

Adaptive Vernacular: A Search for Future Houses in Eastern Region of Thailand

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ABSTRACT

This study aims to explore ways in which contemporary vernacular houses can be created to be responsive to environmental, socio-cultural, and economic conditions. Within the selected three provinces of Chachoengsao, Prachinburi and Nakhon Nayok, our goal was to propose possible prototypes for contemporary vernacular houses that respond to current requirements while still sustaining their regional characteristics. Current problems and changing housing demands were studied along with input from local people. From field surveys and focus groups, the research found that neither “traditional” nor “modern” solutions will suffice, so the prototypes need to strike a balance between these models. Outcomes developed from this study involve house prototypes that are not models to be strictly copied, but possible creative guidelines which allow their owners to truly adapt to and transform for the future.

Keywords: adaptive vernacular, vernacular Thai house

INTRODUCTION

Alongside the development of manmade constructs, the natural condition of our environment is constantly changing. New living requirements, which are the results of both human actions and global climate and natural transformations, are inevitable. Are we, as a species, well equipped to dwell within these changing environmental and socio-economic conditions? How can local people be prepared to live in, adapt to, build, and rebuild their vernacular environments? Can people utilize local knowledge to propose innovative ways in which houses and built environments are created and constructed? What can people learn from the unique characteristics of the traditional vernacular environment in order to prepare themselves for the future?

These interrelated issues are most apparent and unavoidable in the design of our houses. Twenty years ago, this was a problem of designing space and form. Yet, since the early part of the twenty first century, with pressing planetary climate change, the nature and definition of our built environment has become the subject of repeated consideration. The task of designing space and form has become questionable; even the word design itself has become problematic. Should our environment be designed only by architects and planners, or should everyone be able to participate in and prepare our environments for the future?

If the creation of our environment cannot be considered an autonomous discourse limited to a group of architects, how can attempts to “build or rebuild the vernacular environment” truly involve local people, while integrating all related knowledge in order to respond to the changing environmental and socio-economic demands? Are there other ways of imagining and working with the vernacular environment that can prepare local people for future circumstances?

RESEARCH OBJECTIVES

This research aims to accomplish three major objectives in vernacular housing design – to study the existing problems, involve local people

in the process, and propose possible housing prototypes.

To study the current problems facing vernacular house development in the Chachoengsao, Prachinburi and Nakhon Nayok provinces of Thailand, our research aims to understand, analyze, and categorize these problems, including the changes caused by society as well as the transformation of the natural environment.

To involve local people, the research aims to both gather knowledge from and distribute knowledge among local citizens. It is not only intended to generate research outputs but is aimed to benefit both local people and authorities and to create awareness of adaptive dwelling for future circumstances.

To propose possible prototypes for adaptive vernacular houses, the goal of this research is also to integrate knowledge from the study in order to propose various possibilities for building and rebuilding the vernacular environment; i.e., houses that will be able to adapt to and withstand future environmental changes. Not only will these vernacular living and building situations be considered, the industrial possibilities for the creation of vernacular-built environments will also be a key consideration for the research. The possible outcomes include possible design proposals as well as an exploration of industrial production possibilities.

SCOPE AND METHODOLOGY OF RESEARCH

The areas of study were selected because of their drastic environmental transformations over the past twenty years. Chachoengsao, Prachinburi and Nakhon Nayok were the three provinces selected as purposive areas of study as they exemplify diverse types of vernacular settlements affected by not only environmental changes but also by socio-cultural and economic transformations. Vernacular houses in these provinces, highly affected by such changes, are in severe need of adaptation and transformation.

The research was conducted by following three interrelated methods.

Field Surveys: With purposive sampling, vernacular houses from Chachoengsao, Prachinburi and Nakhon Nayok provinces were selected to exemplify the dwellings and environments affected by both natural and manmade changes. The study areas were selected and grouped by topographical conditions, ecological conditions, and the effects of environmental changes rather than geographical area. Within each province, three communities or villages were selected, while the number of houses in each community or village varied between three to five dwellings, depending on availability and accessibility. The field survey also aimed to involve local people and integrate their needs, problems, knowledge, and insights into the research. The method of people's participation was employed and divided into two main steps. The first step was to collect data on the problems, needs and requirements of each region: a focus group study as well as a field survey in the selected areas were then conducted. The second step was to distribute the research findings and results to the local people; both a focus group study and an intensive workshop with local people and authorities were conducted, along with the distribution of building manuals and other information to the local authorities.

Literature Research: Existing research on vernacular-built environments was studied. Data collected from this research was analyzed in association with data from the field survey. Existing data on the changing natural environments within different regions was also studied.

Propose possible solutions for adaptive vernacular houses: To propose solutions for adaptive vernacular houses, knowledge, data, and information from all previous research stages were integrated and synthesized through the process of architectural design.

RESEARCH PRETEXT

Preceding Project

Thirty years ago, while traveling through rural provinces outside of Bangkok, sightings of traditional and vernacular houses were not rare.

Various ethnic groups who had migrated to Thailand could still be found living in close-knit communities, each with distinct forms of housing. At the time, most of these dwellings still employed construction methods that had been handed down over generations (Chaichongrak, 1996).

However, with Thailand's rapid socio-cultural and economic changes over the past twenty years, a transformation of the rural dwellings within the country was inevitable. As local agriculturally-based industry has gradually become overshadowed and often replaced by developing industries, domestic lives within these rural areas have also been transformed (Chaichongrak & Freeman, 2002). With the introduction of new and less costly materials as well as more rapid methods of construction, traditional and vernacular dwellings of diverse ethnicities have become a rare find. This is partly because the "image" of the ideal house in rural areas has changed (Panin, 2010); the rapid speed of social media and communication networks have offered people images of housing that were once unfamiliar and unobtainable. Dissatisfied with their seemingly "outdated" or "different" houses, the majority of the rural population now prefer to live in housing that is "updated" and "similar" to houses elsewhere. This has resulted in "contemporary" houses pertaining to stylistic similarities that no longer meet specific ethnic needs or contextual topographical conditions, as the desire to build a house to match an "updated" or "contemporary" image does not correspond with the socio-economic particularities of each region. This has generated a multitude of houses with similar appearances that seem to belong everywhere and nowhere at the same time. During the past ten years, this problem has become more and more pressing to the point that the National Housing Authority of Thailand initiated an ambitious project to propose new possibilities for future housing in the rural areas of each region (Panin, 2010).

In an attempt to find "new" prototypes for the vernacular dwellings of each region, the National Housing Authority of Thailand launched a project in 2009 titled, "The Study on Integrated Approach in Rural Housing Design." The main goal was to propose design solutions for rural dwellings that answer to current transformational demands while still maintaining the regional characteristics

specific to particular lifestyle. This project was divided into five sub-projects for each region, led by principal researchers from various universities. Each project consisted of a national design competition for the New Vernacular House for each region; the project then concluded with design proposals and construction drawings for vernacular houses of the central, northern, northeastern, eastern and southern regions (Panin, 2010). However, even with the so-called “prototypes,” which were designed by architects without really examining each region’s needs and peculiarities, major questions still remain unanswered. How can these housing prototypes be effectively implemented? Do these houses answer to not only future socio-cultural conditions but also environmental ones? Can these houses still be considered vernacular?

The National Housing Authority’s project serves as the starting point for this research, which aims not only to evaluate the project’s purpose but also aims to further investigate the above questions; these questions each generate a further set of inquiries to be investigated. What really are the current needs of people in each region? How have their living conditions been transformed? How could the vernacular heritage of each region be taken into account and transformed into something new? How could new possibilities be offered to satisfy both the functional and representational aspirations accompanying these houses?

Literature

As this study is an integration of various research areas, literature that serves as a pretext for the research has been divided into several categories.

The first literature category concerns the Thai vernacular-built environment, vernacular houses, vernacular settlements, and traditional dwellings in Thailand. This research offers information regarding the meaning and characteristics of various types of vernacular dwellings in Thailand and the differences between them; it also addresses the methods in which vernacular houses employ local resources to develop their unique characteristics and usage. Studies in this first group also include those focusing on traditional Thai houses, the nature of their space

and form, the materials used to build them, and their methods of construction. From this first set of studies, the research aims to understand not only the physical characteristics of vernacular houses in Thailand but also the relationship between vernacular dwellings and the daily lives of their inhabitants as well. This first set of studies also focus on the vernacular architecture in different regions of Thailand. Research and texts in this group concentrate on the historical background and major characteristics of vernacular dwellings in different regions. Existing literature is categorized by Thai geographic regions, which are the North, the Northeast, the South, the Central, and the East. Literature in this grouping gives a broad understanding of the typical vernacular settlements within each region and how they evolved, as well as the major characteristics that mark the uniqueness of each region. The research gathers literature that outline the typology, spatial, and formal configuration as well as the materials and construction system of the vernacular houses in each region to determine their similarities and differences (Horayangkura et al., 1999).

The second category of research concerns the environmental ecology or the vernacular-built environment and its ability to adapt to changes. This research aims to examine studies that address the ecological and environmental aspects of vernacular dwellings in Thailand, focusing on both aspects in different regions of the country, as well as the relationship between the natural environment and building cultures. Research and texts in this group also address the ways in which the vernacular architecture adapts itself to different climatic, as well as social and cultural, conditions. There also exists research concentrating on the transformation of the vernacular-built environment in specific regions of the country (Panin, 2017).

The third set of studies address the aspect of human participation and built environments in Thailand. Although focusing on low-income housing, research exists that introduce and address the possibilities of employing human participation in the design of housing, communities, and environments. This group of literature alludes to the notion of people’s participation as well as the process and benefits of involving local citizens in both the decision-

making and the design process of housing development in Thailand (Tovivich, 2012).

The fourth literature category consists of research from a research program organized by the National Housing Authority of Thailand in 2010. It is a program titled *The Study on Integrated Approach in Rural Housing Design*, which aims to study the possibilities of developing or recreating vernacular houses for four regions in Thailand, which are the North, the South, the Northeast and the Central region (Panin et al., 2010).

These four categories of literature serve as a pretext to this research. They were synthesized and integrated with results from field surveys and people's participation as well as focus groups to help generate design prototypes.

Definitions

Following the above-mentioned pretext, the research began with a conceptual definition of the key terminology, which will also become the framework for this research's questions as well as its proposals.

Vernacular Thai House:

Vernacular Thai house refers to houses built mostly in rural areas in different regions of the country. They are built by local people and craftsmen, without the involvement of architects or designers (Panin, 2002).

Adaptive Vernacular:

Adaptive vernacular refers to a vernacular-built environment that has been or will be transformed but is still based on its original condition, without being completely changed or built anew (Panin, 2017).

Regional Characteristics:

Regional characteristics refer to the physical characteristics of vernacular houses that directly answer to local conditions and requirements. They include both spatial and formal characteristics and material conditions as well as methods of construction (Oliver, 2006).

Contemporariness:

Contemporariness refers to the current conditions that have been translated into current needs and requirements, both physical and psychological, real and ideal (Panin, 2017).

RESULTS FROM FIELD SURVEYS AND FOCUS GROUPS

Following the research methodology, this research focuses on field surveys of houses and focus groups within selected areas in order to understand the specific conditions, problems, and current needs of local citizens. Interviews and focus groups must be conducted before architectural programs can be established. Then, in the design process, people within the selected region act as the main participants working with architects who not only facilitate but also accommodate their needs and transform them into design solutions. Local craftsmen and local building experts who are familiar with local materials and techniques are also involved, offering their insights into the real implementation of the designs (Panin, 2017).

From a participating population of 113 people from 31 houses within 9 villages, information from field surveys and focus groups can be divided into seven important points.

1. Socio-economic conditions:

The majority of the population in the selected areas are ethnically Thai, with only 7% that are of Chinese descent. While twenty years ago, more than 70% of regional populations were rice farmers, today only 20% remain in this field, with 10% doing mixed agriculture. The remainder are business owners, store owners, general workers, and office workers as well as civil servants and governmental officers. These changes in socio-economic conditions have also required changes in local citizens' domestic environments. Simply, they spend much less time at home, and spaces for keeping agricultural products are no longer needed. When work is mostly done outside of the house, the home is seen as a place for rest and leisure rather than a place for daily work, unlike in the past. With different members of the

household having different occupations conducted outside of the home, shared working areas are used for other functions.

2. Family conditions:

While twenty years ago, most families within the areas consisted of extended family, today only 12% are. Also, within these contemporary extended families, 67% live in separate houses within the same housing compound. 78% of these families are single families. Of families that live in the same housing compounds, 66% consist of 3-5 family members, 18% consist of 1-2 members, and only 16% consist of more than 6 members. For these reasons, large pieces of land are no longer needed. Families usually consist of only two generations, not three or four like twenty years ago. Thus, houses are no longer expected to accommodate more than two sub-families. Yet, despite there being less members in the household compared to ten or twenty years ago, each household member spends more time in private spaces and less time in public or shared areas. Shared bedrooms that can accommodate everyone in the family are no longer preferred, and most houses have compartmentalized or clearly divided bedrooms that are individually enclosed.

3. Current living conditions:

22% of the families have been living in their houses for 21-30 years, while 20% have lived in them for more than 50 years, and 18% for less than 10 years. The length of time lived in the house for the rest of the families falls between 11-20 years and 31-50 years. 80% of the families own their land, while 16% live with their parents, and 4% share the land with siblings. Regarding the size of land, 20% are between 100-200 square wa, 35% are between 200 square wa to 1 rai, and 25% are between 1-2 rais.

Regarding the design of the house, 75% of the owners designed their own houses, 20% were designed by building contractors, and the remaining 5% were either designed by architects or bought from previous owners. In terms of the construction, 55% of the houses were constructed by local building contractors, 23% were built by the owners, and 17% were built by the owners with the help of neighbors. 70% used

building materials bought from local stores, 15% used materials from old houses, and the remaining 15% used or adapted local materials.

With regard to construction cost, 65% of the houses cost between 200,000-500,000 baht while 14% cost between 500,000-1,000,000 baht. 16% of the houses cost less than 200,000 baht, while only 6% cost more than 1,000,000 baht.

4. House characteristics:

90% of the houses are raised on stilts with an open ground level. 80% of the houses are configured in a Thai traditional spatial system of rooms connected with a terrace or "chan." Kitchen and dining spaces are not necessarily separated, while living or multipurpose spaces are not usually walled-in but interconnected with other spaces of the house. Additional working spaces are necessary and preferred as separate rooms. 90% of the houses have no designated storage space but keep daily essentials in each and every room. None of the houses have specifically designated car parking attached to the house. 100% of the families parked their cars outdoors or at the open ground level. 90% of the houses no longer have spaces to keep agricultural products, and only 10% still have rice barns.

In terms of the house's interior spaces, 40% of the families have 2 bedrooms, 20% have 3 bedrooms, and 10% have only 1 bedroom. Another 10% have 4 bedrooms, while the rest share multipurpose spaces. 60% have bathrooms within the house, connected or accessed through living areas, while 40% of the bathrooms are located outside or separate from the body of the houses.

5. House extensions:

Of all the survey and focus groups conducted, 67% of the houses have been extended and modified to generate more rooms, while the remaining 33% have not had any house extensions done. 60% of the houses had to be modified or extended to accommodate additional family members due to either births or marriages. 30% of the houses' modifications were to prevent or prepare for future flooding. The other 10% of the extensions were built to facilitate aging family members. 50% of the housing extensions were

built by contractors, while another 50% were constructed by the owners with the possible help of neighbors.

6. Formal characteristics:

90% of the houses were built within 2 or 3 adjacent or connected gabled roofs. Only 5% were built under 1 gabled roof, and another 5% have more than 4 interconnected roofs. 90% of the houses' roofs are relatively low, compared to much higher roofs normally founded in the central region of the country. The most common style of roof involved it being slanted to around a 15-degree angle, which can be perceived as relatively flat compared to the 35- to 40-degree angle of traditional Thai houses founded in the central and western provinces such as Ayudhaya, Suphanburi, Petchburi and Ratchaburi. While roofing marks the important characteristics of houses in the region, their spatial configurations are marked by an equal distribution of both open "chan" and closed-off rooms. On the upper level, 70% of the houses are organized around or along open "chan." Thus, open or partly open "chan" is still perceived as an important characteristic of houses in all three provinces.

7. Requirements and specifications:

At first, more than 80% of the locals preferred something completely new and different from their traditional or vernacular dwellings. Yet, after being presented with more factual information about the different types of houses, the locals began to understand their own socio-cultural and environmental specificities. As a result, most locals have begun to understand that regional characteristics simply mean being rooted to their local conditions while allowing them to adapt to changing demands. Moreover, when pressed with the issues of habits and activities as well as climate, the same group of locals expressed great concern that their houses must be climatically comfortable in terms of natural ventilation to accommodate specific domestic activities similar to their old houses. From the questionnaires as well as focus-group meetings, the locals concluded that they preferred something adaptive rather than their traditional vernacular houses or completely modern houses (Panin, 2017). Thus, the current

problems of vernacular housing, integrated with foreseeable future needs from all 113 people from 31 houses within 9 villages, and the major requirements can be concluded as follows:

Physical Characteristics

- 7.1 The house should neither look like traditional Thai houses nor look like modern mass-produced houses found in the city, meaning they should express regional and vernacular characters while looking "up-to-date." They should also not feel alien from their neighbors.
- 7.2 The house should retain the two major regional characteristics of flat gabled roofs and open "chan."

Spatial Organization

- 7.3 Familial, communal, or multipurpose spaces can be organized both as open "chan" or enclosed rooms but should connect all private spaces to allow social connections.
- 7.4 Private bedrooms should all be seen from communal spaces and never be hidden from view.
- 7.5 Bathrooms and kitchens are preferred within the house, not as separate quarters or buildings.
- 7.6 Most rooms should allow natural sunlight, either direct or indirect, to avoid the use of electrical lights during the day.

Extensions

- 7.7 The house should first and foremost accommodate future extensions or modifications, from 1 to 4 bedrooms. Two types of extensions are called for: that of separate living quarters to allow more privacy, and that of adjoined rooms to create a unified body for the house. Yet, both types should promote social interactions within the family.

Ventilation

- 7.8 The house should allow natural ventilation for every single space and room, while being well protected from

heavy rains and winds (90% of families do not want air-conditioning).

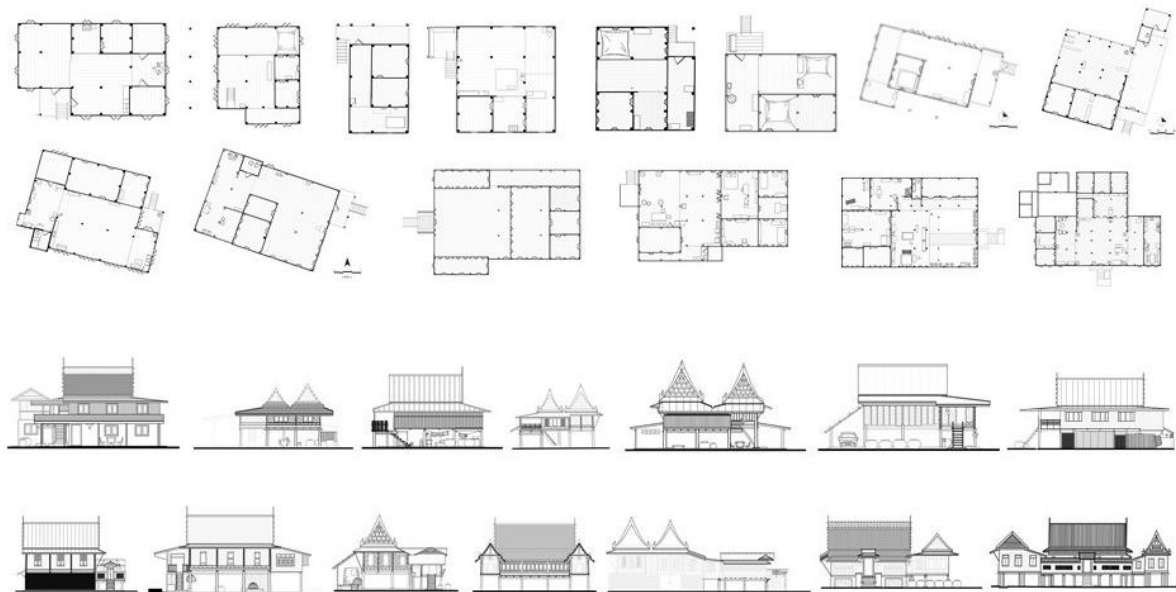
Construction and Budget

7.9 The house should be easily constructed, either by contractors or by owners, with partial help from others.

7.10 The house's average construction budget should be between 300,000-1,000,000 baht, with maximized extensions of 4-5 bedrooms amounting to approximately 3,000,000 baht.

Figure 1

Houses from field surveys



PROPOSED DESIGN PROTOTYPES

The goal of these design proposals is also to integrate knowledge from the studies and focus groups with existing literature in order to propose various possibilities for building and rebuilding houses; these houses will then be able to adapt to and withstand future socio-cultural and environmental changes. Not only will the vernacular living and building situations be considered, but industrial possibilities for the creation of vernacular-built environments will also be a key component of the research.

Following the preceding steps from the studies, design solution proposals have been developed. Data about current needs as well as expected future transformations were collected from participating focus groups within the three provinces. With all 10 major requirements in

mind, design proposals were developed by architects working closely with local people, whose inputs were taken into account at every step to ensure actual acceptance by the locals. All design proposals were evaluated and re-evaluated by the locals through questionnaires, interviews, and focus group meetings before each solution could be concluded.

After various stages of work, designs were created following the previously stated architectural design process. The results are house A and B, each with 3 stages of expansion.

House A-1 (Figure 1) accommodates 1-2 people, while house A-2 (Figure 2) has been extended to accommodate 3-4 family members, and house A-3 (Figure 3) is expected to allow a maximum 5-8 people; accommodating 10 people would be possible, but it is rare for families within the region to be this large.

House B-1 (Figure 4) accommodates 1-2 people, while house B-2 (Figure 5) has been extended to accommodate 3-4 family members, and house B-3 (Figure 6) is expected to allow a maximum 5-8 people; up to 10 people is also possible with this design.

Both houses A and B were created with similar sets of requirements, thus representing a similar approach to design and construction. The differences lie in their modes of extension. While house A allows extensions into additional sets of

rooms which are distinctly separate from the original house, house B employs extensions that are closely joined to and aligned with the original rooms. As a result, houses A-2 and A-3 can be perceived as having two or three separate living quarters within the same house compound, while houses B-2 and B-3 would still be seen as a singular compact housing compound. These two types of spatial extensions match the different types of family relationships that call for different housing configurations.

Figure 2

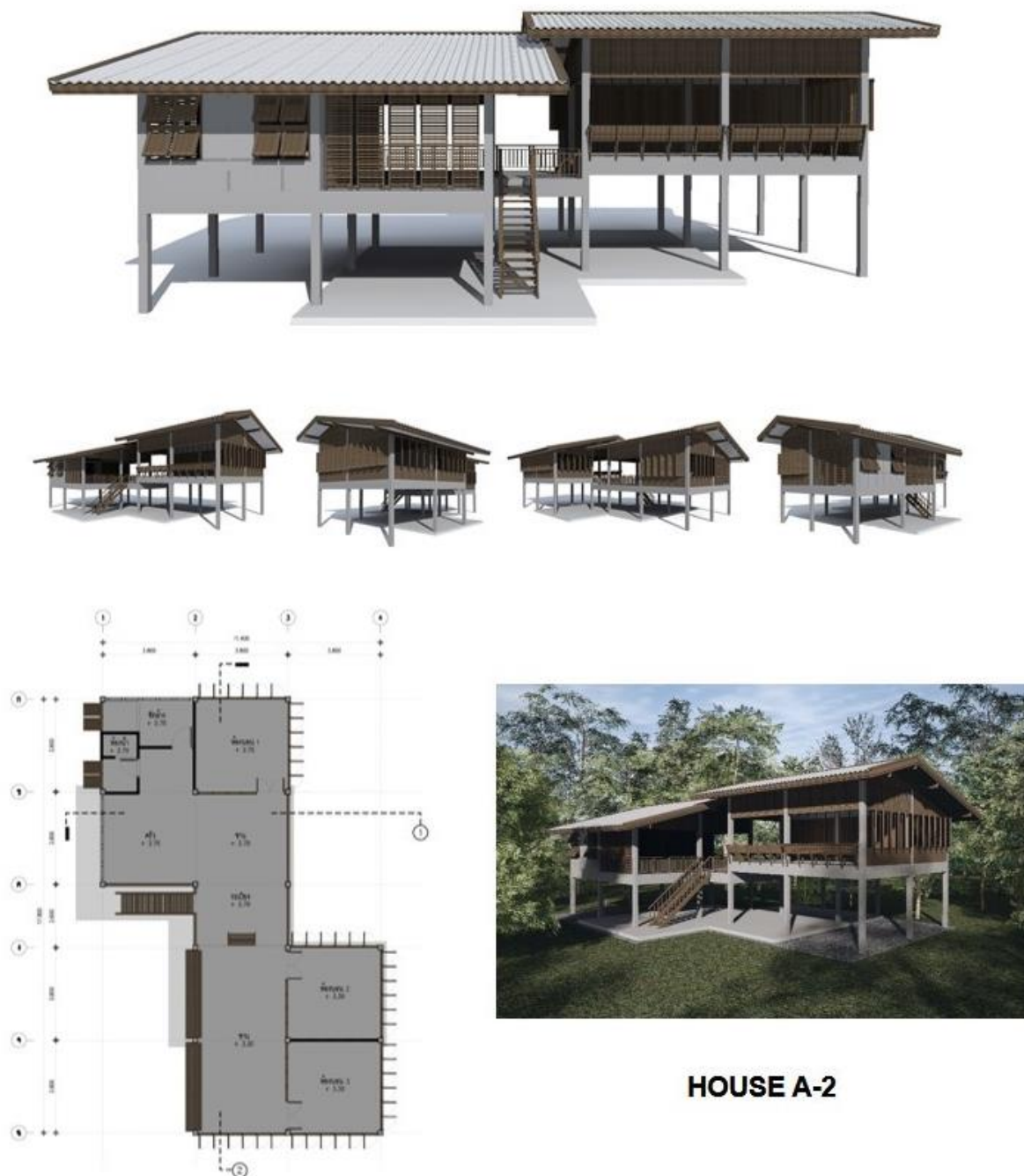
House A-1



HOUSE A-1

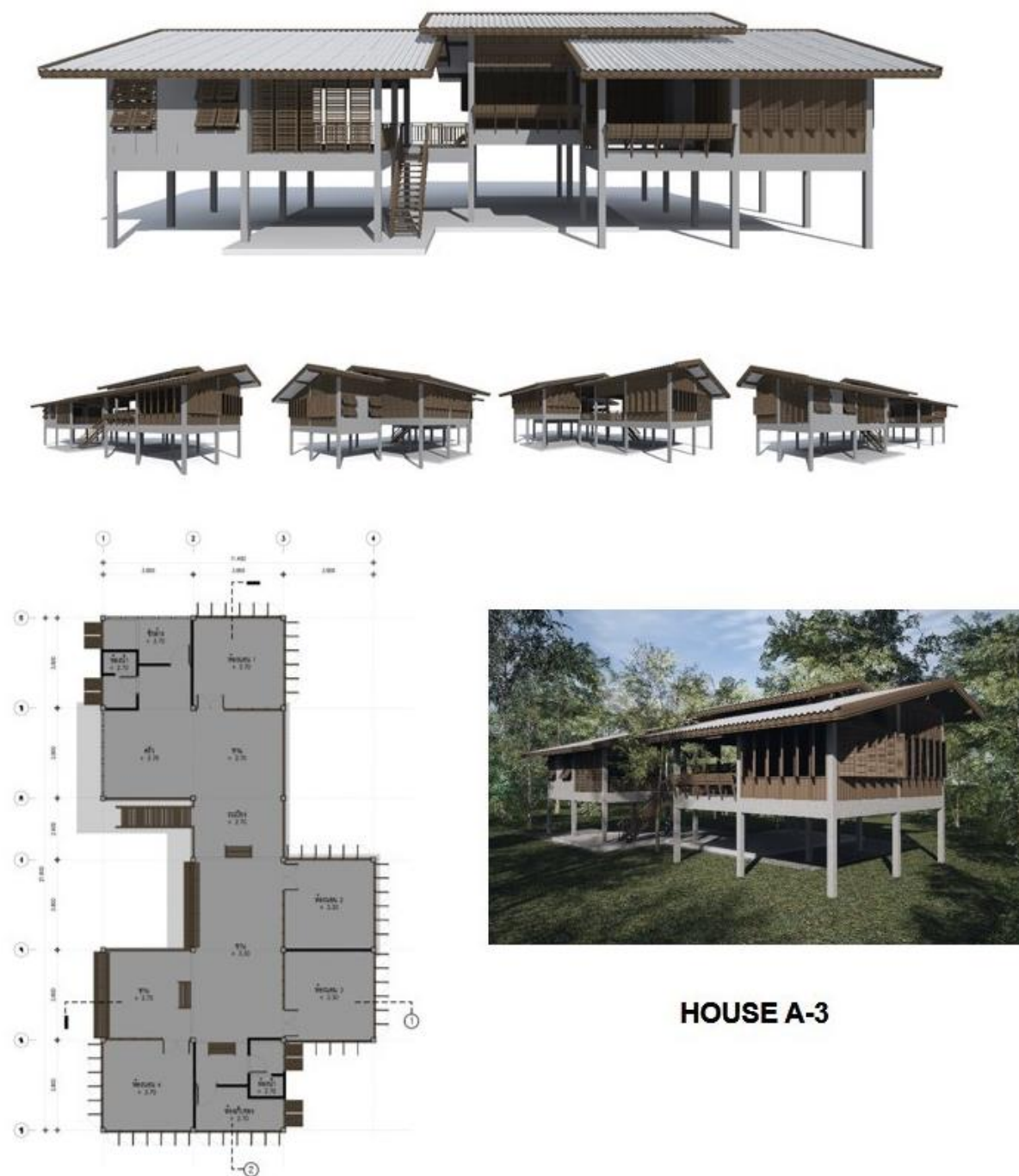
Figure 3

House A-2



HOUSE A-2

Figure 4
House A-3



HOUSE A-3

Figure 5

House B-1



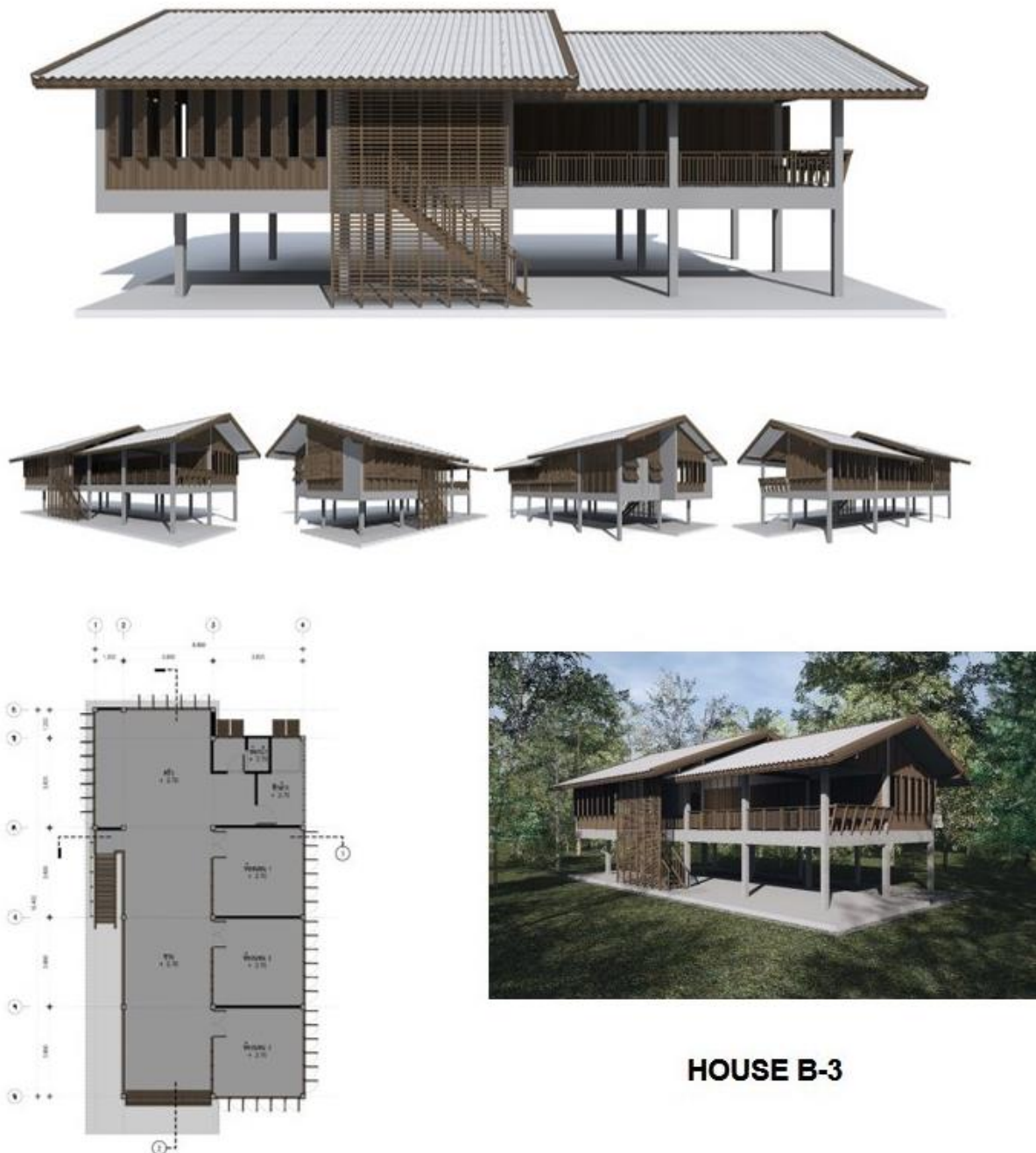
HOUSE B-1

Figure 6
House B-2



Figure 7

House B-3



HOUSE B-3

CONCLUSIONS: LIVING AND SHARING

The proposed design solutions, while differing in specific details, all demonstrate the idea of collective living and shared spaces that are primary concerns for local people. Although answering the question of how a family shares a

house is not too challenging no matter how diverse the lives of family members are, living together entails certain commitment to sharing the living space (Panin, 2017). This does not mean that publicness should be emphasized over privacy or vice versa; the questions that usually predicate the design of a house are to what extent can each particular need be fulfilled

and to what extent should each inhabitant conform to collective living standards within the family. As the goal of this study was not to find completely new solutions, the first task of this research was to understand not only the physical requirements but also the socio-cultural specificities within the micro scale of the family. Only when such understanding is established can the design begin to translate both the individual and collective needs into a unique spatial and formal configuration.

Integrating ideas from existing literature with data from field surveys and focus groups, the first solution that seemed natural to the locals in the selected region was to envision a housing compound consisting of multiple living quarters that are simultaneously separated and joined together. Each space shares a set of entrance stairs leading up to an upper level that acts as both the unifying and segregating element of the housing; it is a point of entry that everyone shares before going to their separate dwellings (Inpuntung, 2002). Elevating the living areas from the ground has been a staple method for Thai people to organize the hierarchical order of diverse domestic activities. In these design proposals, while service areas can be tucked underneath the terrace level, the main living areas are raised on a platform joined by an extended terrace called a “chan”. The terrace or “chan” becomes either a place to join with other family members or a point of departure; both the entrance and the terrace are simply transitional elements that allow the multiple spaces to coexist as one. It is also essential in the design of vernacular houses for all of the separate spaces to not be walled in; there should exist rooms without walls, or rooms with walls that accommodate occupations differing from what was typical in a traditional enclosure. The spaces enveloped by these walls are not limited to the public or social parts of the house. While it is true that there are private spaces in the house that are walled in on four sides, others are loosely demarcated by the “chan” terrace, creating a sense of collective co-existence (Sthapitanonda, 2017).

These design proposals aim to create an understanding of how different settings can be interconnected, along with developing both terminology and concepts to illustrate this. Design, in this sense, would depend on insights

from situational similarities and differences, for it is based on spatial relationships and connectedness rather than the form of the objects. In this sense, planning and room definition in a traditional sense are given alternatives, resulting in more fluid, yet well-defined, spaces.

These design proposals are not stylized in a sense that signifies style or authorship; they reintroduce vernacular values as they are intended to define and redefine everyday affairs into unique settings. This means the house also anticipates changes. It is a place that is designed for particular needs, yet allows possible freedom of transformation.

The goal of these design proposals is to offer alternative visions that answer to current demands while maintaining the characteristics relevant to each region’s specific way of life. The prototypes mainly focus on the available physical and material conditions and offer locals the possibility of recreating their own vernacular architecture. However, such designs are also a paradox. Because the design proposals are currently hypothetical, it is difficult to determine their validity. The study concludes by leading to another set of questions. How can research in this field re-introduce local citizens to the value of their own vernacular culture? In addition to offering locals proposed design solutions of their dwellings, perhaps what must be reintroduced is the disappearing traditional and vernacular cultures, as well as knowledge about the ways in which these cultures can be adapted and developed alongside a rapidly transforming global culture. How could we re-introduce this fundamental knowledge and training to re-familiarize the locals with their fading building cultures? In addition to re-constructing the vernacular house, perhaps the ultimate goal of research in this field should be to re-construct the vernacular values, knowledge and craftsmanship that may help generate sustainable re-construction of the vernacular environment for the future.

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