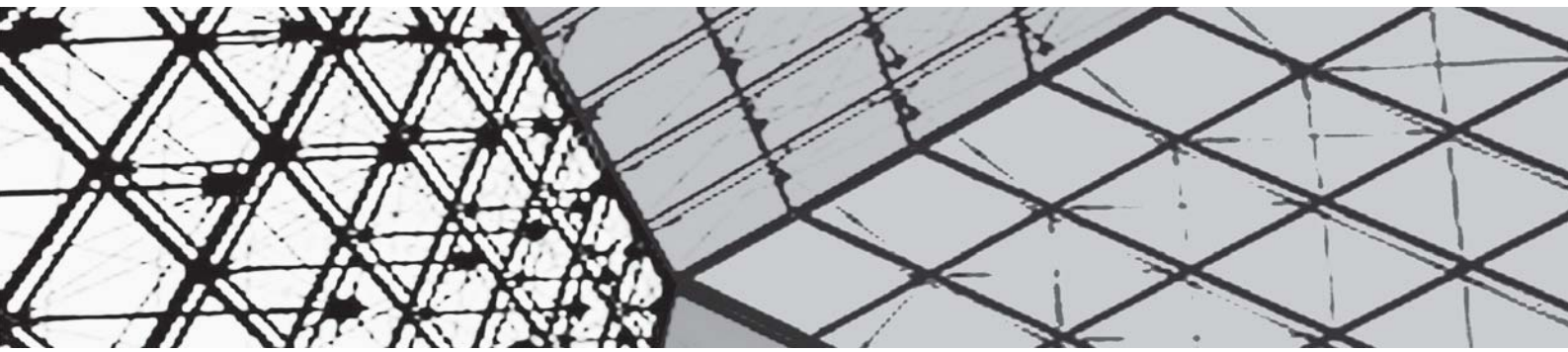
Extending the House / Extending the Dream: Modifications to Government-built Housing in Bangkok Metropolitan Region

ต่อเติมบ้าน / เติมเต็มฝัน: การต่อเติมบ้านพักอาศัยในโครงการของรัฐ ในเขตกรุงเทพมหานคร และปริมณฑล

Boonanan Natakun and David O'Brien



Extending the House / Extending the Dream: Modifications to Government-built Housing in Bangkok Metropolitan Region
ต่อเติมบ้าน / เติมเต็มฝัน: การต่อเติมบ้านพักอาศัยในโครงการของรัฐในเขตกรุงเทพมหานคร และปริมณฑล

Boonanan Natakun[1] **and David O'Brien**[2]

[1] Faculty of Architecture and Planning, Thammasat University, Pathumthani 12121, Thailand,
E-mail: boonanan_n@yahoo.com

[2] Faculty of Architecture, Building and Planning, The University of Melbourne, Australia,
E-mail: djobrien@unimelb.edu.au

Abstract

This paper analyses user initiated modifications at one Baan Ua-arthorn housing estate located at Rangsit Klong 3 in Prathum Thani Province in the outskirts of Bangkok. By analysing a series of architectural drawings and interviews with the residents, results show that housing modifications are driven by a variety of factors – some of which are pragmatic in their nature while others can be about recreating a new expression of their personal preferences. The paper suggests that these modifications play an important role in improving the living standard of the residents and the community as a whole. It suggests that new government-built housing estates should be designed to enable these types of modifications and by doing so the capacity of the residents to create a harmonious neighbourhood in response to their incremental needs will be enhanced.

บทคัดย่อ

บทความวิจัยนี้ได้วิเคราะห์การต่อเติมบ้านพักอาศัยหนึ่งในโครงการบ้านเอื้ออาทร โครงการนี้ตั้งอยู่ที่บริเวณรังสิตคลอง 3 จังหวัดปทุมธานี ผลจากจากวิเคราะห์ข้อมูลจากการบันทึกโดยการเขียนแบบร่างโครงสร้างเดิม โครงสร้างใหม่ที่ถูกต่อเติม และการสัมภาษณ์ผู้พักอาศัยในโครงการ ได้สะท้อนถึงสาเหตุหลายองค์ประกอบที่นำไปสู่การต่อเติมบ้านพักอาศัย บางส่วนเกิดจากความต้องการพื้นฐานซึ่งต้องการขยายพื้นที่เพิ่มเติมเพื่อตอบสนองความต้องการที่เพิ่มขึ้นของผู้อยู่อาศัย ขณะที่บางส่วนแสดงออกถึงความพึงพอใจในรูปแบบการต่อเติมบ้านพักอาศัย บทความนี้ชี้ให้เห็นว่าการต่อเติมบ้านและที่พักอาศัยมีความสำคัญในการยกระดับมาตรฐานการอยู่อาศัยระดับบ้านพักอาศัย รวมไปถึงระดับชุมชน และจากการศึกษานี้รูปแบบพื้นฐานของการต่อเติมบ้านพักอาศัยมีเป้าหมายเพื่อช่วยในการพัฒนาการออกแบบบ้านพักอาศัยในโครงการของรัฐในอนาคตที่สามารถตอบสนองความต้องการพื้นฐานของผู้อยู่อาศัยได้ดีขึ้นตลอดจนส่งเสริมรูปแบบการต่อเติมที่อยู่อาศัยอย่างเหมาะสมที่สามารถตอบสนองความต้องการที่เพิ่มขึ้นของผู้อยู่อาศัยในอนาคต

Keywords

House Modification (การต่อเติมบ้านพักอาศัย)
Government-built Housing (บ้านพักอาศัยในโครงการของรัฐ)
Bangkok Metropolitan Region (กรุงเทพมหานครและปริมณฑล)
Patterns of Modification (รูปแบบการต่อเติมบ้านพักอาศัย)
Aspirations of Residents (ความต้องการของผู้อยู่อาศัย)

1. Introduction

1.1 Background

Homelessness is a significant problem worldwide and increasingly so in rapidly urbanizing countries such as Thailand. The Royal Thai Government has actively sought to alleviate this problem by addressing basic needs of the urban poor through ambitious initiatives such as *Baan Ua-arthorn* and *Baan Mankong* housing schemes (Boonyabancha, 2005). Both initiatives have been implemented for over six years with the completion and occupation of thousands of houses. While the houses themselves are modest, they enable residents to obtain long-term mortgages and the capacity to secure a place to call their own. New communities have emerged and a sense of belonging and ownership has developed. Coupled with a sense of ownership comes the capacity to remodel interior and exterior spaces to suit each individual family and to reflect their preference and identities. In most cases this process involves a series of modifications to the basic structure and simple house design to suit the specific requirements of the residents.

This process of self-help modifications in government-built housing has occurred in many developing countries (Tipple, 1999). This paper investigates government financed, designed and built housing in Bangkok, Thailand to identify if and how the residents follow this trend of self-help modification. One of the Thai government policies, as stated in 2003, aimed to build 300,000 low-cost housing units by 2008 (Sanandang, 2005). This is an ambitious target and some efforts have been made to reach this total with the construction of Baan Ua-arthorn housing projects throughout Thailand. This paper will analyse one of these Baan Ua-arthorn housing projects on the outskirts of Bangkok and discuss how people modify their houses, the common patterns of modification and then reflect on the value of these modifications.

1.2 Study Objectives

Baan Ua-arthorn detached houses have been designed as simple and affordable structures. However this simplicity lends itself to further user initiated modifications so residents are able to meet their own individual needs. This type of user modification occurs outside the control of the authorities and risks being seen as dangerous, inappropriate or degrading the value of the asset. Therefore the governing authority, in the case the National Housing Authority (NHA), has attempted to prevent problems via the regulatory processes that control house modification. Nevertheless, these regulations have been circumvented by many of the residents and the majority of the houses in the project have undergone varying degrees of change.

This paper will explore the ways in which residents undertake modifications and will identify common patterns of modification in order to understand the reasons and incentives driving them.

2. Methods of Study

2.1 Research Method

Baan Ua-arthorn houses have been selected as case studies in this research as they are a common example of the government-built housing constructed throughout Thailand. They have been built with mass production techniques and therefore there are a number of houses to be investigated. Moreover, as Baan Ua-arthorn houses have been complete for over six years there has been ample time for residents to modify their houses. For the purposes of this paper five houses have been selected for analysis. This is not a large sample – the authors have investigated a far broader sample in their overall research. However the sample of five discussed here is adequate to outline the main themes discussed in this paper.

2.2 Data Collection Tactics

Five research tactics have been employed to elicit the data used in this research and they have been derived from the text 'Architectural Research Methods' (Groat & Wang, 2002). Firstly, *Morphological mapping* allowed the researchers to understand the architectural characteristics within their specific contexts. This paper has mapped selected Baan Ua-arthorn houses and their site plans. Analysis of these drawings has enabled comparisons to be made between original and modified houses.

Secondly, *Physical Trace Analysis* enabled the researchers to understand how space is used. In this case the researchers studied the traces left behind by the residents – the links between common objects and the spaces they inhabit. One of the advantages of this technique is that it does not impact on the people and their behaviour creating the trace (Kellehear, 1993).

Thirdly, *Observing Environmental Behaviour* is a technique used to investigate the relationship between human activities and physical settings (Zeisel, 2006). This tactic helped the researchers identify the effects of modified houses on their users. This also helped define how residents live and behave in their modified houses and allowed the researchers to explore patterns of user behaviour and the links with the resultant patterns of modification.

Fourthly, *Interviews* were used to explore 'what people think, feel, do, know, believe, and expect (Zeisel, 2006). Three sets of interview questions were used in this paper. The first set was designed to understand general 'non-personal' background information about residents. This set introduced the study and sought resident's general ideas about their houses. The second set identified and recorded a number of architectural features that residents modified or are in process of modifying. This set also asked residents to make a series of value judgments comparing their own houses with nearby modified houses. This helped the researchers understand the rationale behind the factors that drove residents to modify their houses. The final set of interviews was undertaken to identify the resident's cultural background, profession, social status, monthly income and lifestyle choices.

Finally *Archival Research* Tactics helped retrieve documents such as an original site plans, plot designs and building construction techniques. These were obtained from Thailand's National Housing Authority (NHA) (2003) and allowed the researchers to analyze and make a comparison between original housing design and the modifications identified during the research.

3. Baan Ua-arthorn Housing

3.1 Estate Planning

Baan Ua-arthorn estate in Rangsit klong 3 is the first Baan Ua-arthorn project and was initiated in 2003. It provides 477 housing units, community facilities such as a service centre, public library, community childcare facilities, communal park, playground and sport fields. All these information were retrieved by the researchers from the community centre of the case study in 2007**.** The basic infrastructure is of high quality with the main road built with reinforced concrete roads twelve metres wide and minor roads six metres wide. Footpaths are concrete and two metres wide. Electricity, water and sewerage is provided to all houses in the estate.

3.2 Plot and House Design

Only one type of house has been designed and built at this estate. Every plot is 21 square *wa* (84 square metres) and every house is 48 square metres (28 and 20 square metres for the ground and the first floor respectively). Figure 1 shows the ground and the first floor plans. Figure 2 shows

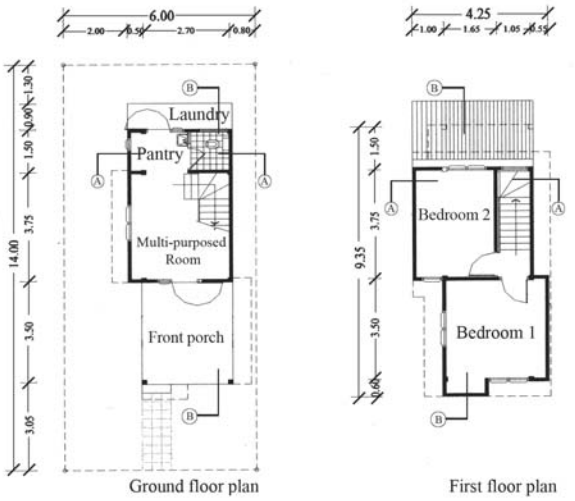


Figure 1. Typical floor plan of Baan Ua-arthorn house.

Figure 2. Typical four elevations of typical Baan Ua-arthorn house.

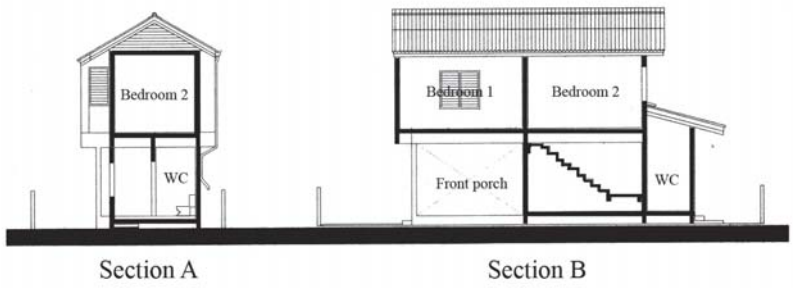


Figure 3. Section A & B of typical Baan Ua-arthorn house.

Source: Figure 1-3 retrieved from the Thai National Housing Authority at its local office in Pathumthani province in 2007 (modified by the researchers).

four elevations of the houses, and Figure 3 shows the cross-sections.

Baan Ua-arthorn houses differ from many other contemporary houses in Bangkok as there is a higher proportion of mass-produced components. Whereas many other developments include concrete posts and floor panels that are poured on-site, Baan Ua-arthorn houses have these components built in a factory. The front façade uses fibre-cement sheets–cut to look like traditional timber boards–produced under the *Sherra* brand-name. Windows and doorframes are also prefabricated, as are all internal fittings such as bathroom fittings, door and window hardware and interior finishes. The NHA believed that this strategy minimized both the cost of construction and the time taken to construct each development. A standard of housing design of Baan Ua-arthorn housing project is shown in Figure 4.

Baan Ua-arthorn houses display some shared characteristics with many other sub-urban housing types sold by developers catering to the private housing market. While Baan Ua-arthorn houses are more modest, the general market prefers white painted masonry houses with prominent roof forms, portico entries and mass produced items such as glazed windows, decorative doors and perimeter fencing (Figure 5).

(a) (b)

Figure 4. A typical Baan Ua-arthorn detached house as built; (a) front view (b) side view.

Source: http://www.tarad.com/home04/img-lib spd_2007071794829_b.jpg

Figure 5. An example of common sub-urban housing type in Thailand.

4. House Modification

Before outlining the modifications that have taken place, it is important to note that the NHA local authority has attempted to control the extent of resident initiated modifications with a series of regulations. There are four key regulations that are worth noting. Firstly the regulations prohibit permanent structures that extend the eaves of the house, secondly they require a half metre 'non-construction' zone between the house and any fence, thirdly they restrict fences to a height less than 1.5 metres, and finally they prohibit any extension or modification to the first floor.

This section demonstrates that many residents have circumvented these regulations and the majority of the houses in the estate have undergone varying degrees of change. Regulations such as these are difficult to enforce and the relevant authorities show little enthusiasm in policing them. Given that the residents have been purchasing the houses with subsidized loans over a long period the regulations had offered some control over the individual houses, the residents and the related legal contracts. However as time passes and residents gain greater equity in their houses the authorities have tended to ignore the illegality of these modifications.

4.1 Methods for Classifying Modifications

Analysis of each house in this estate suggests that there are six major types of house modification. These types are outlined in Table 1.

Table 1. Six major types of modifications.

Type 1	Paving around the perimeter of the house
Type 2	Improved fencing
Type 3	Extended eaves, roofs and awnings (temporary or/and permanent)
Type 4	Enclosed front porch
Type 5	Extended kitchen
Type 6	Extending rooms with new walls

(a) (b) (c)

Figure 6. Three categories of house modification classified based on six major types of modification; (a) Minimal or no modification (b) Limited modification (c) Multiple modification.

However these patterns of modification have not been undertaken in a uniform manner. Some houses have not undergone any modification, some have had minimal modification while others have had extensive modifications. For analytical purposes the houses have been classified into three categories (Figure 6).

- *Minimal or no modification* (having 0-1 out of six modifying types)
- *Limited modification* (having 2-4 out of six modifying types)
- *Multiple modification* (having 5-6 out of six modifying types)

4.2 Five Case-study Houses

It is not possible to closely study all houses in this estate, and the authors have closely studied 25% of the houses in the estate. For the purposes of this paper five houses have been selected to show a cross-section of the types of modifications commonly found. Figure 7 shows the locations of these five houses and reveals that these houses are evenly distributed – both spatially in the estate as well as proportionally representing each of the three different categories of modification within the estate.

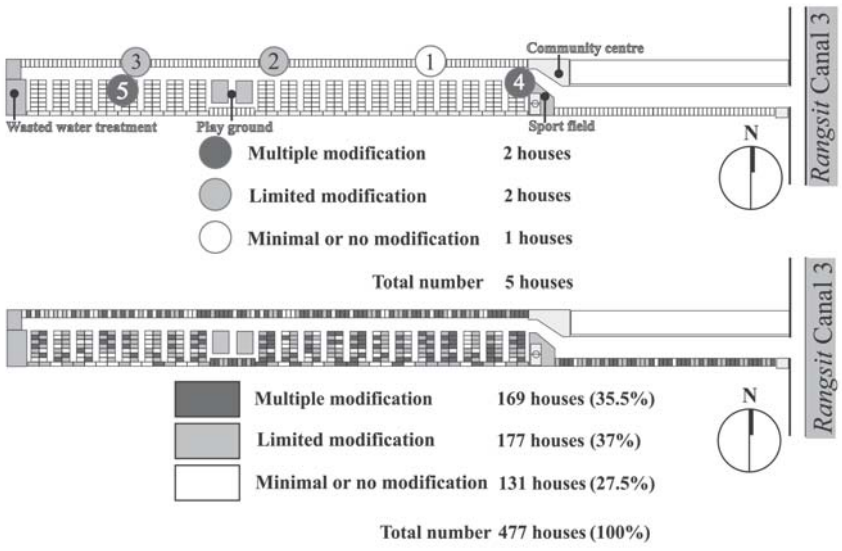


Figure 7. Five selected houses' location and the three categories of modification.

House 1 is an example of the houses with *minimal or no modification* while Houses 2 and 3 exemplify those with *limited modification,* and Houses 4 and 5 exemplify those with *multiple modification*. Figure 7 shows the location of five case study houses in the community lay-out plan.

House 1 – Minimal or No Modification

Two adults have lived in this house for three and a half years, and the only modification has been to pave the bare earth in the front yard. This space is now more liveable and 'convenient' to use the owner's words. The resident hired a professional contractor who charged 1,500 Baht (approximately US$ 50).

The residents propose to eventually enclose the original front porch – to form a living room – and build a Thai styled kitchen, which is usually outside to dissipate the smoke and strong aromas, at the rear of the house. They suggest that their motive is to make their house look like other modified house.

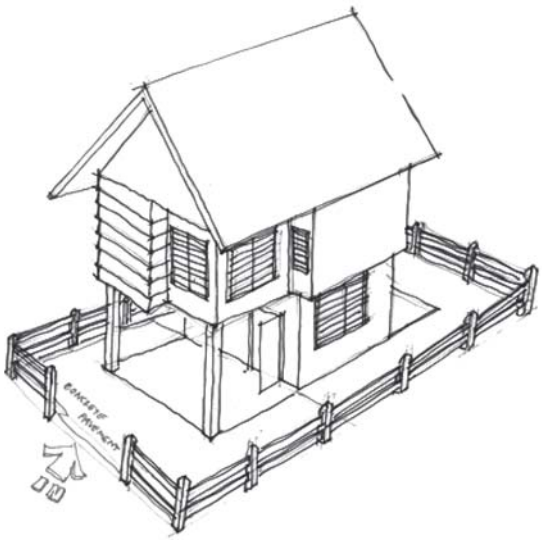


Figure 8. Axonometric of House 1.

Figure 8 shows the sketch of House no.1 to be analysed. Figure 9 and 10 show the existing condition of the house while Figure 11 shows the mapping to understand which architectural aspects of the house have been modified.

Figure 9. Front view of House 1.

Figure 10. A cooking and laundry area at the rear of the house.

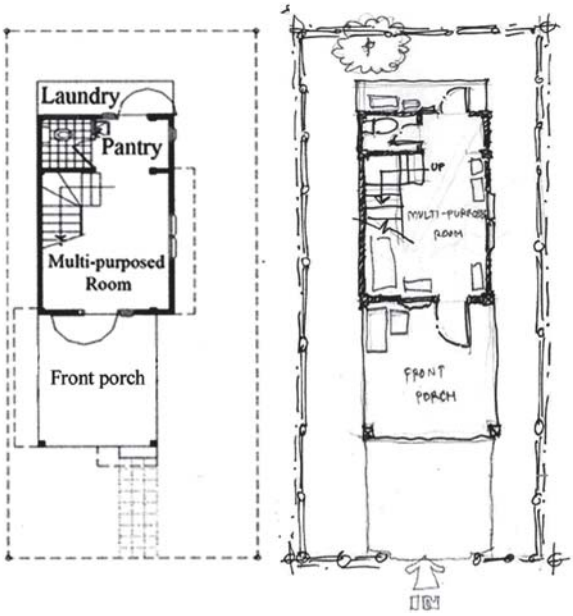


Figure 11. Floor plan of House 1.

Outcome: *Concrete pavement (type 1) in front of the house.*

House 2 – Limited Modification

Figure 12. Axonometric of House 2.

The residents (three adults) have lived in the house for two and a half years during which time they have undertaken three distinct modifications. Figure 12 shows the sketch of House no. 2. The house is now used as a private childcare centre. Initially a new open-air kitchen was constructed at the side of the house (Figure 13). The kitchen was paved with concrete and covered with awnings, and the rear area of the house became the laundry (Figure 14).

The second, and biggest modification took place when the resident opened a private childcare centre at home. This included a tiled porch and front yard with a fabric roof to make a semi enclosed children's play area (Figure 15).

The most recent modifications include additional awnings at the left side of the house. This modification, requested by the resident's son is so he can run a computer repair shop from the front porch (Figure 16).

Figure 17 shows the mapping to understand which architectural aspects of the house have been modified.

Figure 13. Open-air kitchen.

Figure 14. Concrete pavements at the rear of the house.

Figure 15. The area, covered by fabric awnings, front porch used for raising children.

Figure 16. A renovated front porch becoming a working area of computer repair shop.

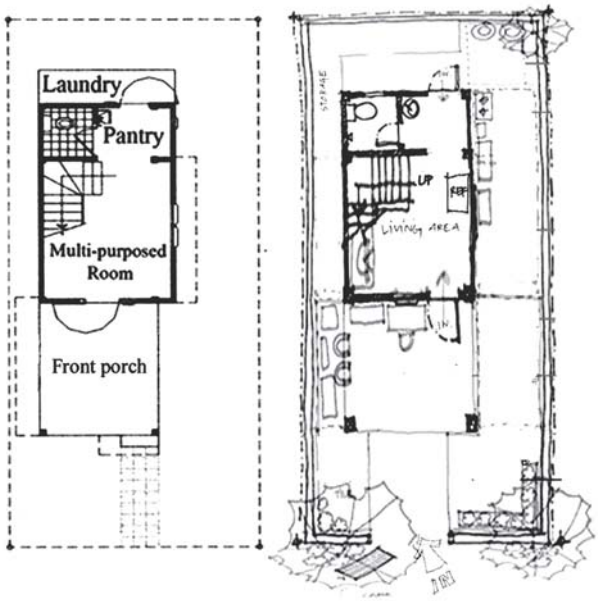


Figure 17. Floor plan of House 2.

Outcome: *Concrete and tiled pavement (type 1), improved fence by planting vegetation (type 2), extended awnings at the right side of the house (type 3)*

House 3 – Limited Modification

Figure 18. Axonometric of House 3.

Two adults and one young child have lived in this house for nearly three years and they wish to improve the house to help care for their son. Figure 18 shows the sketch of House no. 3. They have enclosed the front porch to make a living room (Figure 19), paved the front yard, extended the bathroom and built a Thai kitchen at the rear (Figure 20), extended the concrete fences and installed new steel gates (Figure 21). The quality of these modifications is high and includes various types of decoration.

Figure 19. A new multi-purpose room.

Figure 20. A new Thai styled kitchen.

Figure 21. Masonry fences with an elaborate steel gates.

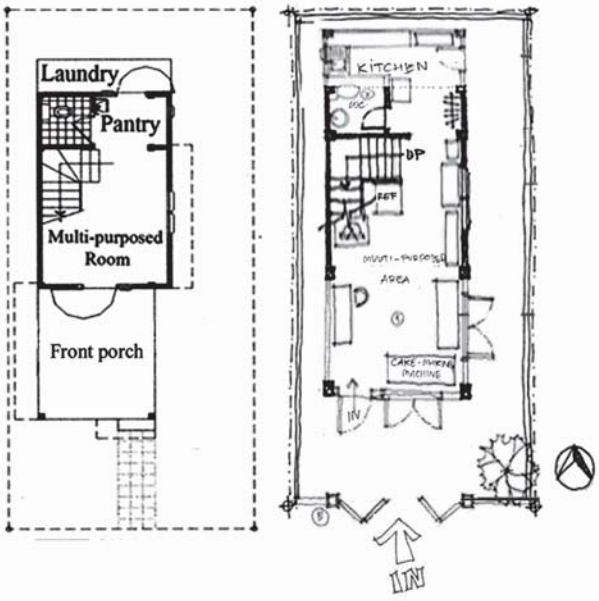


Figure 22. Floor plan of House 3.

***Outcome**: Concrete pavement (type 1), new masonry fence (type 2), enclosed front porch being a new living room (type 4), new Thai styled kitchen (type 5).*

During the interview, the residents showed their interest in improving security. Windows have been bared and the front fence is secure. The residents have noted that this is common practice in other parts of Bangkok. The residents also plan to undertake further modification and want to paint the fences and build additional eaves around the house perimeter. They claim it is too hot living inside the house during daytime and want more habitable space. The residents claim this is a common strategy for many residents in the estate.

Figure 22 shows the mapping to understand which architectural aspects of the house have been modified.

House 4 – Multiple Modification

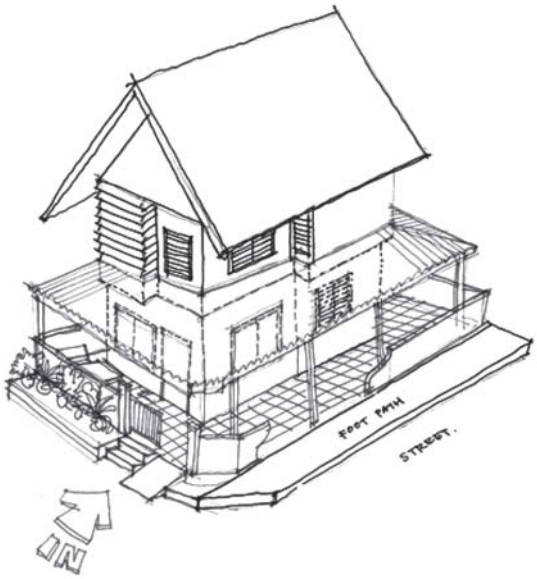


Figure 23. Axonometric of House 4.

Two adults and one baby have lived in House 4. They have lived in the house for four years and eleven months. Only set of modifications took place in the house three months ago before the interview taken place. Figure 23 shows the sketch of House no. 4.

Figure 24. The next door house of House 4 being imitated by the residents of House 4.

Figure 25. A new living room (merged with original front porch).

Figure 26. A new front porch extended.

Figure 27. A new undercover area at the side of the house.

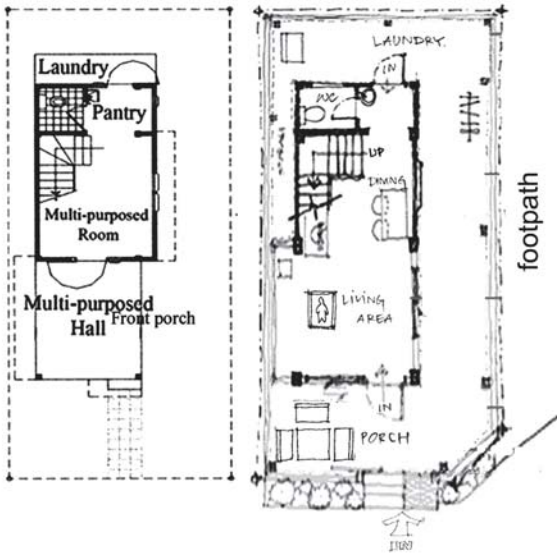


Figure 28. Floor plan of House 4.

***Outcome**: Pavement (type 1), improved fence (type 2), extended roofs (type 3), enclosed front porch (type 4), extended room (type 6).*

The female resident has been greatly inspired by her next-door neighbour who has undercover areas all around the perimeter of the house (Figure 24). She has now built awnings around her house, enclosed her front porch (Figure 25), tiled the floors and built a new masonry fence around the house (Figure 26). The quality of all modifications is high. Outdoor furniture has been bought and there is parking space for the new motor-cycle and a place for drying clothes (Figure 27).

Figure 28 shows the mapping to under-stand which architectural aspects of the house have been modified.

House 5 - Multiple Modification

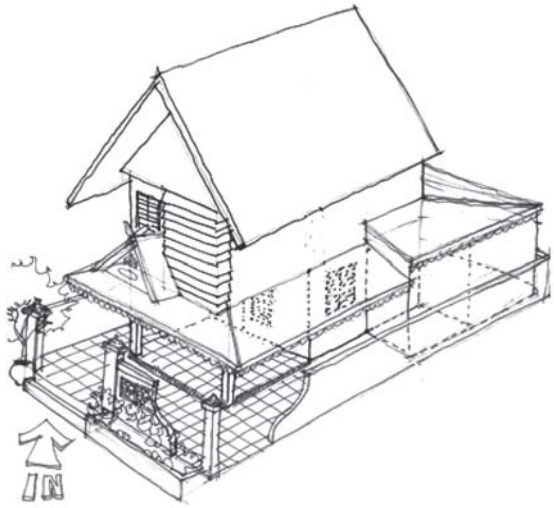


Figure 29. Axonometric of House 5.

The residents have lived in this house for two years and the modifications began even before they moved in to increase the living area to accommodate one adult and five children. The owner's brother helped her design the modifications – inspired in part by his visits to a number of tourist resorts throughout Thailand. Figure 29 shows the sketch of House no. 5

The first modifications included works to masonry fence (Figure 30), the front porch (Figure 31), an additional bathroom, a new Thai styled kitchen (Figure 32) and open-air storage spaces at the perimeter of the house (Figure 33). Again the quality of these modifications is high and the new eaves to the front porch are well made and include a gable decorated with a decorative *galare* (a decorative ornament used in traditional Thai houses traditionally from northern Thai regions) adorned with some Thai text 'wishing the residents wealth'. The eaves are lined with painted timber slats and decoratively carved timber and moldings run around the perimeter of the eaves. The front porch and yard have decorative tiles and the columns supporting the upper floor have been similarly tiled. The front porch area is well used throughout the day and evening. The perimeter of the house is surrounded by a well-tended garden. The kitchen is high quality with tiled floors, walls and benchtops. It includes running water, electric ceiling lights, gas cooking and a painted suspended ceiling.

The resident explained that the new kitchen and new bathroom were required as the previous spaces were not large enough for five children. The children can now play safely on the new flooring rather than the dirt that had previously surrounded the house.

During the second phase of modification the fishpond was removed and the resident's brother organised a new masonry fence around the house to improve security. The owner can now host her larger family on weekends. However the resident is thinking of enclosing her front porch which will inevitably reduce her capacity to host these family gatherings.

Figure 34 shows the mapping to understand which architectural aspects of the house have been modified.

Figure 30. Elaborate masonry fences.

Figure 31. An improved front porch.

Figure 32. Thai kitchen occupied all area of the house.

Figure 33. Open-air storages at the both sides at the rear of the house.

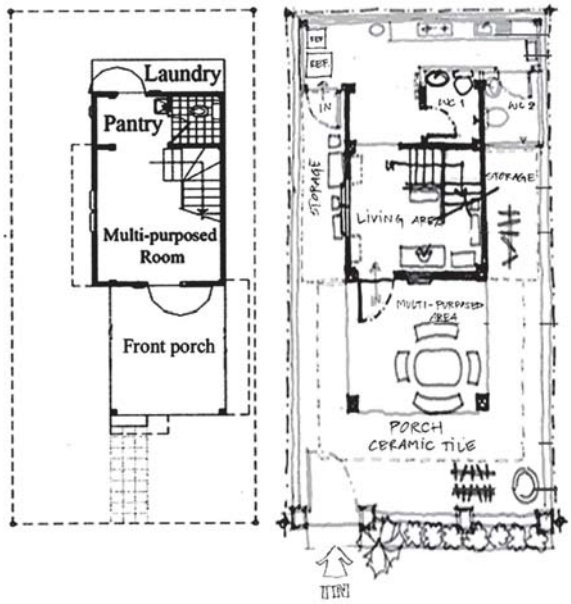


Figure 34. Floor plan of House 5.

***Outcome**: Tiled pavement (type 1) new masonry fences (type 2), extended roofs (type 3), new Thai styled kitchen (type 5), extended room (type 6)*

5. Patterns of Modification

Analysis shows that the resident's modifications at Baan Ua-arthorn closely follow a series of common 'patterns'. which have something in common with the 'patterns' described by Christopher Alexander in his seminal texts 'The Timeless Way of Building' (Alexander, 1979) and 'A Pattern Language – Towns, Buildings, Construction' (Alexander, 1977). In these text Alexander tries to find key architectural patterns in the environment that have special meaning and value. Alexander speaks of common living 'patterns' that emerge when traditional societies are directly responsibility for their own environment. This text was an attempt to understand those unquantifiable qualities that combine to make everyday cohesive patterns of living. Alexander claimed that the patterns discussed in 'The Timeless Way of Building' gave the user the power to create an infinite variety of buildings in the same way as our ordinary verbal language provides the capacity to create an infinite variety of sentences. He went on to argue that the patterns were necessary because languages had been broken down by modernism and were no longer shared.

Alexander's second text in the series, the seminal 'Pattern Language' (Alexander, 1977) had an ambitious agenda which attempted to set out both the spatial and tectonic language shared by architects and lay people to design buildings. He expanded on the notion of patterns theorised in his earlier text, claimed each pattern emerged as a response to a key problem occurring frequently within the built environment and that the language offered solutions based upon the close study of available precedents. Alexander used both text and images to describe how these problems might be commonly understood and addressed, and in the process tapped into the extensive culture of pattern making.

In this paper we set out to identify some of these key patterns that the residents of Baan Ua-arthorn are addressing in the modifications they are making to their houses. We have identified five of these patterns for further analysis.

5.1 Pattern 1 – Replacing Earth with Paving

The first and simplest pattern of house modification sees the residents replacing the bare earth around houses with paving. The owners typically use previously empty space around the house for a variety of purposes to improve their space for both functional and social activities. This makes the house larger, cleaner and reduces maintenance. The preferred area for paving is at the front of the houses to improve the entry space and at the rear to improve private spaces.

A number of materials used for this paving include concrete, oil-based mats and tiles. Bare concrete is the cheapest and least desirable whereas tiles require a concrete base and are expensive to purchase and install. Oil-based mats are inexpensive and can provide a clean surface. However all of these options provide a surface that is safer, enables residents and visitors a more comfortable space to socialise and increases the value of the property.

5.2 Pattern 2 – Increasing the Size of Fences

The second common pattern has residents replacing the original open fences with taller more dense fences. The original fences post and rail types built from reinforced concrete. While they demarcate the boundary of the site they are not secure – nor do they create much privacy. Residents throughout the estate claim to be concerned about their privacy and security and see new fences as a way to mediate the physical and social links between public and private space. Furthermore these new fences and elaborate gates become a tool for residents to add decorative elements to their house and reflect their social status. As such they take on an architectural meaning that extends their physical role to show the owner's status and aspirations (Rapoport, 1982).

However not all new fences are solid 'man-made' structures and it is common for vegetation to be used. This vegetation does not create a physical barrier in the same way as a steel fence but does allow the resident to create a visual screen that partially shields the front porch from the street. At the same time this vegetation fence in an inexpensive method to create a more pleasant environment within the estate (Figure 35).

Figure 35. A new fence with small green area.

5.3 Pattern 3 – Extending Undercover Outdoor Space

The residents commonly claim to extend their undercover outdoor space for pragmatic concerns such as creating space for activities such as cooking (Figure 36), laundry and vehicle parking (Figure 37). Many families run small businesses under the awnings surrounding their house.

However this space is also a popular location for socialising. It does not require residents to bring visitors inside the enclosed parts of the house (which is contrary to Thai customs) and acts as a buffer zone between exterior and interior space.

Figure 36. Additional awnings for supporting functional needs.

Figure 37. Additional roofs for supporting functional needs vehicle parking and clothes drying.

At the same time this space is within the semi-public domain where levels of privacy and security can be mediated with fences, vegetation and the placement of furniture. This type of space is also commonly the coolest part of the house and natural ventilation provides higher comfort levels.

5.4 Pattern 4 – Enlarging Indoor Spaces

Worldwide it is common for residents of government built housing estates to wish for additional living space – primarily in living, dining and kitchen areas (Yap, 1994). Not surprisingly larger families tend to have a stronger desire to extend living areas – particularly those families with young children. However many residents choose to extend their living areas to accommodate relatives who visit for short periods of time. Many others run businesses (small shops, making clothing and computer repairs are common). In many modified houses residents have used new enclosed front porch to make space for businesses activities.

The front and rear porch areas are the most common places to extend the house. The front frequently takes on commercial applications whereas the rear becomes domestic space for new kitchens and laundry spaces (Figure 38).

Figure 38. A new Thai styled kitchen at the rear of the house.

5.5 Pattern 5 – Additional Decoration

Perhaps the most complex pattern of modification is centred on the addition of decoration to the façade of the house. This pattern deals with latent meanings and values through the process of house modification. Two key considerations govern this pattern – firstly the residents need to identify themselves with a particular style and secondly their aim to demonstrate their social status. Rapoport (1982) states that decoration is a key tool used by residents to indicate status (Rapoport, 1982).

This desire of the residents to express themselves with decoration can lead to specific architectural forms such as the '*galare*' on house 5 or can be expressed through the choice of specific materials and fittings such as glazed tiles or western styled bathroom fittings.

Other expressions of decoration and status are not strictly architectural with many residents creating elaborate gardens with various types of plants and fixtures such as outdoor furniture. Symbols of nationhood and reverence for the monarchy are also popular (Figure 39).

Figure 39. An example of a well-tended garden decorated with flags supporting the monarchy.

6. Conclusion

The value of this study lies in its capacity to identify the ways residents modify the standardised house to suit needs not accommodated by the initial design team due to outside restraints. It was impossible for the original designers of the Baan Ua-arthorn estate to address all needs as they were required to house many people on a specified footprint and with a limited project budget. However we suggest that by identifying and understanding these modifications – and the needs that drive them – enables future developments of this type to be targeted more closely with the residents needs.

The patterns of modification identified here show that there is a great deal of complexity involved in the act of modification. Physical changes are linked closely with emotional needs which the resident is often only able to discuss in pragmatic terms. The rationale for improving fences and gates is often linked with improving safety by the residents but the manner in which it is done – the level of detail and decoration – also links with the resident's needs to demonstrate that they are improving the value of their house (and correspondingly their own value). This inter-connectiveness means that house modification remains a complex process where the resident's needs and desires are identified and represented in built form.

However this inter-connectiveness can be problematic if we wish to identify common patterns of house modification – and the need to identify common patterns is useful when we wish for a better understanding of how and why standardised houses change over a period of time. There remains a value in reducing the complexity to just five patterns and these patterns are useful if we wish to review this

type of housing with the view to improving it in the future. However the risk is that we might reduce the complexities at play – tensions between traditional and modern cultural expressions; tensions driving divisions between public and private space (outdoor and indoor living); tensions between simplicity and extravagance; tensions between types of well-being. These tensions are clearly at play in the Baan Ua-arthorn estate and the patterns identified here only go part of the way to understanding these and the phenomena of resident controlled modifications.

Finally, this paper demonstrates the importance of understanding architectural patterns and the motives of residents when architects design mass housing. As this type of housing and estate development is seen as a model to be replicated throughout Thailand, the common patterns identified here reveal the likely outcomes to be expected in future Baan Ua-arthorn estates. The key consideration is that residents will continue to modify their houses to improve their living conditions and meet their evolving needs.

References

Alexander, C. (1977). *A pattern language: Towns, buildings, construction*. New York: Oxford University Press.

Alexander, C. (1979). *The timeless way of building*. New York: Oxford University Press.

Boonyabancha, S. (2005). Baan Mankong: Going to scale with “slum” and squatter upgrading in Thailand. *Environment and Urbanization Sage, 17*(1), 21-46.

Groat, L., & Wang, D. (2002). *Architectural research methods.* New York: J. Wiley.

Kellehear, A. (1993). *The unobtrusive researcher: A guide to methods*. St Leonards, Australia: Allen & Unwin.

National Housing Authority (NHA). (2003). *Construction drawings of Baan Ua-arthorn*. Bangkok, Thailand: Author.

Rapoport, A. (1982). *The meaning of the built environment*. Beverly Hills, CA: Sage Publications.

Sanandang, K. (2005, October 8). A roof over every head. *Bangkok Post,* sector 1, p. 10.

Tipple, A. G. (1999). Transforming government-built housing: Lessons from developing countries. *Journal of Urban Technology, 6*(3), 17-35.

Yap, D. T. L. (1994). Patterns of spatial modification of houses of low to middle class income families in the Philippines. *Journal of Architecture, Planning and Environmental Engineering, 455,* 47-54.

Zeisel, J. (2006). *Inquiry by design: Tools for environment-behaviour research*. New York: W. W. Norton & Company.