

How small is too small? Bangkok (frugal) Living

Nuttinee Karnchanaporn : King Mongkut's University of Technology
Thonburi, Thailand

ABSTRACT

Is it too small? 'It' is a one-bedroom private apartment with a floor area of 20 square metres, an ideal for the new way of living in the Bangkok metropolis. As advertised, developers invite their buyers to look into the advantages of low-cost, convenient locations, domestic conveniences and less domestic labours. Bangkok city dwellers become convinced of the shifts toward more convenient domesticity and dream of their (frugal) apartments. The paper examines the interior economy of the family living in such a small apartment and the ways in which it alters the family relationships and homelife of the urban residents. With the increasing numbers of urban residents who buy small living units in high-rise condominiums, how are we to understand the effect of this phenomenon?

INTRODUCTION

In Bangkok, where space is limited, urban residents cram into small apartment units and make such places their homes. Middle class urban residents have shifted from living at home to townhouse to apartment and now more towards condominium for work and education.¹ Abandoning the traditional idea of homelife, a small room with an open plan is ideally meant to guarantee adaptability, affordable living and convenient access to public transportation. In the last thirty years, architects and contractors envisaged these private and public apartments as a common type of mass housing suitable and affordable for a low and middle-income family. Surprisingly, little is known about the way people use space in these apartments, either by way of interior alterations or how residents adapt to the room-based living. Within the apparent monotony of apartments in Bangkok and repetitive apartment corridors, variety appears as residents' modifications of individual units. To some extent, space determines how residents occupy it and what architects and interior designers prescribe as programs for the domestic interior also have a direct effect on how the home life ought to be lived. Architects and interior designers may provide the blueprints for the spaces in which people live and work but few works have demonstrated that the significance of buildings is determined by their inhabitants.

This paper discusses the issue of the interior economy through two distinct sets of observation: one is the observation of show units of the new middle-priced condominiums, and the other is the observation of inhabited units in the middle to low-priced apartments with similar floor area constructed between the 1980s and 1990s. The first set of observations focuses on the middle-priced condominiums that are priced between 1,200,000 to 1,800,000 THB or 40,000 to 60,000 USD per unit, at a currency exchange rate at 30 THB per 1 USD. These condominiums built within the last five years are high-rise buildings. Each unit generally offers floor areas between 20 to 35 square metres, which is smaller than older apartments. A condominium unit can be individually owned or rented with secured access to common facilities such as reception, mailbox, elevator hall, exercise room, green area, laundry service area, and other public amenities. The second set of observations focuses on older apartments. The apartments are both public and private, which have been constructed to meet the urban housing demands of the low-income working class population in the 1980s. The apartment buildings are usually 5 to 10 stories high. Each unit offers floor area of around 30 to 45 square metres, which is bigger than the new condominiums. These apartments provide no shared facilities except a waiting area and the apartment supervisor's office. There is no controlled access to the upper floors. In this way, the two different terms (condominium and apartment) are used in this paper to refer to the different sets of building type. It also reflects how urban residents identify and use the terms to associate with the two building types.

While the design of new condominiums focuses on creating a liveable space with minimum floor area, the reality from older apartment units portrays a very different image. Photographic documents and a series of resident interviews carried out in 2009 and 2010 reveal a paradigm shift in Bangkok home life. The photographs and furniture layout plans of small apartment units illustrate physical outlook, spatial arrangement, the individualisation of the immediate environment and living constraints in these apartments. Breaking away from the underlying idea of what home should be, these photographs illustrate how residents cope with the available space of room-based living. Between the new condominiums and the older apartments, we begin to see a discrepancy in room-based living as it ought to be lived and as it is lived.

CHANGES IN THE CONSUMPTION OF THE HOME

Statistical records from the United Nations in 1991 indicated that Bangkok held the highest proportion of its national urban population of any capital city in the world, with 56% of the whole population living in Bangkok.² Recent published statistical records from the Bangkok Post newspaper indicates that population in Bangkok suburbs and vicinities increased by over 40% in the last decade due to the government's plan for new extensions and construction of more rapid train lines.³ In the past 30 years, housing development in Bangkok has been driven by the private housing estates. Housing estates became a dominant feature of Bangkok suburbs from the 1990s onwards as a product of changes in the building industry during the 1970s and increased

land prices in the inner city and older suburban areas.⁴ As products of new household formation within the middle class population of Bangkok, the planned and gated housing estates emerged as a new ecology for living. Houses were designed essentially for nuclear families in contrast to the older forms of compound housing which formerly dominated Thai homelife.⁵ The concentration of housing estates for middle income earners was focused on the northern and northeastern suburbs of Bangkok. Currently, the trend of luxury housing estates is graphically exposed on billboards along Bangkok's ring roads. These billboards advertise a grandiose urban living utopia located along the ring road towards the western suburbs of Bangkok.⁶ In parallel with the development of private housing estates, public and private apartment buildings have also been constructed since the 1980s for the low-income working class population. The significant feature of the apartment unit is the open plan interior arrangement with 30 to 40 square metres of floor area. This is in marked contrast to the separate room arrangements of the house. These apartments were built in many locations within the inner city.

Recently, with the development of the mass transit system in Bangkok, there is also a trend for high-rise condominium development in the inner areas of Bangkok. Although the intensity of high-rise condominium development in Bangkok has not been researched in detail, the increasing number of property developers focused on high-rise condominium development and listed in the stock market of Thailand is marked. The building of condominiums was already the highest growing sector among high-rise buildings in the first half of 2011, and the average price of condominiums of all grades rose by 5-15% a year.⁷

Along the Bangkok Transit System (an elevated train known as the BTS) and the Mass Rapid Transit Authority of Thailand (an underground train service known as MRT), middle-priced condominiums have begun to crowd the areas around the stations of these two rapid transport systems, especially at the end of the line towards the western extension of BTS line (Wongwian Yai and Krung Thon Buri station), and towards the northern end of MRT line (Phahon Yothin and Lat Phrao station). While the older apartment units have open plan interiors, the new condominium units have separate rooms similar to conventional house plans, amid a more limited floor area. Most significantly, the advertisements of the middle-priced condominiums as well as the show units have tried to convince potential buyers that living in a condominium unit, even with the limited floor area, is just about right for urban residents. The convenience in commuting to work, study and urban activities becomes a key aspect of Bangkok urban lifestyle.

The economy of domestic interiors in Bangkok has transformed significantly from house-based living to room-based living. From the decline of the living compound for the extended family in the inner city of Bangkok, to the detached single house for the nuclear family in the suburban housing estates, it could be said that urban lives in Bangkok are now entering a new phase where room-based living becomes pre-eminent. When space for living is made smaller and more economical, what is left that contributes to the issue of homelife?

AS ADVERTISED / AS IN SHOW UNITS

Advertising of the middle-priced condominiums presents a remarkably uniform image of what ideal vertical living should be, and stresses that living in the condominium is part of the lively urban lifestyle. These condominiums, from various developers, offer similar unit plans and more or less the same floor area. The buildings are packed with mainly studios and one-bedroom units with the number of units around 500 to 700 units per building (Figure 1). The density and the smallness of the unit clearly makes the unit price affordable. With a focus on the first-time buyer, the issue of an economical price-per-unit is a dominant factor. While advertising of housing estates focuses on the exclusive and luxurious living environment of detached single houses, condominium advertising produces a picture of a room that fits urban living conditions and meets the demand of connected urban life. To make the picture of the urban lifestyle clear, a show unit (a mock-up room with complete interior furnishings) has become an essential part of the buying process. The show unit offers a model of home life as lived by imaginary residents. Several features of the urban lifestyle can be identified through daily items intentionally placed in the unit as if the viewers are walking into someone's room. This room-based living can be new to many Thais.



Above
Figure 1: Recent completion of two high-rise condominiums located adjacent to the station of the new extension of Bangkok Transit System on the Silom Line.
Photo: Karnchanaporn, 2011

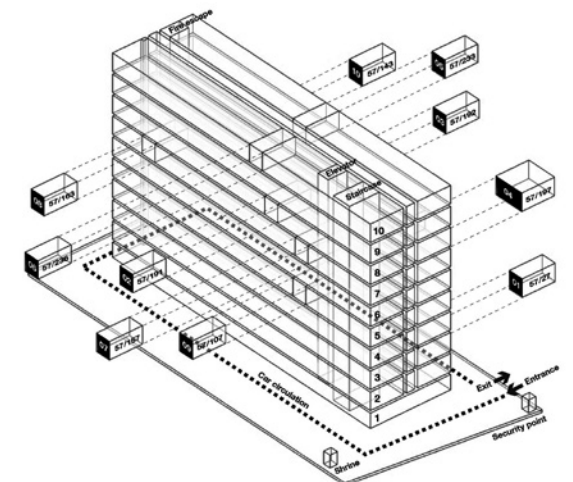
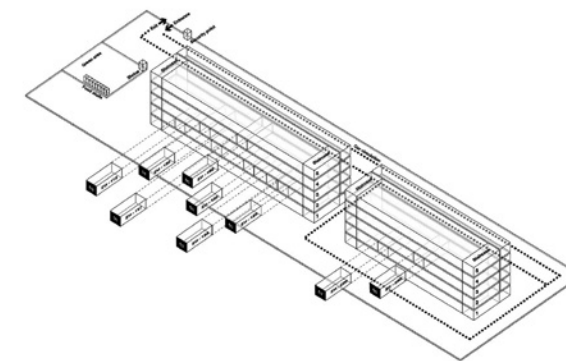
The show unit assists the viewing public to make sense of the possible living experience in room-based living. In the design of the one-bedroom unit in the middle-priced condominium, there have been significant changes to the internal organisation of domestic space. Designers of these condominiums have abandoned the open-plan room in the apartments built during the 1960s to 1980s. In the two examples of a one-bedroom unit of 22.5 square metres and 22 square metres of floor area, architects and interior designers aim to give an impression of sufficient living space in the unit by making the unit function as a small version of a house (Figure 2). The all-purpose area is eliminated. Separation between different functions is made physical and a series of rooms starts to emerge, i.e. bedroom, living room, kitchen and dining area, and the outdoor space of a balcony. It might have seemed normal that the wet and dry areas in the bathroom are separated. However, this separation does not exist in the plans of older apartments or older houses as the bathroom is commonly perceived as a wet area in Thai culture.⁸ The separation inside the bathroom reflects the lifestyle of a more urbanised way of living. Despite the minimal space, the one-bedroom unit provides images of space capable of accommodating a married couple.



Larger units (Figure 3) are obviously more expensive and are on offer in fewer numbers in the condominium building. The two examples of the larger unit promote privacy and the wellbeing of an established nuclear family: a father, a mother and a child. A two-bedroom unit offers a master bedroom with en-suite bathroom (in the 45 square metres of floor area), a second bedroom for a child, a second bathroom, a shared space for the family, kitchen area, and a small outdoor area, all of which mimic the life of the family home. The show unit for the two-bedroom unit is not common in the middle-priced condominium sales office as this type of unit does not reflect the main target buyers. Both examples of the one-bedroom and two-bedroom units elucidate how room-based living reflects and to some extent shapes the expectation of Bangkok urban home life.

AS LIVED

The significant increase of the working class population in the 1980s has also meant the need for new and affordable places located in urban areas. Public and private apartments saw the highest demand amongst low to middle-income urban residents due to affordability and urban location.⁹ The examples included in this paper are from 2 research survey focusing on three apartment buildings constructed in the 1980s; two buildings are part of the Royal Thai Navy's housing benefits scheme and one is a private apartment. The initial survey observes 20 apartment units in detail. The three buildings share similar architectural outlooks as being plain and straightforward with no ornamentation, echoing some characteristics of public housing based on rational (modern) architectural design from the West (Figure 4 and 5). Accessing these buildings and apartment units is simple: there is no controlled access for the three buildings and one can move freely from floor to floor. The ground floors are designated for shared parking space and a communal area. Upper floors are apartment units. There is no shared public amenity but one can find services such as a grocery shop, salon, coin washing machine and drinking water servicing some of the units.



Opposite Top

Figure 2: Examples of 22.5 square metres (left) and 22 square metres (right) one-bedroom units of a recently completed middle-priced condominium in Bangkok. Source: Kamchanaporn, based on information from L.P.N. Development Thailand, 2010.

Opposite Bottom

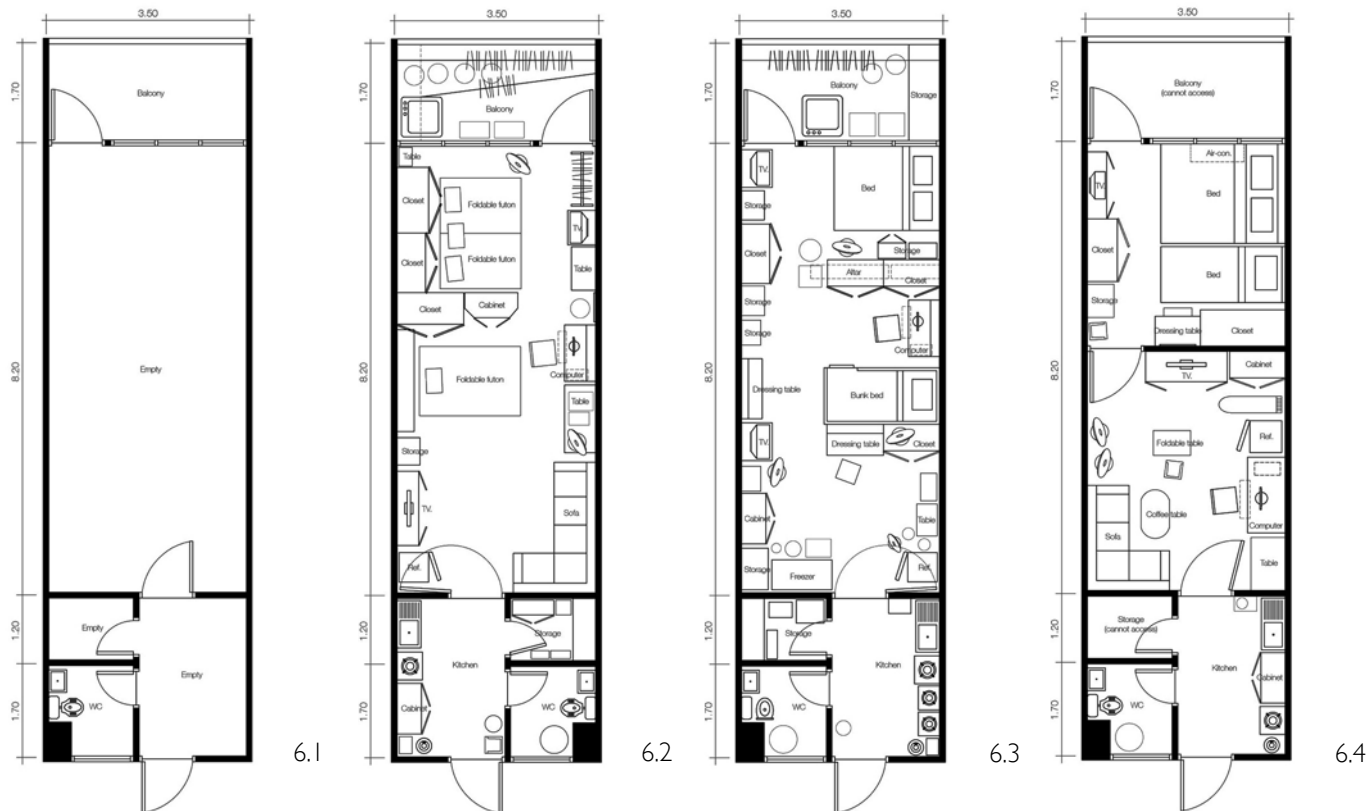
Figure 3: Examples of 45 square metres (left) and 56 square metres (right) two-bedroom units of a recently completed condominium, Bangkok. Source: Kamchanaporn, based on information from L.P.N. Development Thailand, 2010.

Above Left

Figure 4: A survey of 10 units in two apartment buildings, the Royal Thai Navy flat, Thonburi area, Bangkok. Source: Kamchanaporn, 2011.

Above Right

Figure 5: A survey of 10 units in a private apartment building, Thonburi area, Bangkok. Source: Kamchanaporn, 2011.



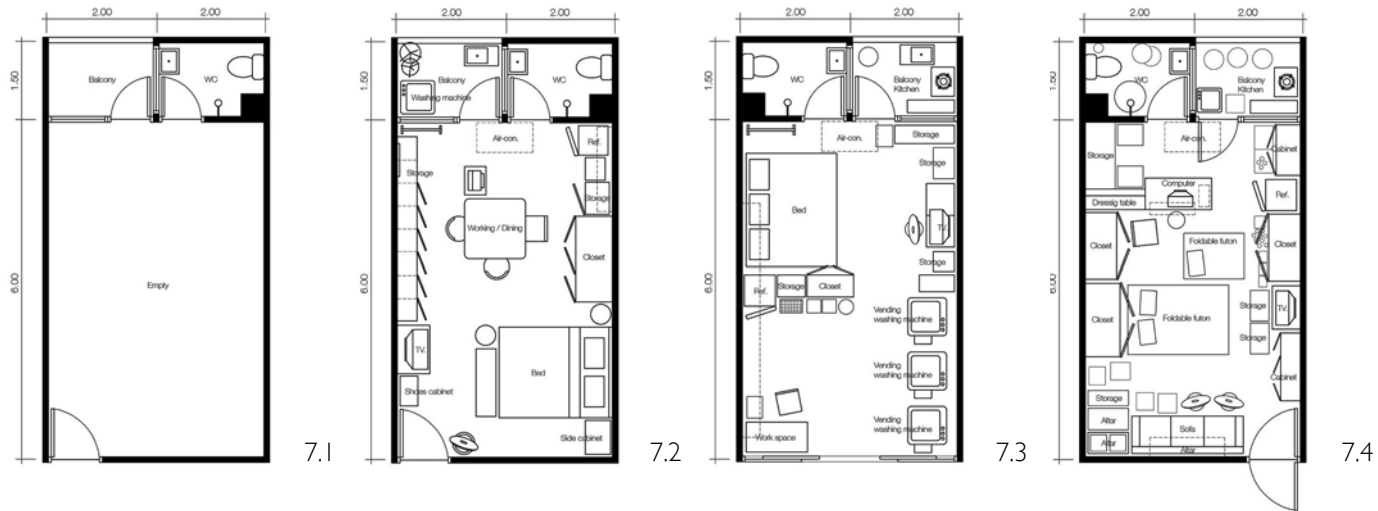
In collecting data from these apartments, the research adopts an anthropological, open-minded point of view. Parallel to the survey of spatial use, the research also borrows ethnographic research strategies and techniques such as unstructured interviews and participant observation. Respondents include owners (parents) and other family members (children and relatives). Although the research is an architectural study, the interdisciplinary research approach provides more alternatives with which to collect and view data.¹⁰ Moreover, photographic documentation by the researcher, of which some photographs are included in this paper, is used to elucidate the conditions for living in these apartments.

Contrary to the room arrangement in the new condominium units, all units in these apartments offer an open plan interior consisting of one all-purpose room, a bathroom and a balcony in each unit. In order to accommodate various needs, the floor plan of these units was originally left flexible with a floor area of between 30 to 45 square metres. From observation, the issue of one's territory within these units can be a complex one. Domestic territories are controlled by different family members.¹¹ For example, it is common that most family members accept that living room, hallway, and bathroom are public areas claimed exclusively by no one, whereas bedrooms and the study area are controlled by one or two members. The cooking area and kitchen tend to be claimed as a female zone, led by the mother. Entertainment areas are often claimed by a male, especially the father. However, in the cases of these older apartments in Bangkok, issues of territoriality and personal space are almost not applicable when making spatial analysis. Spatial boundaries tend to collapse within the small living space. There is neither an exclusive adult or children area, nor a male or female area. While private space for adults is maintained, spaces for children and young adults are evidently made multifunctional. Some units have been turned into a part-shop, part-apartment unit, such as a grocery shop and coined washing machine area (Figure 7.3). These apartments have to fulfil multifaceted functions, overwhelming the domestic interiors with overlapping programs.

Without walls to the interior space, furniture becomes the key for creating divisions within the room, especially a division between private (sleeping) and public (common) areas. For example, a closet is commonly used to divide space between parents and children (Figure 6.2 and 6.3), between sleeping areas and common areas (Figure 7.4), and between sleeping areas and shop areas (Figure 7.3). Where the front of a closet opens into the sleeping area, the back of a closet provides a wall surface to the common area. In the same way, a television cabinet is also used to divide space between a common area and sleeping area (Figure 6.3 and 8). From the interviews of the research respondents, the size of the room becomes problematic when residents have children of different gender. Children of the same gender commonly shared a sleeping area. But parents with a daughter and son struggled to provide separate areas for them. In one particular case, a bunk bed is provided for a daughter and a son allowing them to at least maintain the separation while the parents can maximise the use of floor space (Figure. 6.3). Foldable furniture pieces such as a bedding futon, foldable table and chair are found in most apartment units. Futons are folded and stored away during the day making the room available for purposes other than as

Opposite

Figure 6: Plans indicating current furniture arrangement of three different units (floor area of 45 square metres) in the Royal Thai Navy flat, Bangkok. From left to right: (6.1) An empty apartment unit, (6.2) an apartment unit for an extended family of four members, (6.3) an apartment unit for a single family of four members, with front area designated for food preparation as the mother works as a food vendor, and (6.4) an apartment unit for a single family of four members. Source: Kamchanaporn, 2011.



a bedroom (Figure 6.2 and 7.4). Foldable tables and chairs are used when the common area is needed for eating, studying or working (Figure 6.4, 7.3 and 10).

Common space in these apartments offers places for entertainment, work, study and rest (Figures 9 and 10) and several activities are mingled here including sleeping (Figure 8). Television continues to be a central part of family gatherings with the use of earphones by young adults (seen in most apartments) as they try to isolate themselves from the overlapping activities. In one case, a teenage son has to use earphones to watch television at night while his mother and sister sleep. Young adults gather more in the communal area in the evening. In the cases of extended families, family members of different ages also struggle to maintain the comfort of living together in the same room (Figure 9). Visitors are unwanted in these apartments due to the tightness of living activities so neighbours talk along the corridors and communal areas, while friends are expected to meet somewhere else outside the apartments.

Cooking food and eating daily meals together, which used to be considered as a main part of Thai family life, is becoming less common. According to interviews with residents, the kitchen in the Navy Units is small and badly ventilated as it is placed in the front part of the unit (Figure 6). There is no space provided for a kitchen in the private apartment (floor area of 30 square metres) so residents have used a balcony to cook (Figures 7.3 and 7.4). Residents spend less time cooking and buy more 'ready' meals. Moreover, family members eat at different times of the day, and they also prefer different choices of food. One-dish meals or noodle dishes dominate the dietary choice of these urban residents. The use of the dining table, common in the middle class home in Bangkok, has disappeared in these apartments.

My wife and I have chosen to live here, it is much more convenient to go to work and the kids can go to school by themselves. We also have supermarket and market nearby so it makes life very easy. My older daughter can help taking care of the younger one. I can concentrate on working more. We have bought a house in the suburbs of Bangkok but we can only go there for some weekends. The location is too far from the city. I first planned to have only

one child but now we have two children. The younger one sleeps with us in the bedroom and my teenage daughter prefers to sleep in the living room... Of course, we have problems with not having enough space for everyone in this apartment but I think we can live with it.

A research respondent, 45 years old, government officer, living in a 45 square metres unit in the Royal Thai Navy flat, Thonburi area, Bangkok. (See also the furniture layout in Figure 6.4 and Figure 10)

I like it here. The location of this apartment is good for both us. My daughter is now married so she moved out. She is now renting another room in this building but our grandchild stays with me and my wife most of the time. Yes, you see, the apartment is messy with too many stuff but what can we do. Space is never enough here. But I lived here for nearly 20 years and I get use to it now.

A research respondent, 62 years old, retired office worker, living in a 30 square metres unit in a private apartment building, Thonburi area, Bangkok. (See also the furniture layout plan in Figure 7.4)

These apartments reflect the economy of urban home life. They represent a substantial shift in attitude towards the need for the ideal home among urban residents. Although there are problems of overcrowding, privacy and storage, the frugal living in these apartments is neither sacrifice nor deprivation but is a matter of choice. The problems and constraints of limited space become bearable as the unit prices and the locations of these apartments satisfy the residents. The home that provides space for the development of character and identity is no longer essential.

HOW SMALL IS TOO SMALL?

When space is 'too small,' this can also refer to the issue of 'overcrowding' which is considered a negative emotional reaction resulting from the high-density of people living within the space. High-density living can cause problems for the health of inhabitants for example; aggression, elation, and physical reaction, to the extent that high-density residence is related to higher rates of child abuse.¹² Moreover, overcrowding is a psychological

Opposite Top

Figure 7: Plans indicating current furniture arrangement of three different units (floor area of 30 square metres) in a private apartment building, Bangkok. From left to right: (7.1) An empty apartment unit, (7.2) an apartment unit for single occupancy, (7.3) a part-shop, part-apartment unit rented by a family of four (7.4) an apartment unit for an extended family of four. Source: Kamchanaporn, 2011.

Opposite Bottom

Figure 8: The use of furniture such as a closet, a bookcase and an entertainment cabinet as a space divider in the two apartment units (floor area of 45 square metres). The picture on the left shows the use of a closet and cabinets to divide parents' sleeping area from children's bunk bed (see the furniture layout plan in figure 6.3). The picture on the right shows the use of an entertainment cabinet (television and hi-fi system) facing the common area and the back of parent's closet that forms a wall panel for a teenage son's bed in the common area, private space for adults is maintained and space for a young adult is multifunctional. Source: Kamchanaporn, 2011.



as well as an objectively viewed social phenomenon. Overcrowding is far more complicated than the number of persons in an available space, and is generated by a combination of how a space is organised, for what purposes, and what kind of activities are involved.¹³ Nonetheless, from the examples shown of the new condominiums and the older apartments, the issue of what is affordable has more impact on the residents than the issue of size. The shift from house-based living to room-based living has forced family members to settle in the same room for both days and night use. As in the lived apartments, monthly expenditure remains significant to any decision regarding homelife. How much does one earn per month? How much money does one need to make in order to cover the monthly bills and children's education? How much does one need to keep for savings? and so on.

'Ideal living' models presented by condominium layouts show these units address new interior economies. The show unit attempts to suggest a way of living smarter in a smaller space. Designers of these show units deliberately send the message that you can afford to live the life you want to live and the life that you dream of living. While the interior furnishings look trendy, they are also affordable. With increases in average condominium prices there is also a tendency for the one-bedroom condominium unit becoming smaller.

As much as the show unit tries to make the living atmosphere visible, it also hides other issues. If we look more carefully, most show units fill the space with custom-made furniture and built-in furniture. Interviews with experienced Thai interior designers show the simple fact that most standard furniture (especially closet and storage units) is unable to fit well with the space provided in these new condominiums.¹⁴ The furnished show unit reassures potential buyer that the unit is not too small for what it could offer. To make the unit liveable as it is shown in the show unit, condominium buyers are often encouraged to make an additional purchase of a set of room designs that look exactly like the show unit. Interior design services recommended by the condominium guarantee all the furniture and ornamentation that the interior designer suggests, fit into place. Hence, the issue of whether it is too small or not does not surface in the process of buying.

The examples in this paper demonstrate that the lived apartments, built some twenty years earlier, have already shown signs of unhealthy homelife such as overcrowding, untidiness and poor family relations. However, the current study has confirmed that urban residents prefer convenience and safety to spaciousness and living quality.¹⁵ In the older apartments, domestic life in room-based living tends to be fragmented, so that each family member occupies space at different times of the day to avoid crowding the room. Cheap storage units and tables fill in the edges of the room. With attempts to compartmentalise different activities in the open plan room, family members are physically turning away from the common space; instead of facing inwards, these urban residents turn their backs to the common space to face the wall in order to gain privacy. This is opposite to the traditional Thai house and in the contemporary house where activities in the common area face towards the centre of the room. Furniture arrangements and observations of the older urban

Opposite Top

Figure 9: Two examples of common areas in the private apartment units (floor area of 30 square metres). The picture on the left is a part-shop, part apartment unit rented by a single mother and three children – two girls and one teenage boy (see the furniture layout plan in figure 7.3). The closet helps separate the shop area from the area where all family members sleep. At night when the shop is closed, the front area can also be used for family activities. On the right a common area of an extended family with the grandfather's Buddhist items placed adjacent to grandchild's dolls. Source: Kamchanaporn, 2011.

Opposite Bottom

Figure 10: A common area in an apartment unit (see the furniture layout plan in Figure 6.4) for a single family of four members – parents and two daughters (floor area of 45 square metres). Pictures show the use of a foldable table for studying in the evening and another foldable table for daily meals. Source: Kamchanaporn, 2011.

apartments clearly reflect the isolation. There is little or no room for family bonding which is vital for home life.

In contrast to the older apartments, the middle-priced new condominium units of a similar floor area or smaller floor area offer a unit with designated rooms. This could be viewed as a positive way to show how to manage the smallness in terms of living. The condominium is going back to the idea that many people still feel the need for a room apart, no matter how small the space is. Giving specific features to each room, these condominium units are offering a 'home' to the residents. However, shrinking in size does mean that physical aspects of the room, especially furniture and storage, might not support family life, as they can be too small to accommodate family activities.

A number of studies have been carried out on small dwelling units, especially apartments that are part of social benefit schemes. Low-income households and immigrants who live in the inner city areas are more likely to suffer from the experience of overcrowding but they have to accept such conditions simply because the ability to satisfy needs is clearly dependent on income.¹⁶ One study on small dwelling units (a floor area less than 60 square metres) in China indicates that China too is in much need of a better designed room-based living due to its fast developing cities. Spaces in the existing small living units cannot be used efficiently and are not flexible enough to cope with changes required by urban residents.¹⁷ Other research asks whether it is reasonable to assume that the trend towards smaller households (a nuclear family or lone-person household) means that in the future we will need a more diverse stock of smaller dwellings?¹⁸

Past – apartment, present – condominium, and now what will be next? It is difficult to define how small is too small. The space of room-based living becomes smaller in order to keep the price at an affordable rate and to maintain contact with urban transportation networks. Yet, people are accepting such facts. The demand for living in urban locations looks likely to remain buoyant for some years to come. Evidently, room-based living becomes the engine of economic growth in Bangkok. When attention is turned to look at the interior space of the small

living unit, both old and new, it is almost too small for family life. Room-based living might have reduced the home to a 'place to crash'. Sleeping would be the main activity in room-based living where other functions are minimised to keep down the total area in square metres. Work and leisure activities are defined as something done outside the living unit. When such small space is filled up by household furniture, there is almost no space for family interactions. A good intention for contemporary design then yields a similar effect to the old apartment designs; that family bonds cannot be maintained or strengthened by the home place. In this way, Thai urban residents have an increasing possibility of facing the loss of homelife and healthy family life. How are we to understand this phenomenon? As in design education, are we prepared to deal with these changes? What precise role can interior designers play to support this? These are the questions that should be addressed more in design education, otherwise urban living is at risk of being unsustainable, both physically and mentally.

ACKNOWLEDGEMENTS

The analysis of this paper is part of a research titled "The Transformation of Personal Space in Private Apartments, A Case Study of Low-Cost Private Apartments in Bangkok" funded by Thailand Research Fund (2009 -2011).

NOTES

1. Bandit Chulasai, ed., *Baan Thai, Kluek Kwamkid Series* (Thai Houses) (Bangkok: Chulalongkorn University, 1997), 43-47.
2. Marc Askew, *Bangkok: Place, Practice and Representation* (London and New York: Routledge, 2002), 2.
3. Kanana Katharangsiporn, "Foreigners shift to Bangkok Suburbs," Bangkok Post, September 6, 2011, B3.
4. Askew, *Bangkok: Place, Practice and Representation*, 64.
5. Askew, *Bangkok: Place, Practice and Representation*, 64 and Chulasai, Baan Thai, 79-98.
6. Nuttinee Karnchanaporn and Apiradee Kasemsook, "World Class Living?," in *World Cities and Urban Forum: Fragmented, Polycentric, Sustainable?*, eds. Mike Jenks, Daniel Kozak and Pattarana Takkanon (London: Routledge, 2008), 293-302.
7. Katharangsiporn, "Foreigners shift to Bangkok Suburbs," B3.
8. Chulasai, Baan Thai, 72 and Pusadee Tiptus, *Houses in Ratanakosin*

- Period 1 from 1782 to 1851* (Bangkok: Chulalongkorn University Press, 2002), 110.
9. Vimolsiddhi Horayangkura, Research Report Series No.4 *The Affective Impacts of Physical Environments Upon Flat Residents: A Comparative Study of Dindeang – Haiykwang Housing Projects* (Bangkok: Chulalongkorn University Press, 1983), 1-3.
 10. Susan Kent, ed., *Domestic Architecture and the Use of Space: An Interdisciplinary Cross-cultural Study* (UK: Cambridge University Press, 1993).
 11. Francis T. McAndrew, *Environmental Psychology* (USA: Brooks/Cole Pub. Co., 1992), 134-135.
 12. McAndrew, *Environmental Psychology*, 153.
 13. William H. Ittelson, Harold M. Proshansky, Leanne G. Rivlin and Gary H. Winkel, *An Introduction to Environmental Psychology* (USA: Holt, Rinehart and Winston, 1974), 148-151.
 14. Nuttinee Karnchanaporn, "The Transformation of Personal Space in Private Apartments, A Case Study of Low-Cost Private Apartments in Bangkok" (Unpublished Research, Thailand Research Fund, 2011), Chapter 4.
 15. Horayangkura, *Research Report Series No.4 The Affective Impacts of Physical Environments Upon Flat Residents: A Comparative Study of Dindeang – Haiykwang Housing Projects*, 78-87 and Karnchanaporn, "The Transformation of Personal Space in Private Apartments, A Case Study of Low-Cost Private Apartments in Bangkok," Chapter 4.
 16. Horayangkura, *Research Report Series No.4 The Affective Impacts of Physical Environments Upon Flat Residents*: 78-87; William A.V. Clark, Marinus C. Deurloo and Frans M. Dieleman, "Housing consumption and residential crowding in US housing markets," *Journal of Urban Affairs* 22(1) (2000): 49-63; and George Sternlieb and James W. Hughes, *America's Housing: Prospects and Problems* (USA: Center for Urban Policy Research, 2006).
 17. Xichen Zhang and Jingxin Hao, "Sustainable Dwelling Space of Small Units," *Advanced Material Research* Vols. 243-249 (2011): 6465-6469.
 18. Maryann Wulff, Ernest Healy and Margaret Reynolds, "Why Don't Small Households Live in Small Dwelling? – Disentangling a Planning Dilema," *People and Place*, Vol.12, no.1 (2004): 57-70.