

Identifying Indigenous Elements in Urban Planning and Architecture of Sapa

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Abstract

Since the French started occupying Indochina, there was a demand emerged to build resorts in regions with climatic conditions similar to those in France. The high mountainous areas in Vietnam, especially Sapa, with the favorable climate and natural characteristics, became a focal point for French attention.

Since the Doi Moi period, Vietnam has undergone profound changes driven by industrialization and modernization, with notable progress in the tourism industry. In tourist cities like Sapa, these developments have led to significant transformations in both quality and scale. The rapid growth of tourism has revitalized the city, marked by the construction of new architectural systems and the revival of economic, social, and cultural dynamics. However, this expansion has also had substantial impacts on the environment, cultural heritage, societal structures, and landscape architecture of the region.

Understanding and analyzing indigenous factors in Sapa's urban planning and architecture provide a critical foundation for evaluating these changes. This approach can guide the formulation of sustainable development strategies that enhance the area's natural and cultural assets while preserving its rich traditions and identity.

The study begins with an exploration of the research site, followed by an examination of the local context. By integrating theoretical frameworks with empirical research, the findings identify the distinctive elements of Sapa's urban fabric, offering a foundation for further studies and informed development planning.

1. Introduction

The development of resorts was a key aspect of the French colonial exploitation policies in Vietnam and other Indochina countries during the period from 1900 to 1945 [1]. As a result, French colonial architecture left a profound imprint and became a significant component of the urban architectural heritage across Vietnam's provinces and cities. Over successive historical periods, the ongoing development and adaptation of these architectural legacies have contributed undeniable value to the structure and identity of urban areas, particularly in resorts established during the French colonial era. These sites not only reflect the historical influences of the

colonial period but also play a pivotal role in shaping the cultural and architectural narrative of Vietnam's urban landscapes [2].

Since the Doi Moi period, Vietnam has undergone significant transformation and dynamic development driven by industrialization and modernization. Among the notable achievements is the growth of the tourism industry, which has experienced remarkable successes in recent years. This development has brought substantial changes in both quality and scale to tourist destinations across the country, from mountainous regions to coastal areas, particularly in resort towns established and developed during the French colonial era [3]. In recent years, Sapa has attracted considerable attention from experts, real estate developers, tourism businesses, and the wider society. However, the influx of new investment, particularly in real estate, has caused Sapa to lose much of its inherent cultural and architectural identity. Many developments lack adaptation to the local context, making the area resemble lowland urban centers transplanted into the mountains. This shift has significantly impacted Sapa's urban planning and architecture, eroding the distinctive values of its French colonial heritage [4].

The study of Sapa's urban planning and economic development is crucial to identifying the cultural elements that have emerged, evolved, or been lost over time. Recognizing what remains—be it tangible or intangible, valuable or diminished—provides a foundation for preserving Sapa's unique identity. This understanding is essential for guiding future urban management and ensuring sustainable development that respects the area's historical and cultural legacy. Two research questions have been emerged, including: (i) What are the indigenous elements of Sa Pa and can they be identified? And which element is the most important in Sa Pa urban planning and architecture? (ii) What core values create the identity of Sapa's urban planning and architecture? In the literature, there is one publication addressing the relevant topic, but just with some preliminary results [5].

This paper, aiming to identify the indigenous elements in urban planning and architecture of Sapa, plays as the first step toward the proposal of a holistic solution for preserving Sapa's uniqueness which should be integrated into the urban management and development program for the city. It is structured to consist sections, including the introduction and the conclusion. After identifying the research problem and the research aim, the paper briefly presents a literature review while also looking at several concepts and terms related to indigenous elements to provide a firm background to understand consistently the research topic. The research methodology section discusses the research approach and also the research methods to be used throughout the research study. The research results are presented in two sections. Section four presents and discusses the environments of Sapa as the indigenous sources in relation to urban planning and architecture. These are the practical basis for developing a system of criteria to identify indigenous elements in planning and architecture. Section five addresses the identification of the indigenous elements of Sapa, which are the distinctive features that have been exploited from the indigenous sources. Studying five traditional architectural works and seven French period architectural works and 24 architectural works in the Doi Moi period, the changes as well as indigenous elements in these works have been identified. The identification of the indigenous elements of Sapa will be the basis to continue with further research studies on building a new urban area adapted to indigenous elements in the future.

2. Selected Relevant Concepts and Literature Review

2.1 Selected Concepts on Indigenous Elements of Urban Planning and Architecture

Native: The word "native" in Vietnamese language means "ban dia". "Ban" means original, basic, root. "Dia" means earth [6].

Indigenous/Indigeneity: the adjective "Indigenous" (noun form: "Indigeneity") means "belonging to land". The word "indigenous" in Latin also means home, nature and native. Indigenousness is local identity.

Indigenous factors: the defining aspects of a territory associated with the geographical environment and landscape, created by the local people.

Indigenous adaptation: Over time, new imprints will emerge within that community to adapt to the "native" environment, exemplifying indigenous adaptation, thereby altering previously recognized forms to align with the local context.

Indigenous architecture: Can be perceived as an architectural work rooted in the inherent attributes and conventional materials of the region, an architectural style that emerges from the locality itself. Indigenous architecture employs native construction methods and practices, resulting in distinctive architectural styles characteristic of the specific locality. Indigenous architecture is inherently traditional and may also encompass elements of vernacular architecture, as local development occurs concurrently. In the context of this research study, "Indigenous architecture" can be regarded to as the traditional architecture of the Vietnamese people, namely the architectural style utilized by the local community, as defined in the dictionary [7]. The movement of maintaining and promoting indigenous architecture aims to rejuvenate traditional cultural elements and national identities, thereby enhancing the architectural diversity among countries, ethnic groups, and regions [7].

Indigenous culture: the totality of material and spiritual values of a community, locality, region or region created in the historical process. The characteristic of the local culture is the cultural identity of that locality [6].

2.2 A Brief Literature Review on Identifying Indigenous Elements of Urban Planning and Architecture

Literature shows that there are a number of methods for identifying the indigenous elements of urban planning and architecture. Benjamin [8] pointed out that there are two new sub-fields to gain new insight into the topic: experimental archaeology and study settlement and shelter from the anthropological viewpoint. Mapping is one of the popular methods, which has been used to identify indigenous community use zones in Southern Suriname [9]. Surveying is another widely used approach, which is often conducted together with measurements, photography, and reviewing archives. This approach was used the case study of Ardabil city [10] and also in a recent research study in Vietnam [5]. Participative research partnerships are a pertinent methodology for academics and professionals in planning and design, as well as for Indigenous communities engaged in projects aligned with Indigenous planning practices [11]. Real world case study is also a good research method that has been adopted in Australia [12], Vietnam [5], which involves exploration of primary archival sources, pictorial images and measured architectural drawings etc.

In order to identify the indigenous elements of urban planning and architecture, the process must start with the identification of indigenous sources. Benjamin [8] pointed out that there are two major indigenous sources: (i) knowledge of architectural design, component and assembly fabrication, and materials; and (ii) advantageous talents for designers, including design proficiency, contextually relevant information, inventiveness, mechanical aptitude, and perceptual skills. Tran [7] discussed the conceptual sequence of *Indigeneity – Indigenous Spirit – Local Spirit – Local Identity*; while Identity = Essence (inherent, internal characteristics) + Nuance/Expression (degree of external manifestation), then the structure of the issue of indigeneity in architecture also includes two key components: intrinsic content (內涵, referring to what is contained within) and external representation (外面 / 外面, referring to what is outwardly expressed). The author also emphasizes significant sources of indigeneity, including indigenous spirit, local natural ecological environment, local cultural and social environment, local architectural physical environment, contemporary elements, indigenous models and native landscapes.

Through an overview study of practical lessons, projects, and research on indigenous adaptation in urban planning and architecture both globally and in Vietnam, it is evident that each historical period presents a different image of urban planning and architecture. These differences stem from factors such as culture, awareness, perspectives, ethnic groups, and the social institutions of the respective era. In this research study, the indigenous elements of Sapa will be explored with the following sources: local natural conditions, local economic and technical conditions, indigenous cultural and social conditions.

3. Research Methodology

This research study applies a hybrid approach of methods. Firstly, the research topic was investigated with the observation of the distinctive features of Sapa's urban areas in terms of culture, society, economy, planning, and architecture. Secondly, expert judgment was mobilised to obtain feedback in developing a set of criteria to identify indigenous elements in planning and architecture. Thirdly, case studies of five traditional architectural works, seven French period architectural works and 24 architectural works in the Doi Moi period have been explored. The case studies will assist in validating the indigenous elements in planning and architecture of the City. Then, indigenous sources of Sapa have been explored to discover the indigenous element of the City.

The specific methods have been utilised in this research study include:

- Content analysis of the historical materials: Collecting data and materials related to indigenous issues in Sapa's urban areas for analysis
- Site surveying: measure, draw, and take photographs of the existing planning and urban architecture of Sapa to create a comprehensive collection of drawings, images, and diagrams
- Mapping Methodology: Utilizing a system of maps combined with historical documents to identify and assess the objective transformation of Sapa's urban structure and architectural works across different developmental periods
- Sociological Survey Method: Conducting sociological surveys using questionnaires to collect opinions on identifying indigenous elements. The survey involved 220 participants, of whom 64.45% were architects, 24.09% were urban managers, and 10.45% were tourists. The results were used to establish criteria for determining indigenous factors
- Data Analysis and Statistical Methods: Using the Likert Scale (5-point scale) measurement method, Cronbach's alpha assessment method, and data processing tools like Microsoft Excel and STATA to aggregate the survey results.
 - Criteria for Indigenous Natural Conditions (37.3%): This includes weather, climate, topography, geology, ecosystems, and the environment.

- Criteria for Indigenous Cultural-Social Conditions (30.2%): This encompasses culture, needs, perspectives, religion, ethnicity, and social institutions.
- Criteria for Indigenous Economic-Technical Conditions (32.5%): This involves economic factors, materials, and indigenous technical factors.
- Morphological Analysis Method: This method combines a mapping system with historical documents to identify and assess the objective changes in urban structure and architectural works in Sapa over different developmental stages. This analysis serves as a crucial foundation for proposing viable solutions regarding the planning and urban economy of Sapa, based on principles of inheritance and sustainable development.
- Analytical-Synthetic Method: The synthetic method focuses on analyzing information, data, documents, and books related to the research issues. In addition, we also cooperate with prestigious experts in the industry, through various activities: academic exchanges and expert consultations to perfect research content and results.

4. Sapa and the Indigenous Sources in Relation to Urban Planning and Architecture

4.1 The Development History of Sapa

Since the French started occupying Indochina, there was a demand emerged to build resorts in regions with climatic conditions similar to those in France. So, in 1904 the French government directed the research and establishment of resorts in the seas and highlands of Vietnam. Vice Admiral Decoux developed resorts in a reasonable way, and at the same time the Central Department of Urban Planning and Architecture was established with the first task of studying major centers, conducting planning and expanding large resort areas such as Da Lat, Sapa, Tam Dao [2].

Before 1890: The land of current Sapa was formerly an ancient land, the indigenous community consisted of mountainous ethnic minorities living scattered on the slopes and rugged high mountains.

From 1909-1945: Since 1897, the French researched on the ethnicity and language of ethnic minorities living scattered in the mountains of Sapa to have a basis for developing resorts for the French army.

From 1945-1975: due to the war, most of the buildings built by the French were destroyed and in general, the architecture of this period did not leave any mark.

From 1979-1986: the redevelopment started after the war but at the same time reusing the facilities left by the French.

From 1986-2000: Sapa re-established the province after the aftermath of the war, encouraging socialist-oriented multi-sector economic development. Tourism started to bloom and since then many construction activities took place strongly. The starting point of the development phase was during the period from 1995 to 1997, to meet the tourism demand without any development planning orientation.

From 2000-2020: The period of industrialization and modernization. Service tourism continues to be affirmed as a spearhead economy sector. The image of Sapa urban area has changed rapidly due to uncontrolled development, but proposals have started to address the negative consequences of this hasty development for a more sustainable urban development.

4.2 Exploring the Indigenous Sources of Sapa

4.2.1 Natural Environment and Climate

The topography of Sapa is typical of the Northern mountainous region, with steep slopes ranging from 35° to 40° on average, with slopes over 45° in some places, rugged terrain and complex dissection. Located in the East of Hoang Lien Son range, Sapa has an average altitude of 1,200m to 1,800m, the terrain is inclined and gradually sloping in the direction of West - Southwest to Northeast. The highest point is Fansipan peak of 3,143 m high, and the lowest point is Bo stream of 400 m high above sea level. The topography of Sapa is divided into 3 typical forms:

High mountain sub-region on the top (1): Including the communes of Ta Giang Phinh, Ban Khoang, Ta Phin, and San Sa Ho. The average altitude of this area is from 1400-1700m, the terrain is dissected, steep slope, narrow valley and forming a rugged area.

Sapa - Sapa sub-region (2): Including the communes of Sapa, Trung Chai, Lao Chai, Hau Thao, Ta Van, Su Pan, and Sapa town. This is a sub-region located on the second step of Fansipan peak with an average height of 1500m with less separated terrain, hilly type.

Strongly separated mountain sub-region (3): Including 7 southern communes of the ward, namely Ban Phung, Nam Sai, Thanh Kim, Suoi Thau, Thanh Phu, Nam Cang and Ban Ho with high mountainous terrain, sharp peaks, steep slopes. deep narrow valley.

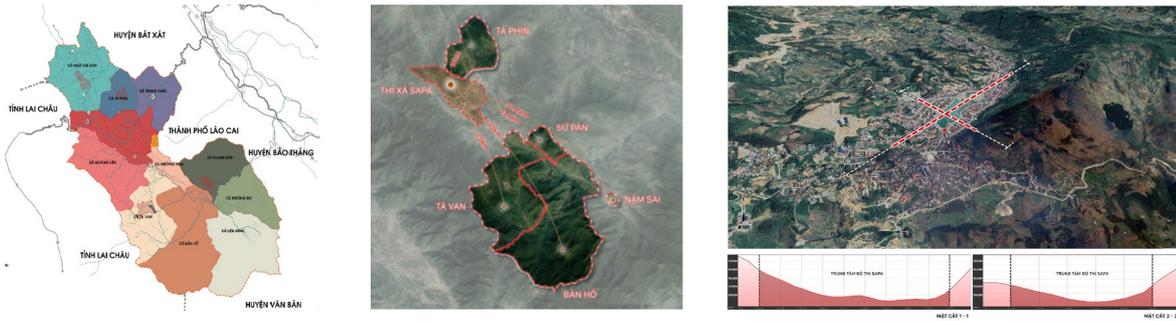


Fig. 1 Sapa and 5 surrounding villages (source: [4])

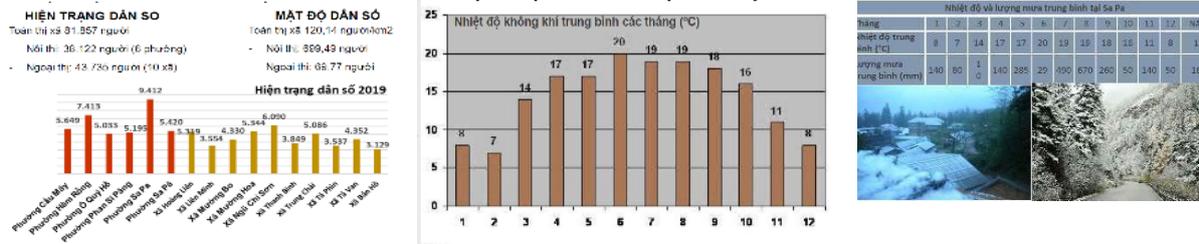


Fig. 2 Climate conditions of Sapa (source: [4])

Sapa has a natural ecosystem with a landscape of hills, mountains, rivers and streams. The network of rivers and streams is quite thick with the two mainstream systems, i.e Bo stream and Dum stream [4]. Flora is rich and diverse, there are many types of trees, and some trees are similar to those in Europe.

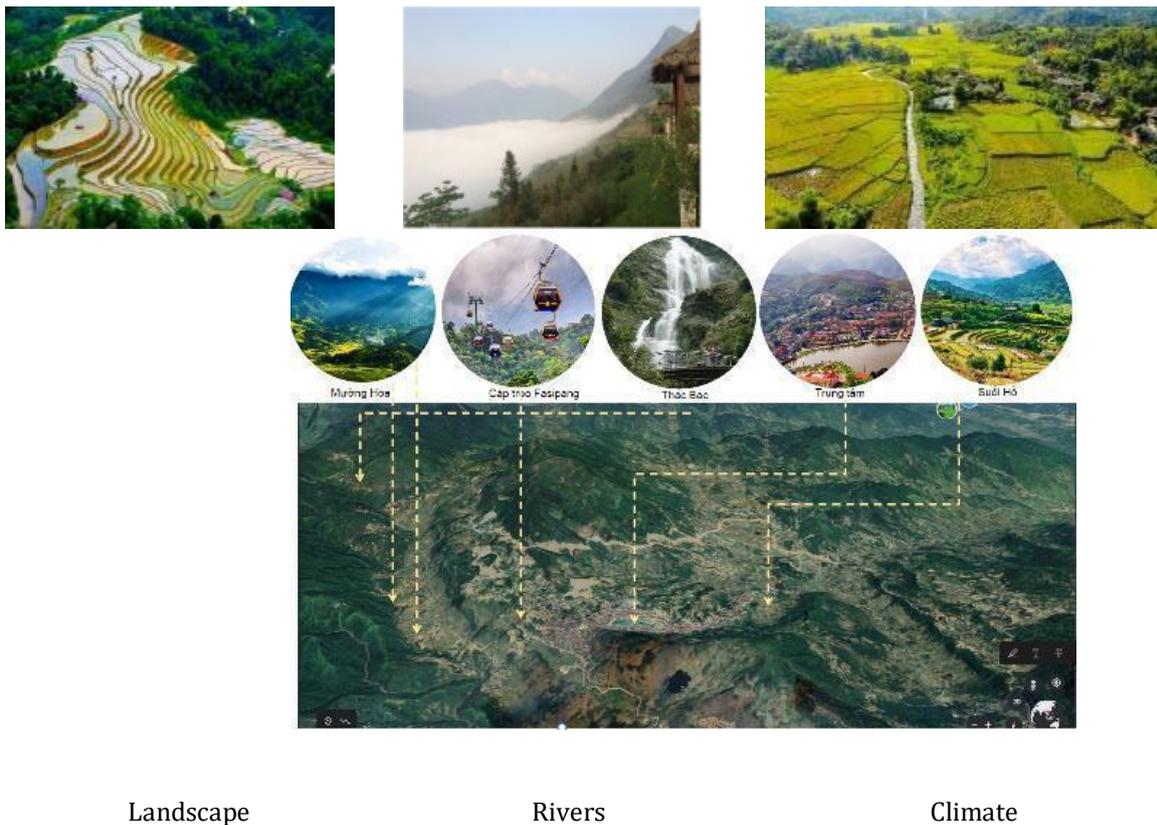


Fig. 3 Natural conditions of Sapa (source:[4])

4.2.2 Social, Ethnic and Lifestyle Characteristics

Sapa city was founded on the ancient land, inhabited by many ethnic groups and it is this diversity that creates the cultural identity of the region. The population structure of Sapa town has changed a lot because of the influx of people from different ethnic groups, from which many villages have been formed, especially after the French arrived in Sapa. In 2020, Sapa town has 6 main ethnic groups including: Mong, Dao, Tay, Kinh, Giay, Xa Pho (Phu La) in which the Mong people account for the largest number of 52%; Dao ethnic group 22.4%; Kinh ethnic group 14.8%; Tay ethnic group accounts for 5%; Giay ethnic group accounts for 3%; Xa Pho ethnic group accounts for 1.06%; other ethnic groups accounts for 1.74% [4].



Fig. 4 Socio-cultural characteristics of Sapa city (Source: [13])

Cultures of the region's ethnic groups are divided into 3 groups [14]:

- Culture of behavior group
- Spiritual culture group
- Material culture group

a. Culture of behaviour group:

Socio-culture which is expressed in behavior, in family and community relationships, has a wide operating range. These customs have many unique features associated with the cycle of human life, the cycle of crops and livestock. And with the same ceremony, but each ethnic group has different rituals and has its own characteristics. Therefore, associated with the above activities is a system of customs and habits with strong ethnic character [15].

Table 1 Characteristics of indigenous people's culture and behavior

People	Culture of behaviour	Illustration
Kinh	Nuclear family Communities, villages Getting married, giving birth and raising children Funeral rituals, ghosts Build a new house	
Tay	Nuclear family, with 3 generations Patriarchal family Family tree Wedding ceremony, funeral rituals Build a new house	
Giay	Patriarchal family of 3-5 generations, There is no patriarch or place of worship Each community has its own laws Weddings, births, funerals... Build a new house	
H'Mong	Family with division of labor High ancestry, solidarity, Village of oral conventions Weddings, births, funerals Make a new house.	
Dao	Patriarchal family, 2 generations A clan is a collection of unmarried members who share a common ancestor. There are separate conventions: marriage, birth, identity, funeral, new house	
Xa Pho	Patriarchal family Divide the estate in half for backup. Wedding ceremony Birth and parenting ceremony Funeral rituals	

b. Spiritual culture

Spiritual culture includes a system of "mystical" conceptions about the perception and explanation of natural and social phenomena.

Table 2 Cultural and spiritual characteristics of indigenous people

People	Spiritual culture	Illustrations
Kinh	Folk beliefs (universe and soul) Ancestor worship Religious beliefs Festivals and celebrations of the year (Tet of Kitchen Gods)	
Kinh	Literature and art (instrumental, performance, visual...) (Lion dance)	
Tay	Ancestor worship Worshiping the village community god Worship and healing Festivals, New Year's Eve, Festivals (Feast of the field...) Literature and art: music, art of words, dance... (Xoe Dance - Ta Chai)	 
Giay	Worshiping ancestors, Kitchen God, birth God Worshiping the ancestors Worshiping the God of the Village, the God of the River... (Roong Poo festival - Giay people) Literature - art: ancient stories, folk songs, Proverbs, riddles... Traditional musical instruments, dance...	 
H'Mong	Ancestor Worship Worshiping house ghosts, family god, healing... Festivals, New Year's Eve, Festivals: worshiping the forbidden forest... Literature and art: Folk songs, folk tales, fairy tales... Traditional musical instruments, visual arts, folk games... (Instrument: Khen)	 

<p>Dao</p>	<p>Ancestor Worship Worshiping the God of the Earth, and Birth God Festivals, Tet, Festivals (Village offerings, Shen Nong) (Grading ceremony)</p>	
<p>Dao</p>	<p>Literature - Art: Proverbs, riddles, folk tales, dance art, folk games swinging ropes, singing answers ... (Dance Festival)</p>	
<p>Xa Pho</p>	<p>folk beliefs earlier New Year Festival (Khoi Si dim) large sweeping ceremony, new rice festival</p>	
	<p>Literature and art: Art of words, folk dance... (Creating patterns on clothes)</p>	

c. Material culture

Material culture includes many genres such as: culinary culture, housing, costumes, vehicles, but the most prominent feature is the houses and costumes of the ethnic groups. Each ethnic group has a different culture that has created differences in the structure and content of houses as well as costumes.



Fig. 5 Ethnic costumes (Source: [13])

4.2.3 Features of Planning, Architecture and Landscape

a. Planning

Transport: Inter-regional traffic includes 3 routes: railway, road and river. Diverse routes to Sapa center.

How to divide and subdivide construction land plots: In order to meet the needs of tourists, but there are no specific development regulations, so the land plots clearly show the economic potential of the investors. The higher the building density is, the greater the utilization factor is proportional to the economic income. The land plots are uneven in size and are developed according to economic needs and have not paid enough attention to the general landscape of the city. Housing expresses the individuality of each household, not according to the general planning idea of the city. Signs of the construction work of this period show the differences in economic status of each individual.



Fig. 6. Sapa urban map 2022 (source: [4])

b. Green trees and the water surface

Forest landscape system: Protection forest, special-use forest, production forest, Hoang Lien Son national forest. System of rivers, streams, ponds, and lakes: Dum stream system: Mong Sen stream in Ta Phin commune and Dum stream in Trung Chai commune, Sapa and Sapa town are the headwaters of Suoi Dum. Bo stream system: Muong Hoa stream in San Sa Ho and Lao Chai communes is the headwater of Bo stream. Thac Bac Lake is located at an altitude of over 2,000m, over 5ha wide, separated by two rocky ravines with large divisions. Suoi Vang is a branch of the Muong Hoa stream. Artificial lake is in the expanding center of Sapa.

c. The landscape system and the spirit of the place

Agricultural and resort urban landscape: The French have played a role in creating the urban landscape, agro-ecosystem and resort tourism. The architectural works built in the French period have increased the spirit of Sapa city by the image as well as the imprint left by these works.

Primary forest landscape: The climate is suitable for growing many kinds of fruit trees, cardamom trees, along with natural primeval forests, creating a typical forest landscape of Sapa.

Village landscape and terraced fields: Ethnic people mainly live on farming, hunting and farming activities. This kind of activity has created a village landscape with terraced fields.

Tourism landscape in the Doi Moi period: Transitioning to the period before and after Doi Moi. Besides natural factors, man-made factors have also created the landscape of Sapa urban area such as the newly added Sapa lake, the cable car system and architectural works built with a strong tourism ecosystem during this period.

d. Architectural structures

French villa houses: is a type of house architecture in the form of villas built from the French period to the present day. These buildings are currently being used as resort hotels or administrative offices.

Urban tube house: A type of construction built with concrete, quite popular because of the scale factor built in the period before and after the Doi Moi period. This architectural model originated from China with a construction density of 80%, with 1-8 floors, perpendicular to the street, the house surface is about 5-8m. Its function is as a hotel or to stay in combination with rental.

Large block house: A type of building with the same shape as a tube house but with a larger width and size, built after the Doi Moi period, mainly used as a hotel or motel.

Resort constructions: Built in a variety of ways, resort buildings with different standards, from low to high, meet the needs of tourists. The resorts, luxury hotels, mid-range and low-end hotels. Homestays experience living with local people.

Public constructions: Originated from the French colonial period. Until the period of 1954-1986, the architectural types of public constructions continued to be built, but not many. In the Renovation period, these constructions were paid more attention to the types of community cultural houses, medical and educational constructions. Indigenous housing projects: scattered in Sapa town and surrounding villages.



Fig. 7 Sapa urban center (Source: Authors)



Fig. 8 Some types of current architectural constructions of Sapa (pictures taken by Authors)

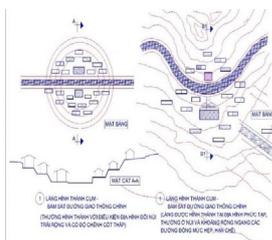
e. Village architecture

Due to the main terrain of hills, rivers, streams and long valleys, villages were established on the basis of farming methods, customs and habits of ethnic minorities, with diverse layout and rich style, and its own characteristics.

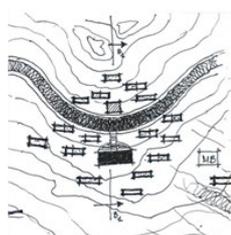
Type 1: The village is established in clusters, closely following the main traffic road formed with the spreading mountainous terrain like Ta Phin village.

Type 2: The village is formed in clusters and closely follows the Main Road. However, it is formed at locations with complicated topographical conditions, usually in mountains with high height, contour lines with large difference in elevation and width of cross section in small contour lines with limited conditions.

Type 3: The village stretches along the route close to the main road, formed on the same high elevation running along the slopes of the stretching mountains.



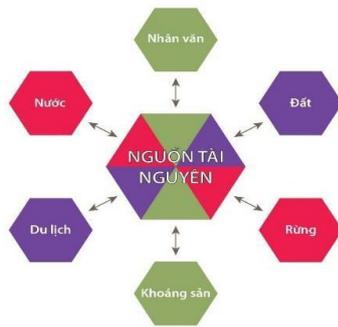
Type 1



Type 2



Type 3



Tourism



Human



Mountain

Fig. 11 Resources of Sapa City (Source: [16])

Besides, Sapa has a lot of potentials on the following resources [17, 18]:

- Land resources: due to the development of forestry trees, specialty trees, medicinal plants and valuable food and food crops.
- Underground water resources: Ultra-light water source in Tak Co (Trung Chai commune) has great value for health and needs to be invested, researched, and put into use.
- Forest resources: With diverse vegetation including many precious trees and especially no wild animals.
- Mineral resources: potential of stone resources, production of construction materials such as sawn stone, large construction stone, in middle and upper district communes.

Human resources: by the culture of the highland ethnic groups.

Local technology technical material condition

Local traditional construction techniques need to be widely recognized by long-standing stable patterns and models, showing experience in dealing with the natural environment, living with nature, adapting to the climate, different usages of materials, handling texture and structure... [19, 20] House on stilts, wooden columns placed on a stone, unburnt bricks, stone, recycled wood, pine hemp, brocade fabric with materials available in nature such as cotton fiber, flax fiber, betel leaf, turmeric root, brown root, indigo tuber... Applying production techniques and technologies helps to make the production process faster, simpler and more efficient.

- Handmade brocade weaving technique of the community.
- Indigenous housing construction techniques
- Local materials mixed with sand, lime, and molasses.
- Local stone material production technology
- Developing hi-tech agriculture (medicinal materials, flowers, agricultural products...)
- Applying technology for smart traffic

5. Identification of the Indigenous Elements of Architecture and Planning in Sapa

5.1 Overall Results

Sapa is a tourist city with characteristics of natural landscape and climate conditions that need to be paid attention to avoid causing damage to these characteristic elements. From that, it can be seen that the relationship between indigenous factors and the planning and economy is a reciprocal relationship that complements and supports each other for development through the synthesis of research results have been achieved.

The research survey, along with the synthesis and analysis of documents on the formation and development of urban architecture in Sapa, has revealed that while the planning and urban architecture of Sapa have undergone significant losses, it remains a key tourist destination in the northern mountainous region. Furthermore, it continues to develop and attract investors.

Through an overview of the indigenous elements of Sapa, especially through the identification of typical indigenous elements of Sapa in planning and architecture, it is found that each period has different indigenous adaptations. The differences through each period stem from cultural factors, perceptions, viewpoints, ethnic groups and social institutions of that period. A city with a sense of place and identity is important for branding. Sapa has changed very quickly in the past 25 years and from that, some new insights have been drawn: there are buildings that are not so outstanding or even look ordinary, but they can also contribute to the creation of a new image, presenting the overall effect of typical Sapa urban image nowadays. This particularity can be positive, but

it could also bring in negative aspects because of an adaptation process in all aspects from the needs of the community to the dominant economic-political factors.

5.2 The Indigenous Elements in Urban Planning and Architecture of Sapa Identified

The recognition and evaluation of native adaptation, whether abstract or not, can be interpreted in many different ways. To simplify this assessment, it is essential to focus on the key elements of urban planning and architecture in Sapa, such as the urban construction context, the project's location within the broader environment, the types of projects (including their scale, color, and design accents), and how they harmonize with local cultural factors. Additionally, the influence of climatic conditions, ethnic characteristics, and spiritual elements must also be considered. Table 4 and Table 5 present the research results with regard to the identified indigenous elements in urban planning and architecture of Sapa.

Table 4 Identification of indigenous factors in Sapa urban planning and architecture (variable factors)

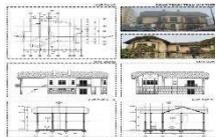
Period	Content	
Before French domination	Planning	<ul style="list-style-type: none"> • Ethnic minority communities live scattered in the high mountains. • The community developed according to bloodline forming H'Mong, Dao, Tay villages... • Choose to place a house near the farming place
	Architecture	<ul style="list-style-type: none"> • Established according to production methods and lifestyles. • Using local materials, mainly Siam wood (Fokienia), leaves.
After French domination	Planning	<ul style="list-style-type: none"> • Urban resort • Mixed development of military and civilian areas • Western and indigenous life. • Planning in accordance with the scale of service. • Zoning by function - Spatial specialization • High elevation area - large scale construction • Low area - small scale construction • Traffic system associated with contour roads. • Beautiful views are respected and prioritized. • Model of European village
	Architecture	<ul style="list-style-type: none"> • Take advantage of the natural terrain, without disrupting the landscape • French local architectural style. • Diverse categories: Public works, religious works, military and civil works (villas) • Villa houses require a minimum area of 50m², with a garden, limited height and architectural details in accordance with the development orientation in the planning. • Forming public spaces in urban areas, flower gardens and playgrounds for the community. Urban decoration • Pay attention to infrastructure development, show respect for the general environmental regulations of the city. (Water supply, drainage, waste...)

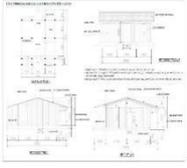
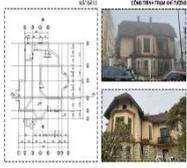
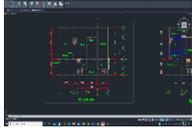
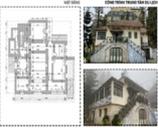
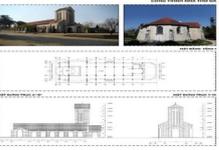
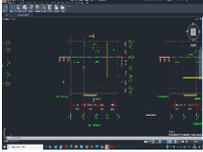
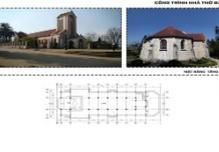
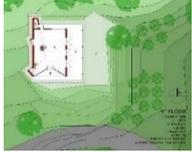
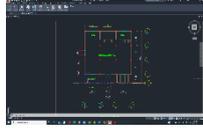
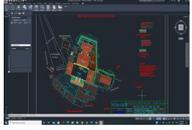
Before Renovation	Planning	<ul style="list-style-type: none"> • Materials used: Pomu, oak, iron, glass, iron, reinforced concrete, mechanical tile, white lime, oil paint ... • Maintain the old planning of the French colonial period. • Expanding traffic, reclaiming new villages. • There is no general plan as well as development orientation.
	Architecture	<ul style="list-style-type: none"> • Architectural works are built on the principle of saving and enough for using, so the area is small. <p>The architectural form is simple, unnoticed.</p>
After Renovation	Planning	<ul style="list-style-type: none"> • Orientation of tourist town with scale in 1995 • Expanding urban areas towards Fansipan and Ham Rong, expanding to villages. • In the period 1995-1997, development had no direction. • The constructions did not follow the terrain but followed the main roads for service business and small trade. • The 2012-2016 master plan divided the urban structure: the central area (French period, before and after Doi Moi) and villages.
	Architecture	<ul style="list-style-type: none"> • Development adapting to the needs of economic development. • Various types of architectural development: Cultural, educational, medical, religious works; residential buildings on the street, hotel and resort projects. <p>The architecture has an imported architectural style, a delta urban image with many high-rise buildings.</p>

Table 5 Identifying the adaptation process of Sapa urban planning and urban economy to indigenous factors

		Native	French period	Before Renovation	After Renovation
LANDSCAPE	Background	Ethnic minority	Sanatorium for the French	War and after war	Economic integration and development
	Location	Village landscape	centre of Sapa area	Center and vicinity	Village and surrounding area
	Function	Housing and barns	Villas/ Resorts/ Military bases/ Public	Residentials/ Public	Residential/Resort/Public.

TYPE
H' Mong



					
	Tay				
					
	Dao				
					
	Xa pho				
					
	Giay				
					
FORM	Scale	80m2 -100m2	60m2 -100m2	Medium and small	Diversity

TECHNIQUE	Colours	Natural	White lime alum, e 3 layers of oil paint	Not paying attention to the color	Diversity and no regulation
	Highlights	Main column system The ancestral house	Viewpoint House with garden	No highlight	Diversity and no regulation
	Structure	The truce	BTCT	Bearing walls	BTCT, Steel
	Materials	Natural wood Leaf roof	Stone, wood, Po mu, oak, single iron glass, mechanical tile...	Brick, lime mortar	Diverse in materials: glass, steel, brick...
	Details	Main column system	The roof does not extend to more than 2.5m...	Not paying attention to the details	Doors, roofs, railings

6. Conclusion

The research, survey, synthesis and system of documents on the process of formation and development of urban architecture in Sapa have shown that the planning and urban architecture of Sapa has lost a lot, but so far it is still a major tourist town of the northern mountainous region and is still developing and continuing to attract investors. The results of identifying the locality of the urban planning and urban architecture of Sapa show that recognizing the indigenous factors formed and developed in the process of planning and urban architecture in Sapa is the basis for assessing adaptation of planning and architecture in the context of development. From there, giving appropriate development orientations for this area to maximize the typical value of the natural landscape, while preserving the highly inherited traditional features, and building regional architecture rich in indigenous characteristics.

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Conflict of Interest

Authors declare that there is no conflict of interests regarding the publication of the paper.

Author Contribution

The authors confirm contribution to the paper as follows: **study conception and design:** THLV, VHN, QTN; **data collection:** THLV; **analysis and interpretation of results:** VHN, THLV; **draft manuscript preparation:** THLV, VHN, QTN. All authors reviewed the results and approved the final version of the manuscript.

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