared aims of three partners: (1) Daewoo Corporations; (2) The Government of Vietnam (GOV) and (3) the Global Alliance Enterprise Consortium (GAEC) (assumed)

Development program:

The target development program is based on the population projection of 750,000 peoples, with an estimated household size of 4.5 persons and a density of approximately 120 square meters (m2) per person. The total population is forecasted to reach 750,000 between the year 2030 and 2040

Land use distribution

The basic component element of the development is the neighborhood. A typical neighborhood will contain a population of 7500 peoples. Five or six neighborhoods will constitute a typical sector. Two sectors constitute a typical district. HNT will be comprised of 9 districts

Component	Land (ha)	Percentage
Residential	1,343	15%
Education	600	7%
Community Facilities	68	1%
Commercial	344	4%
Industrial	1,485	17%
Transportation	1,862	21%
Open space	2,113	24%
Permanent water	955	11%
TOTAL	8,830	100%

Table 2. HNT - Land use program

Community organization

Organizing Principles: 3 principles

The creation of Transit Oriented City.

The proximity to community services. Basic community services (schools, administrative, local commercial, etc) should be within a five-minute walk of residents of the neighborhood.

The establishment of open space system as buffer of developments

Community structure:

The community organization in HNT is expressed through a hierarchical structure. Each level in the structure represents areas sharing common services. Three structuring components are neighborhood, sector and district.(Fig. 2)

The most local structuring component is the **Neighborhood**. (ideal population:7,500 people).

Four to six neighborhoods create a **Sector** with some additional services

Two sectors, each of approximately 50,000 peoples

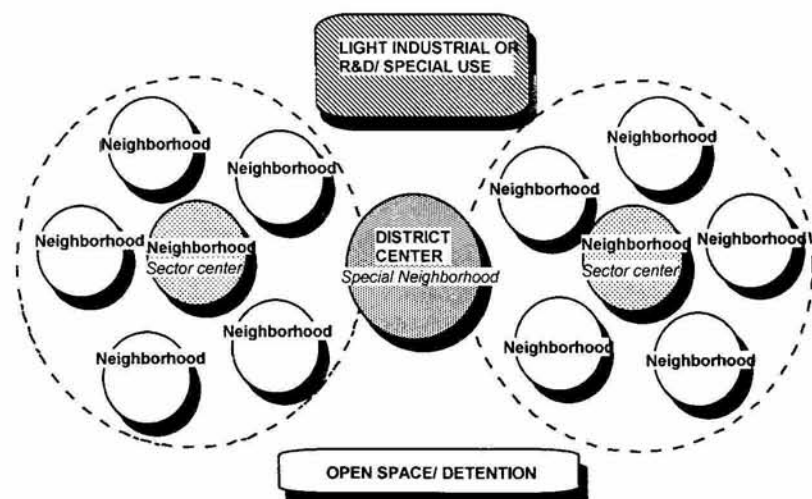


Figure .3. Community Structure

Redrawn by the author according to the Preliminary HNT Master Plan

create a District with the focus is district's center. The district center is its commercial core and includes the major educational facilities and administration and community services for the surrounding neighborhoods.

Physical Organization

Organizaing concepts: Three general concepts:

The emphasis on proximity of residential areas to sources of employment.

The emphasis on access to Mass transit to minimized vehicular use and

The creation of clustered development within open space

HNT physical structure: there are 9 districts in HNT

Open-space system: comprised of a continuous network of green area and waterways. It is regarded as the framework, the "green and blue" setting for the "islands of development" on the citywide, district and neighborhood levels (fig. 3).



Figure 4. Hanoi New Town Open Space Plan. Source: Preliminary HNT Master Plan

Analyzing the HNT planning solution

The way the HNT supposed to be built as it was presented in the preliminary HNT Master Plan shows both positive and negative aspects as we can see below:

Positive aspect : The positive points are reflected in three manners: urban structure, land-usage at the level of development unit and the use of mass transit. This enables

An well-organized urban structure where developments are channeled in the fine grain pattern. The pattern allows both equal distribution of services and urban functions over the community into neighborhoods and hierarchical distribution between neighborhoods, sector's center, district's center and CBD...

The mixture of land uses in every development units. This is strategically to increase the integration of places of works, education, shopping and residence so as to minimize demand for mobility.

The operation of mass transit system to connect all development units. It actually has multiple positive effects: strengthening the urban structure; reducing automobile usage, expense on road construction and maintenance, reducing environ-mental contamination, traffic jam and the excessive fuel consumption.

Critical aspects : The planning solution is viewed negatives from three aspects:

Land -usage at mega-scale

Urban development pattern and

(Resulting) urban morphology

In all senses, land is precious and priceless, particularly in such an agricultural country like Vietnam. The HNT Plan applied a low density norm of 85people/hectare and prepared 35% (more than 3000 hectares of land for open space (in which the permanent water bodies from widened canals occupies 11%, the green buffer space occupies 12.3 %). Using green buffer zones like this will cause mass urban expansion and extensive cost for infrastructure provision.

This development pattern emphasizes physical segregation of neighborhoods by open-space. The neighborhoods - "islands of development" as delineated in HNT Plan will possibly "wrap"

people in their own precinct, limit and condition them from their latent social and economic interaction with neighboring neighborhoods. People just move around within their limited environment without passing through or visiting other neighborhoods unless they have to go there for some reasons. In Hanoi, practical experience has shown that one of reasons causing unsuccessful reality in residential areas, which were planned, based on the neighborhood concept is the "enclosed structure" with less in - out interactions¹¹.

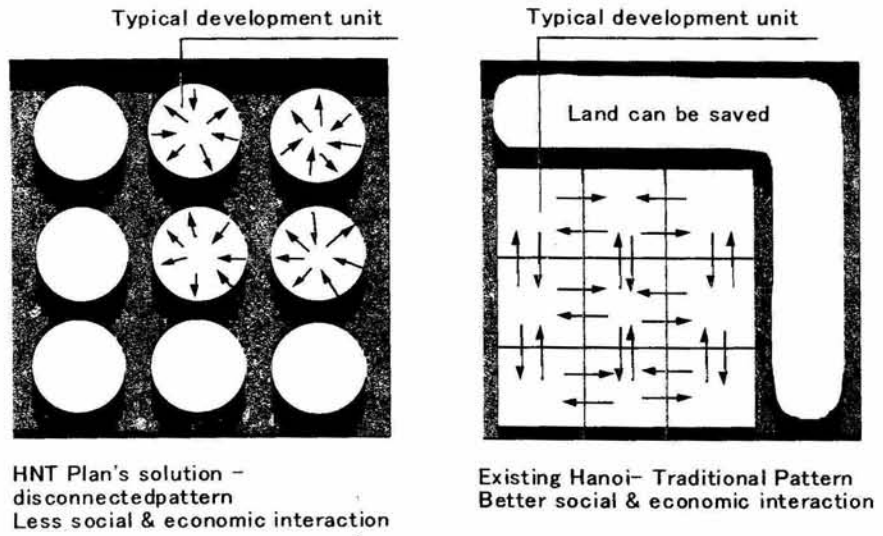


Figure5: Excessive land-usage in mega-scale, disconnected development pattern and disconnected urban space in HNT Plan

Ensuing from the development pattern, new town's morphology would assume "suburban" style, delineated by the image of "villages standing in the landscape setting". The "suburban" morphology would result in a disconnected pattern of urban space.

Inconsistency with the traditional townscape

In addition to the argument of positive and critical aspects, HNT planning solution proves inconsistent with the traditional townscape of Hanoi in several facets

- At first, it is the development pattern and the resulting suburban morphology as just

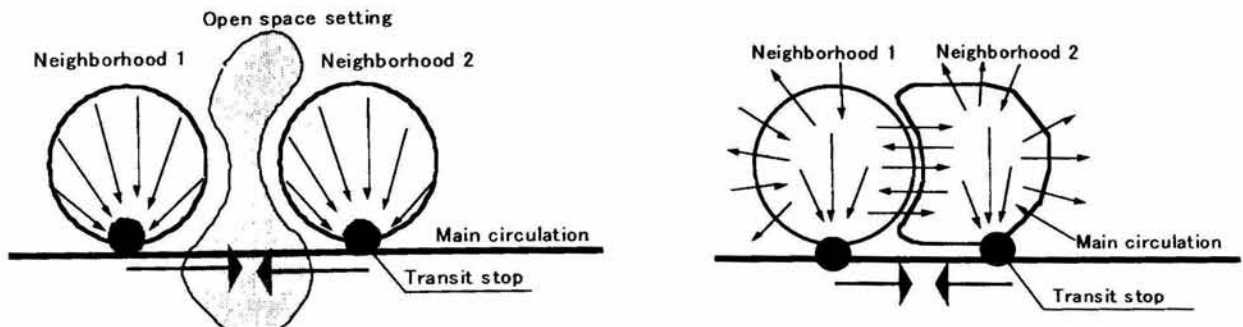


Figure6: If neighborhoods are adjacent to each other with less rigid separation, people will have better social and economical interact

argued earlier.

- At second, it is the morphology and personality of natural elements intended in the urban physical structure. In Hanoi, lakes and green areas - having the roles as typical open spaces stay inside the built-up areas rather than divide them into pieces. They are counterpoint, centers of gravity of peoples and activities. They are active interior organizing factor of the built-forms and the built environment rather than being inactive residue of the urbanized areas. This is an obvious difference.

- One more difference is the functional nature of the road system that also causes difference in character of the townscape. The visual "language" of the townscape in Hanoi is a weaving net of continuous streetscape of shop houses, with vivacious street-life. All development areas are adjacent to each other and bound together. Roads are domains of both circulation and other activities while in the HNT Plan, roads are predominantly domain of circulation.

Thus, the development pattern in the Preliminary HNT Plan is not only a disconnected pattern in itself, but also disconnected with the existing Hanoi. It is the danger of changing the valuable traditional townscape, losing the identity of the city.

The comparison is summed up in table below

	HNT Plan Principles	Existing Hanoi
Urban Structure	Clear urban structure constituted by development units. These development units have either equality or hierarchical functional order	Unclear urban structure with spontaneous accumulating development
2. Land usage at mega-scale	Buffer zones of large-scale open-space separating development areas. Low density: 85people/ha	No buffer zones and separation between development area. High density: 130 people/ha
4. Land usage at development unit	Mix land uses in every development unit Emphasis on proximity between residential and employment areas	Very mix of land-uses and people's activities Spontaneously accumulated proximity between residential, employment and services areas
5. Transit	Emphasis on access to Mass transit	No existing Mass transit
6. Urban development pattern	Developments are separated by open spaces.	Developments are next to each other, bound together as a weaving net of streets system.
7. Urban morphology	Disconnected overall townscape	Continuous townscape
8. Open-space system	Large scale open spaces - located at the boundaries of every development as buffer zones "islands of development within a "green and "blue" setting"	Lakes - "Human scale" open space, public space and located within development areas are common public spaces as the gravity of people and activities; as organizing element of the

		surrounding built-form
9. Roads	Main roads are domain for circulation	Main roads are STREETS, domain for both circulation and activities

Table 3. Comparison between HNT planing and design principles with the features of the existing Hanoi

4 TU-LIEM SITE ANALYSIS

4.1 Physical condition:

The project area is about 840 hectares of basically farmland. The middle part of the site is classified as liable to periodic flooding over 0.5m.

4.2 Existing land-use

There are two agricultural villages Xuan-ding (11230 people), Xuan-la (6400 people) covering 300 hectares and some institutional uses along Hoang Quoc Viet road.

4.3 Existing facilities and Utilities

None water-supply system, none water-drain system accept canals.

4.4 Development Potential and Constraint

Potential:

It is adjacent to the North-Thang-long highway

It has the close proximity with the Old Hanoi

It has direct access to the West Lake waterfront.

The project area is currently imposed less construction, so that it allows new development with less expense on requiring removal and relocation

Constraints:

Lack of existing infrastructure

Low lying terrain, subjected for flooding that require land strengthening and soil improvement

The existing villages on the site - impossible for relocation due to due to social and financial limits

Sources of Urban Design: Four elements present sources of urban design

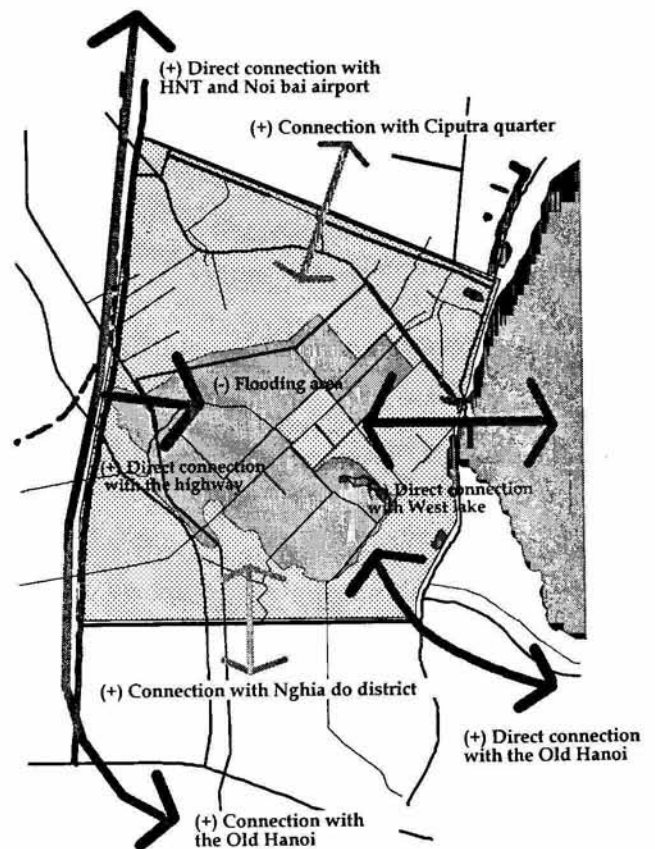


Figure 7. Tu liem site's potential and Constraints

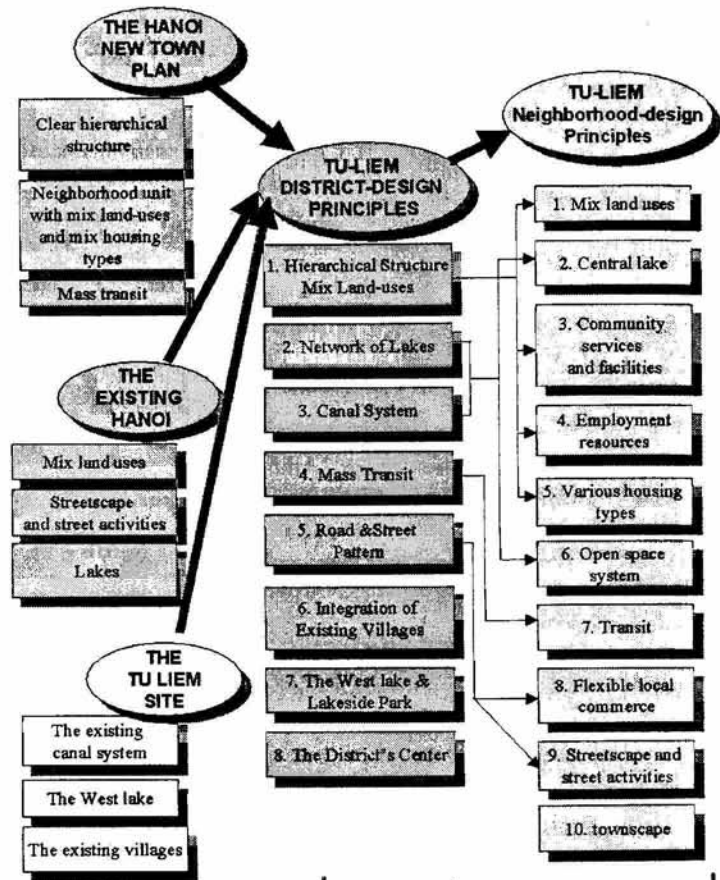
- West Lake,
 - The system of canals
 - The existing villages
- (see fig 7)

5 RECOMMENDATION

5.1 Composition of the recommendation

The aims of the recommendation are (1) to adopt positive aspects of the HNT Plan; (2) to utilize development potential and design resources of Tu-liem site and (3) to transplant features regarded as characters of the old town. It was comprised of positive aspects of HNT planning solution, the characteristics of traditional townscape of Hanoi and the conditions of Tuliem site. Its composition is illustrated in the fig.

THE COMPOSITION OF THE RECOMMENDATION



DISTRICT STRUCTURE

5.2 The concept of District with lakes

From the above discussion, Tu-liem will be designed under the proposed concepts:

“TU-LIEM, THE DISTRICT OF LAKES”.

Under this concept, Tu-liem will be designed which-in a network of lakes will be a powerful organizing factor of the District's physical spaces and activities. The following are relative principles proposed for the design of Tu-liem at its district level:

1. THE HIERARCHY OF URBAN STRUCTURE AND MIX LAND-USES:

The structure of Tu-liem district will be organized into a hierarchy of development units, including neighborhoods (the most local component part), sector's center, and district's center. Each is development of mix land-uses to emphasize the close proximity of residential areas, sources of employment and services¹² so as to reduce demands for mobility.

2. NETWORK OF LAKES:

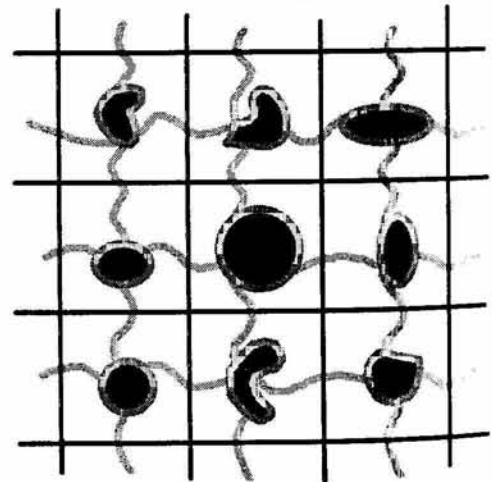


Figure 8. The concept of lake-network in the district

A network of lakes will be created in Tu-liem district; each lake will represent each development unit where it is located in; all are connected into network by canals, pedestrian and green paths (fig. 8). The creation of the lake-network is for the following purposes:

- To establish physically organizing elements of the district's urban space
- To echo the urban characteristic and the identity of the existing Hanoi City
- To form an interior open space system within urbanized area
- To establish a system partly functioning as water detention and draining.
- To solve (in part) the low topographical constraints of the construction site technically and economically.

The network will include a special lake in Tu-liem district's center, a lake in sector's center and other 13 lakes in every neighborhood. The substance of this lake network will be explained in more detail latter.

3. CANAL SYSTEM:

The existing canal system on the site will be optimally preserved and be put into use in urban space functionally, ecologically and aesthetically for four purposes:

The existing canals are parts of an overall drainage system connecting West Lake, To-lich River, Nhue river and the Red river, and other small lakes, ponds of the whole Hanoi. They are needed to be kept intact in term of water draining function.

Second, though in new urbanized areas, better draining system aided by advanced technology can be arranged, such an existing canal system is still very efficient during the development process - usually lasts for ten or twenty years' long. (time dimension)

Third, the preservation of the existence of these canals will help to preserve the botanic ribbons, the ecological balance and natural morphology of the site.

Lastly, if well exploited and carefully designed, these canals can exist in urban context as precious natural and leisure resource for urban citizens. They are also special "Paths"¹³ in creating a strong "city image"¹⁴. The conceptual canals system and lakes are illustrated in figure

4. MASS TRANSIT:

Mass transit will be provided to Tu-liem district in accordance with the overall system planned for the whole Hanoi Metropolis. There are three levels of transit services: Primary (rapid- high volume) transit line, secondary line (light rail or tramway) and buses¹⁵.

The primary line will tie Tu-liem district's center to the existing Hanoi, HNT and the airport.

The secondary transit routes and buses with frequent stops (one or two) at every neighborhood will be planned so as to ensure the walkable distance from every residential point to the local transit stops¹⁶.

The conceptual organization of this system is illustrated in figure 9

5. ROADS AND STREET PATTERN

The system of roads is laid out based on the following conditions:

The system is able to integrate itself to the overall circulation frame of the whole Hanoi

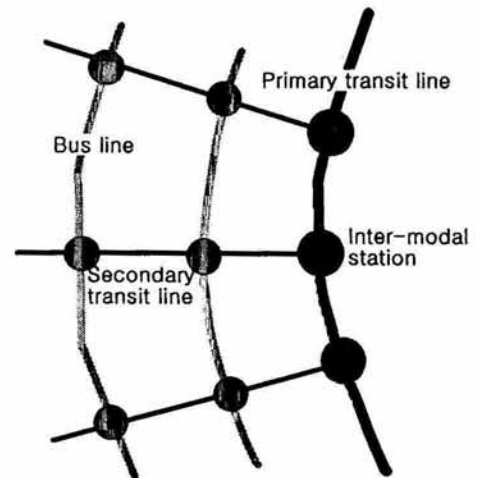


Figure 9. Conceptual organization of the mass transit system

metropolis in the well-functioning manner

The layout should respect important existing elements of the site: the canals system and villages; allowing these elements alive and operate well in urban context.

The system includes primary arterial, minor arterial and local streets¹⁷ (Fig 10).

Primary arterials and minor arterials will be bordering roads of neighborhoods; basically they form a grid wherein neighborhoods grow side by side.

Local streets are means to access into neighborhood. As Alexander C. suggested in the "A Pattern Language" (1977), "one important feature of neighborhood's boundary is *restricted access into the neighborhood*"¹⁸; therefore, these local streets do not allow intensive through traffic passing the neighborhood. This is executed by dead-ending local streets in T-junctions immediately at arterials (neighborhood's boundary)¹⁹.

This pattern will help (1) to maintain the continuous townscape pattern of the existing Hanoi, (2) to support and enrich social and economical interact between neighborhoods, at the same time (3) to produce confines between them to some extent.

6. INTEGRATION OF EXISTING VILLAGES :

The existing villages will be kept and integrated with new urbanized area for the following reasons:

To respect the peaceful lives and residences from generations of the existing residents. In some case, if the relocation is inevitable, it will be executed, but these cases are just exception.

To minimize village-relocation, thus minimize the compensation and other necessary cost.

Here, to integrate the villages with urbanized areas essentially means to turn them into urbanized areas themselves. Villages can be divided, or integrated with new urbanized areas to constitute a fine grain neighborhoods. If the village is equivalent to a neighborhood in physical size and population, infrastructure and services (similar to general urban standard) will be provided to the neighborhood in accordance to the overall infrastructure system of the whole district; like that the village will become a low-rise, low-density residential neighborhood itself. In other cases, villages are combined with new developed areas and become low-rise, low-density residential proportion in those new neighborhoods.

7. THE WEST LAKE AND

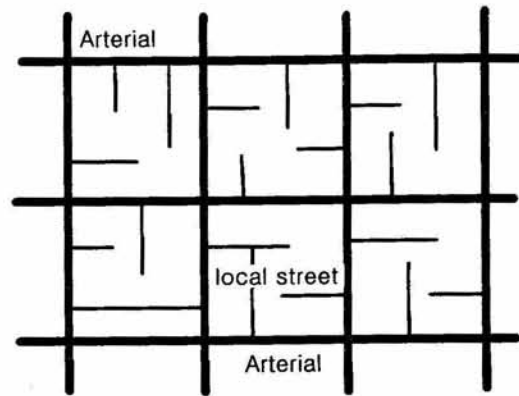


Figure 10. Concept of the Pattern of the Road & street system

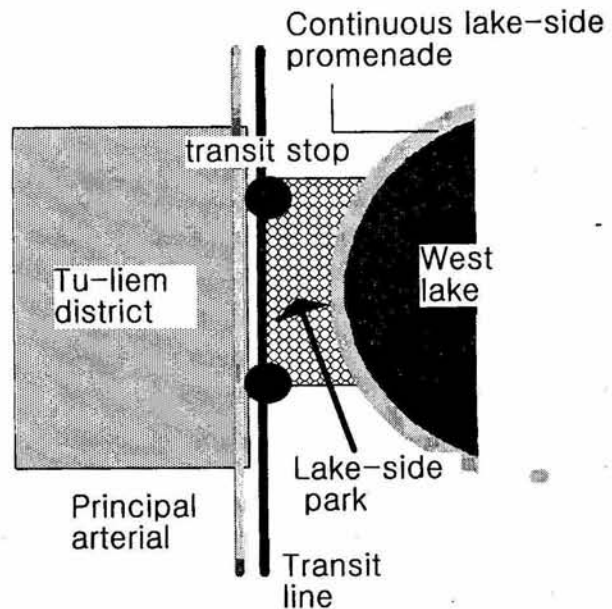


Figure11. Relative location of the Main park, The West lake, the Transit and Tu-liem district

LAKESIDE PARK:

The West Lake is the natural asset of TL site that can not be found in other places, thus it will be carefully treated so as to maximize its natural and aesthetic resources.

First, at the citywide, promenades along the waterfront of the lake will be provided to allows accessibility toward water at any points along the lakeside. The promenade will simultaneously be a landscaping path connecting Tu-liem, the Old Hanoi and other areas around the lake

In the area within of the project's site, the large proportion of land (between the principal arterial and the waterfront) will be preserved for common uses. A main park will be located here. The park and the waterfront will constitute a great lakeside park serving both Tu-liem and the whole Hanoi. The park is also regarded as buffer zone protecting the waterfront from excessive construction and softening the urbanization near the lake.

However, some cultural and recreational facilities can be located within this park (fig 11)

8. DISTRICT CENTER

Inherent from HNT Planing solution, in Tu-liem district, a district's center will be arranged as the district's focus²⁰. It is where the special central lake, together with intensive commercial, majors educational, administrative and community facilities are located. The district's center is prerequisite to be central to the mass transit system²¹. (fig 11)

The network of lakes:

This system of lakes is illustrated in fig 12. Lakes are wholly integrated into a cross-neighborhood system by means of existing canals on the site and green pedestrian or connecting parks; within a neighborhood they are united with smaller open spaces like small parks or common playgrounds in sub-neighborhood areas. The substance of this system is that its position is internal, thus it is intended to function as blood-arterial of activities; rather than being at the margin of every development and just functions as their boundary and recreational zones.

The role and the character of a lake are in accordance with the development's intensity intended for the neighborhood it represents. This is manifested through the lake's size and design; the level of accessibility to it (at neighborhood's level or citywide level); the significance and functions of buildings located surrounding it as well as the intensity of services and activities allocated around.

THE CONCEPTUAL NETWORK OF LAKES AND SURROUNDING USES

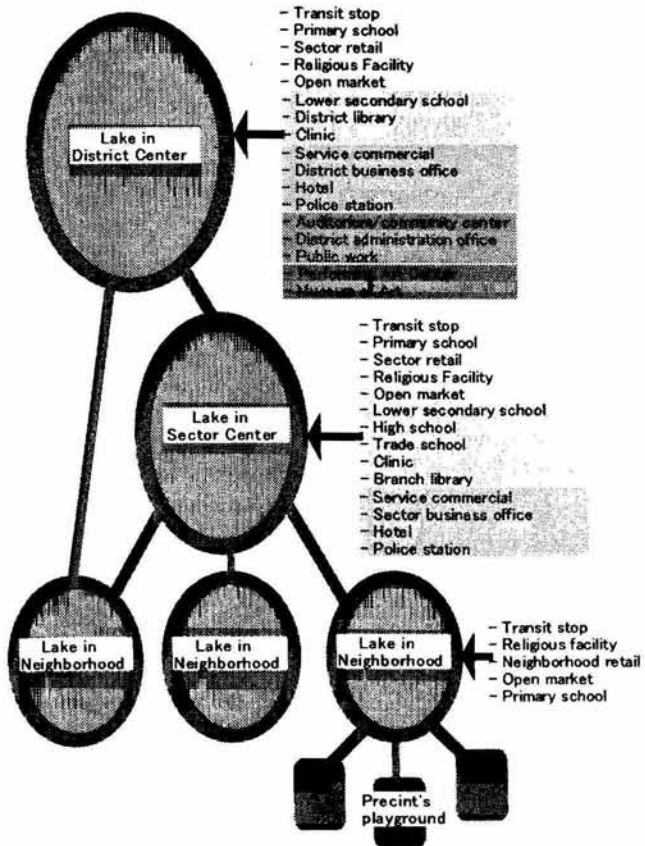


Figure 12. The conceptual network of lakes with surrounding uses

Basically, there will be three types of lakes provided to Tu-liem

Lake in a typical neighborhood: Neighborhood's lake is ideally located at the central part. The lake is surrounded by green buffer of park, leisure zone and side walks. Land surrounding the lake is used for community facilities such as: Transit stop, Religious facility, Neighborhood retail, Open market, Primary school, secondary school and low-rise housing.

Lake in Sector's center: Lake in sectors center is somewhat similar to lake in a typical neighborhood but may be bigger in size and may have more land use functions surround. Additional facilities for sector such as: High school, Trade school, Clinic, Branch library, Sector business office, service commercial, hotels and sector's police station can also allocated around the lake.

Lake in district's center: Lake in district's center is a particular one, located in its center. District's center's lake may be larger, more specially designed and with better accessibility. It is meant to be a rendezvous of the whole district and the whole citywide as successful as the case of Hoan Kiem Lake. The premise for its success is the clustering of primary and important urban functions and activities around it. Therefore, the necessitated facilities for the district should be located surrounding or at the close proximity to the lake, for examples:

- Heavy mass transit stop
- District auditorium/community center
- District administration office
- District library
- District business offices, service commercial, hotels
- Transit stop
- Schools
- Clinic or district hospital
- (These facilities are listed according to the development program of HNT Plan)
- Or facilities at the city wide level, such as:
- Performing Art center
- Museum of Art and other cultural facilities.

5.3 Recommendation – neighborhood level

Design concept: "NEIGHBORHOOD WITH CENTRAL LAKE"

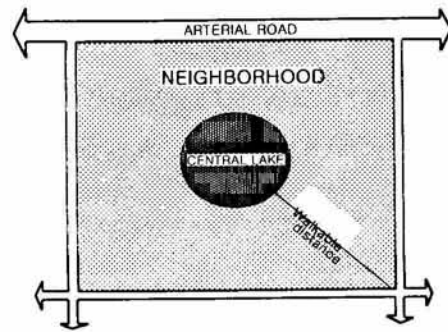


Figure 13. Principle 1 & 2 – the mix land uses Neighborhood with a central lake (principle 1.2)

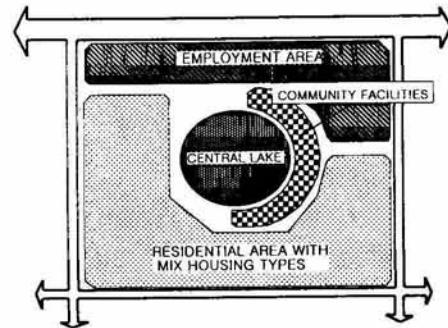


Figure 14. Concept of mix land uses in a typical neighborhood. Principle 1, 2, 3, 4

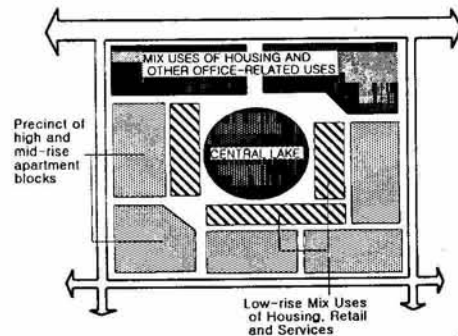


Figure 15. Various housing types for variety of incomes (Principle 5)

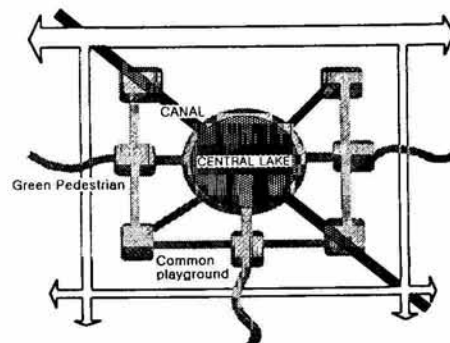


Figure 16. Open space system (Principles 6)

Relating principles:

1. Mix land uses: Neighborhood in Tu-liem will be a dense, tightly woven community with mix land-uses and housing types. This will enable a closed proximity of living and working places so as to minimize travel demand of the citizens (fig.13)
2. Central lake: In each neighborhood, a lake will be created as the center the neighborhood's community, neighborhood' activities and neighborhood's physical townscape(fig. 13)
3. Community service and facilities: Community facilities and services such as: primary school, secondary school, community center, clinic, intensive retail, open market, religious facility, transit stop and others will be clustered surrounding the lake to pull peoples and their activities lake-ward. The lake and those community facilities will mutually strengthen and enforce the roles and functions of both (fig. 14).
4. Employment Resource: In neighborhood's land use plan, employment is intended along bordering roads to maximize accessibility from both inside and outside (fig. 14).
5. Various Housing Types: Variety options of housing will be provided in neighborhoods (fig. 15). Closed to the lake, low-rise housing of two- or four-story houses with mix-use will be arranged.

Further away from the lake, housing is organized into precincts of high-rise and mid-rise apartment blocks sharing a common playground. To place these high-rise blocks away from lake is to avoid blocking the view toward lakes of other buildings, their height does not prevent sunlight and put adverse effect on streetscape.

6. Open Space System

The central lake and surrounding green space will be used as public space, leisure and gathering place of the dwellers. Then, the lake is bound to precincts' playgrounds or garden by existing canal or green pedestrian to form a continuous system (fig. 16)

7. Transit:

Transit lines come to every neighborhood connecting it with other development units. Secondary lines and bus lines collect passengers from neighborhoods, bring them to sector's, district's center or discharge them into primary line. One or more transit stop is located closed to lake the employment area. (fig 17)

8. Flexible Local Commercial:

The local commerce is not condensed into rigid core but left flexible in order to allow its growth according to demands. Local commercial and retail could sprawl along shop houses along the lake and streets to enforce the proximity of residential and services, fosters the street-life and allows peoples to run their businesses as they are doing in existing Hanoi (fig 18)

Open markets are arranged for each neighborhood in one or several points within the neighborhood as domains for the activities of the informal sector.

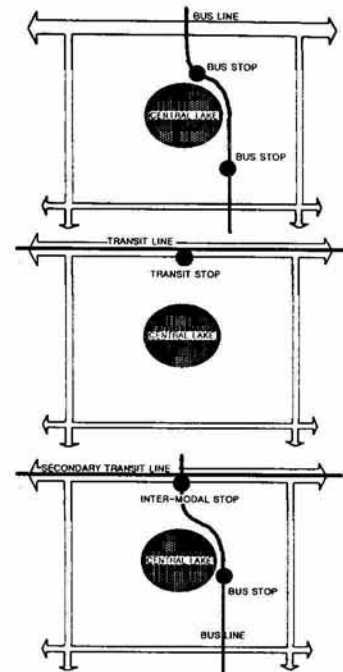


Figure 17. Neighborhood's transit: bus line (top), secondary transit line of light-train or tramway (middle); or combination of both secondary and bus line (bottom) (Principle 7)

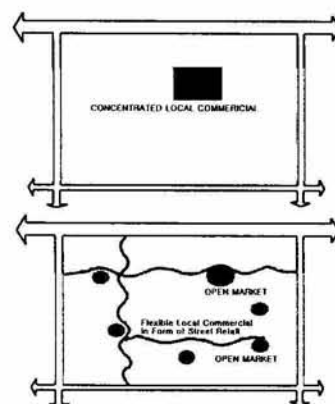


Figure 18: The principles of flexible local commercial (principle 8)

9. Streetscape And Street Activities:

To the possible extend, street-activities will be formulated. This is expressed through the design and activities arrangement at street level.

10. Townscape :

Low-rise structures will be designated closed to the lake. Building height will gradually increase if moving further away the lake. High-rise structures are placed on outer proportion of each neighborhood. Thereby, views toward the lake are possible from various angles and points (fig 19).

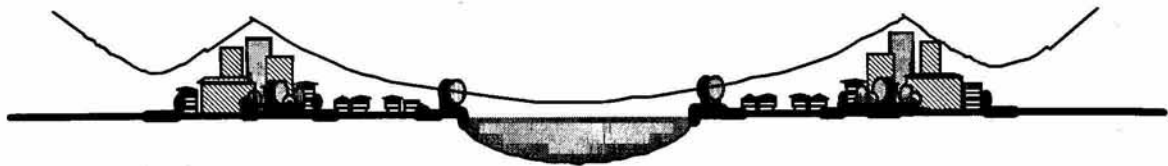


Figure 19: Section of a typical neighborhood illustrate the townscape of the neighborhood

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¹⁹ Ibid

²⁰ Dawoo & Bechtel, op.cit.

²¹ Ibid.