

6.

The traditional Malay house

1. GENERAL INFORMATION

1.1 Title & practice or experience

The traditional Malay house

1.2 Category & practice/experience and brief description

The traditional Malay house is one of the richest components of Malaysia's cultural heritage. Designed and built by the villagers themselves, it manifests the creative and aesthetic skills of the Malays. This is a near-perfect houseform which is appropriate to local climatic conditions and expresses the way of life of its inhabitants.

The house is extremely well designed to suit the warm and humid Malaysian climate and for the multifunctional use of space. Its design is also flexible as it caters to the widely different needs of the users and it has an addition system which allows the house to be extended to meet the growing needs of each family.

1.3 Name of person or institution responsible for the practice or experience

The Malay communities in Malaysia

1.4 Name and position of key or relevant persons or officials involved

Not applicable

1.5 Details & institution

Not applicable

1.6 Name of person and/or institution conducting the research

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2. THE PROBLEM OR SITUATION BEING ADDRESSED BY THE PRACTICED INNOVATIVE EXPERIENCE

The traditional Malay house, which is an autonomous housing process using self-help and mutual-help approaches, can throw some light on the development of a modern autonomous housing model which is based on the needs and aspirations of its users, rather than being imposed by others on the users.

The importance of this housing solution is reflected in its ability to solve the housing problems of especially the poor in a manner that is most appropriate to their socio-economic and cultural needs. This people-centred approach to housing, without the intervention of the state, professionals, contractors and developers could be used as an important input into solving the massive housing problems of the poor in the Third World.

3. DESCRIPTION OF THE PRACTICED INNOVATIVE EXPERIENCE AND ITS MAIN FEATURES

The houseform

The traditional Malay house is a timber house raised on stilts. It is basically a post-and-lintel structure with wooden or bamboo walls and a thatched roof. Windows *are* plentiful, lining the walls and providing good ventilation and views for the house. This quality of openness is also reflected by the large open interior spaces with minimal partitions.

From a distance, the Malay house seems to merge naturally with the environment. The roof, which is large, dominates the low walls and the open stilted bottom of the house. The juxtaposition of the roofs with different sizes and at different orientations creates an interesting visual form.

The traditional Malay house was evolved by the Malays over genera-

tions, adapting to their needs, culture and environment. It may not possess the grandeur or ostentatiousness found in modern buildings designed by modern self-conscious designers but it reflects other qualities lacking in the modern buildings – a clear expression of the way of life and culture of its users.

With a direct dependence on nature for its resources and embodying a deep knowledge of ecological balances, the house is efficiently designed to suit the local climatic requirements using various ventilation and solar-control devices, and low-thermal-capacity building materials. Besides being well adapted to the environment, the house has also evolved a prefabricated building system which is flexible and varied to suit the needs of the users. It has also developed a very sophisticated addition system which allows the house to be extended in line with the growing needs of the user.

Various traditional and hybrid Malay houseforms can be identified in Peninsular Malaysia. They are classified mainly by their roof shapes. The basic houseforms are the *bumbung panjang*, *bumbung lima*, *bumbung perak* and *bumbung limas*.

The most common houseform is the *bumbung panjang*, characterised by a long gable roof. The *bumbung panjang* houses are the oldest identified in Peninsular Malaysia, many of them being over a hundred years old and still in good condition.

The *bumbung panjang* is the simplest of the four houseforms. It has a simple gable roof, supported by kingposts. The most common roofing material used for the *bumbung panjang* is the *attap* (a thatch made from nipah and other palm trees found in the local natural vegetation).

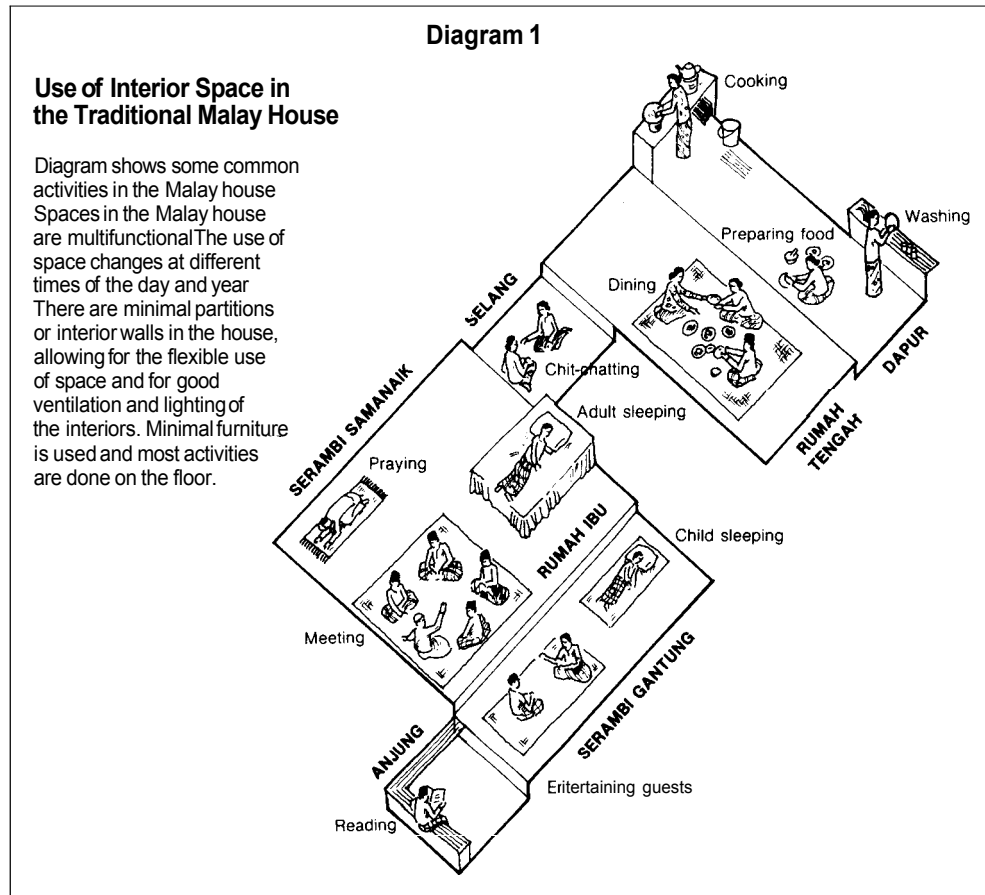
The simple *bumbung panjang* roof-form is most efficient in its ventilation properties. Its simple funnel shape, the use of ventilation grilles at its gable ends (*tebarlayar*) and the use of ventilation joints allow good ventilation of the roof, space which cools the house effectively.

The roof is simple and easy to construct, and this partly explains the popularity of this houseform among the poorer villagers and those who build houses themselves. The *bumbung panjang*, due to its simplicity, is a very efficient roof-form for making additions to the house.

The *bumbung lima*, *bumbung limas* and *bumbung perak* are all houseforms which are not indigenous but developed through foreign influence. The *bumbung lima* and *bumbung perak* houses are believed to have been influenced by colonial Dutch and British houseforms.

The *bumbung lima* house has a hipped roof, the *bumbung perak* house has a gambrel roof and the *bumbung limas* house has a pyramidal roof. Of these three foreign houseforms used in Malay houses, the *bumbung perak* houseform (also called *bumbung potongan Belanda* [Dutch-type] roof in the East Coast) is the most popular.

Design and layout



Basically, the traditional Malay house can be divided into the front and back portions which are centred around the *rumah ibu* (the core house) and the *dapur* (kitchen) respectively.

At the entrances of most traditional Malay houses, stairs lead up to a covered porch called the *anjung*. The porch acts as a good transition space between the public and the private domains.

The *anjung* also acts as an important focal point for the entrance. Unfamiliar visitors and guests are entertained here. It is also a favourite place for the house occupants to rest, chat and watch the goings-on and passers-by in the village.

From the entrance porch, one enters into the *serambi gantung* (hanging verandah). This is the place where most guests are entertained. The low win-

dows in the *serumbi guntung* allow for good ventilation and good views to the exterior.

From the *serumbi guntung*, one enters into the *rumuh ibu*, which is the core area. This is the largest area in the house where most activities are conducted. Sleeping, sewing, praying, ironing, studying and even feasting (*kenduri*) which is held during marriages and other festivals, all occur here. The importance of the *rumuh ibu* is expressed by its floor level being the highest in the house.

The *selung* is a closed walkway used to link the kitchen and the *rumuh ibu* together. The side entrance to the kitchen is also located here. Besides being a circulation space, the *selang* is often used by the womenfolk as a space to chat and socialise. The *selang* is a very effective linking device which leaves an open space between the two portions, allowing good ventilation and lighting for the house.

The *dupur* (kitchen) is always situated at the back of the house, and is on the lowest floor level. Modern kitchens in new Malay houses are often dropped to the ground level where floors are cemented. Preparation of food, cooking, eating and washing are all done here. The womenfolk also often group here to chat.

The court space, which is peculiar only to Malay houses in Malacca, is an intimate, private interior open space in between the *rumuh ibu* and the *dupur*. This space is the wet core of the house where the washing, drying and toilet areas are situated. It is often beautifully decorated with flowers and plants. It is a favourite resting place for the users. Sometimes, informal guests, especially ladies, are entertained here.

Adapting to the climate

One of the main characteristics of vernacular houses is that they are designed with a deep understanding and respect for nature. A comprehensive knowledge of nature's ways and ecological balance was prevalent in traditional societies as the villagers relied heavily on nature for most of their resources. Their food, medicines, and building and household materials were obtained directly from the natural environment.

This design-with-nature approach found in the traditional Malay house is best reflected in the climatic design of the house. To appreciate the climatic adaptations of the traditional Malay house, one must first understand the climatic and environmental conditions that the house is set in.

Malaysian climate and environment

The climate of Malaysia can be classified as warm-humid equatorial, characterised by high temperatures and humidity. Air temperature averages between 22°C and 32°C with small annual and diurnal ranges. It is continually near but seldom exceeds normal skin temperature.

Humidity is high throughout the year, averaging about 75% or more. With heavy cloud cover and high water-vapour content in the air, direct solar radiation is filtered. Although reduced, solar radiation is strong and can cause painful sky glare. The high humidity also accelerates rotting, rusting and the growth of algae and mould.

Winds are generally of low-variable speed. Strong winds can occur with the rains. Winds come in two dominant directions, from the northeast and southwest. Rainfall is also high throughout the year, averaging 250 to 300 cm annually. Rains become more intense with the monsoons.

Vegetation growth is prolific and is sometimes difficult to control under the favourable conditions of moist air, moderate heat and high rainfall.

Thermal comfort requirements

The main causes of climatic stress in Malaysia are high temperatures, solar radiation, humidity and glare. To achieve climatic comfort in the Malaysian home, these factors must be controlled besides the control of rain, floods and occasional strong winds.

For thermal comfort, heat produced by the human metabolic process must be dissipated from the body to the environment in order to maintain a balance and constant body temperature of around 37°C. Metabolism involves the conversion of food into energy for muscular work and tissue-building, emitting heat in the process. Heat gain by the body from the environment through solar radiation or warm air must also be minimised.

Heat is dissipated from the body to the environment by convection, radiation or evaporation, and, to a lesser extent, by conduction. However, heat loss through conduction, radiation and convection is negligible in the Malaysian climate because the air temperatures are continually near the skin temperature.

Similarly, because of high humidity, evaporative cooling and perspiration are greatly reduced and even inhibited. Evaporation of moisture from the body in the humid climate quickly forms a saturated air envelope around the body. The saturated air envelope prevents any further evaporation from the body and undermines the last means of heat dissipation.

Thus, to achieve some degree of thermal comfort, the saturated air envelope around the body must be removed. Air flowing across the body can remove the saturated air envelope and accelerate evaporation. However, this is insufficient because without ventilation (air exchange), both the temperature and humidity in a room will build up to very high levels, leading to very uncomfortable conditions. This temperature and humidity build-up is caused by the heat and moisture output of human bodies within an enclosed space.

Though natural ventilation is often accompanied by air movement, the reverse is not necessarily true. Air movement can often occur without ventilation. This is illustrated in the familiar situation of the use of fans in badly ventilated rooms. The circulation of hot and humid air within a confined space does little to relieve climatic stress. Thus, adequate ventilation is the critical factor in dissipating body heat.

Direct and indirect solar radiation, hot air, together with conduction and radiation from the building fabric are the main sources of heat gain to the body.

Direct solar radiation is the primary source of heat gain while the others are secondary sources, thus making the proper control of solar radiation most crucial for the achievement of thermal comfort. The other major source of heat gain lies in the type of building material used. In most modern buildings where high-thermal-capacity material such as bricks, concrete and zinc is used, the heat absorbed within the building fabric which is radiated to the interiors of the buildings causes great discomfort.

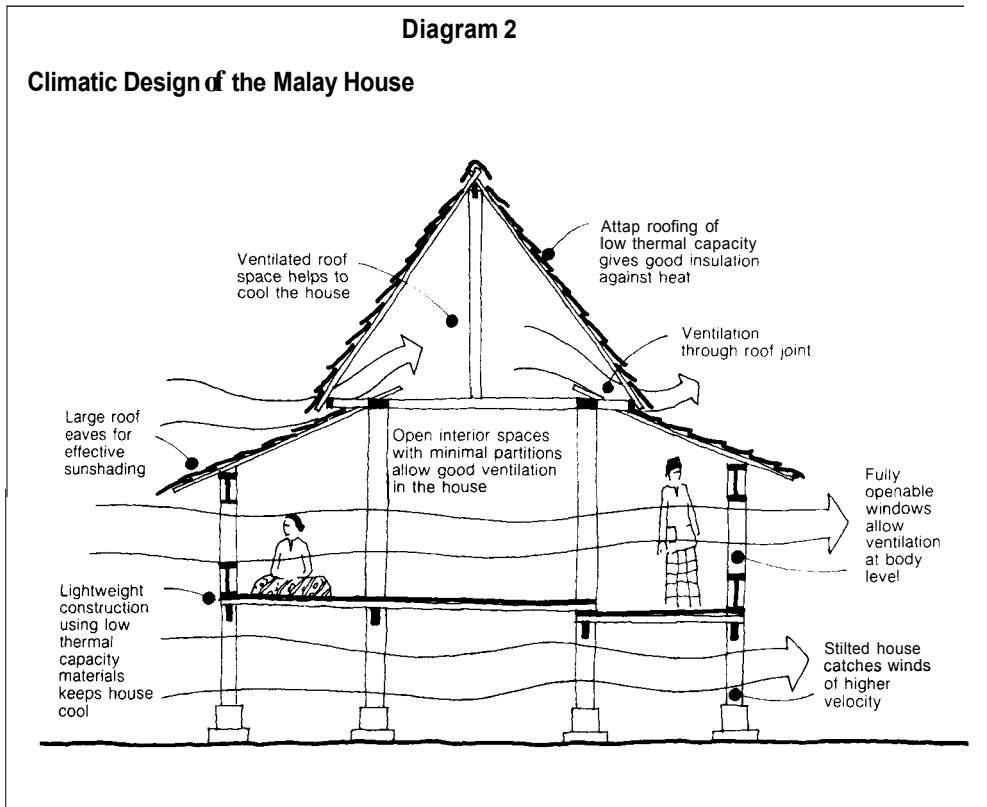
From the above discussion, it is clear that to achieve thermal comfort in the warm humid Malaysian climate, solar heat gain by the building and human body must be minimised while heat dissipation from the body must be maximised by ventilation and evaporative cooling.

A deep understanding of such thermal-comfort requirements and the nature of the Malaysian climate is reflected in the climatic adaptation of the traditional Malay house discussed in the following sections.

Design for climatic control

From the preceding explanation of the climatic characteristics of Malaysia, it is obvious that to attain optimal climatic control, a houseform in Malaysia should provide for the following:

- (a) allow adequate ventilation for cooling and reduction of humidity;
- (b) use building materials with low thermal capacity so that little heat is transmitted into the house;
- (c) control direct solar radiation;
- (d) control glare from the open skies and surroundings;



- (e) protect against rain; and
- (f) ensure adequate natural vegetation in the surroundings to provide for a cooler micro-climate.

The Malay house was designed and built taking these points much into account. As a result, it is a very appropriate houseform suited specifically to the vagaries of the tropical climate of Malaysia. Indeed, it is much more suited to the local climate than the modern Western-style brick house.

The wooden traditional Malay house raised on stilts exhibits a quality of openness which is unseen in most modern houses. This is shown by the many voids of the building in its windows, ventilation grilles and panels; the open stilted bottom; and its open interiors with minimum partitions. This quality of openness reflects the importance given to ventilation in the design of the Malay house.

There are numerous features in the traditional Malay house that are geared towards providing effective ventilation. The house is raised on stilts to catch winds of a higher velocity. The elongated structure of the traditional Malay house with minimal partitions in the interior, allows easy passage of air and

cross-ventilation.

Windows are plentiful in the Malay house and since the body level is the most vital area for ventilation, full-length fully openable windows are used. The carved wooden panels and wooden grilles in the house are also effective ventilation devices. The sail-like *tebar layar* (gable end) of the roof is used to trap and direct air to ventilate the roof space. Ventilation joints in the roof called the *patah* are another creative ventilation device used to ventilate the roof space.

Besides ensuring adequate ventilation in the interior of the house, winds from the exterior are also encouraged to flow through the house. The random arrangement of the kampong houses and the careful planting and selection of trees ensure that winds are not blocked for the houses in the latter path of the wind.

The lightweight construction of the Malay house with minimum mass and much voids, using low-thermal-capacity and high-insulation materials, is most appropriate for thermal comfort in our climate. The wood, bamboo and *attap* used have good insulating properties and they retain or conduct little heat into the building.

Solar radiation is effectively controlled by the large thatched Malay house roof with large overhangs. The walls of the house are low, thus effectively reducing the vertical areas of the house exposed to solar radiation. The low walls also make the task of shading easier. The large overhangs which provide good shading also provide good protection against driving rain. They also allow the windows to be left open most of the time for ventilation, even during the rain.

The Malay house is also designed to control direct exposure to heat from direct sunlight. Traditionally, many Malay houses are oriented to face Mecca for religious reasons. This East-West orientation of the house reduces the exposure of the house to direct solar radiation. The compound of the house is also often heavily shaded with trees and covered with vegetation. This sets the house in a cooler environment, by the trees and vegetation not absorbing and storing heat from solar radiation and reradiating it into the environment.

Glare, which can be a major source of stress in the Malaysian climate, is effectively controlled in the traditional Malay house. This is done by excluding open skies and bright areas from the visual field. Windows are kept low and shaded by large roof overhangs to reduce glare from the open skies. Glare from the surrounding environment is lessened by the less reflective vegetation ground cover, trees and houses. Glare is also controlled by the use of grilles and carved wooden panels which break up large bright areas into tiny ones and yet allow the interiors to be lighted up.

The traditional Malay house with its large roof and low windows tends to be underlighted. This gives a psychological effect of coolness as strong light is often mentally associated with heat. Indirect sources of light like internal and external reflected light are used in the traditional Malay house. They are the best forms of natural lighting for our climate as they minimise heat gain and glare. Direct sunlight should not be used for daylighting as it is accompanied by thermal radiation.

It can be seen that the traditional Malay house uses mainly ventilation and solar radiation control devices to provide climatic comfort for the house. These are the most effective means for climatic comfort in a house in the warm and humid Malaysian climate.

The compound and the kampong

It is difficult to differentiate and demarcate the territories of public and private spaces in the village. Due to the preference for community intimacy over personal privacy, house compounds are often open and unfenced, making private spaces ill-defined and merging with public spaces. As discussed later, this leads to a well-integrated spatial environment which promotes close community ties in the village.

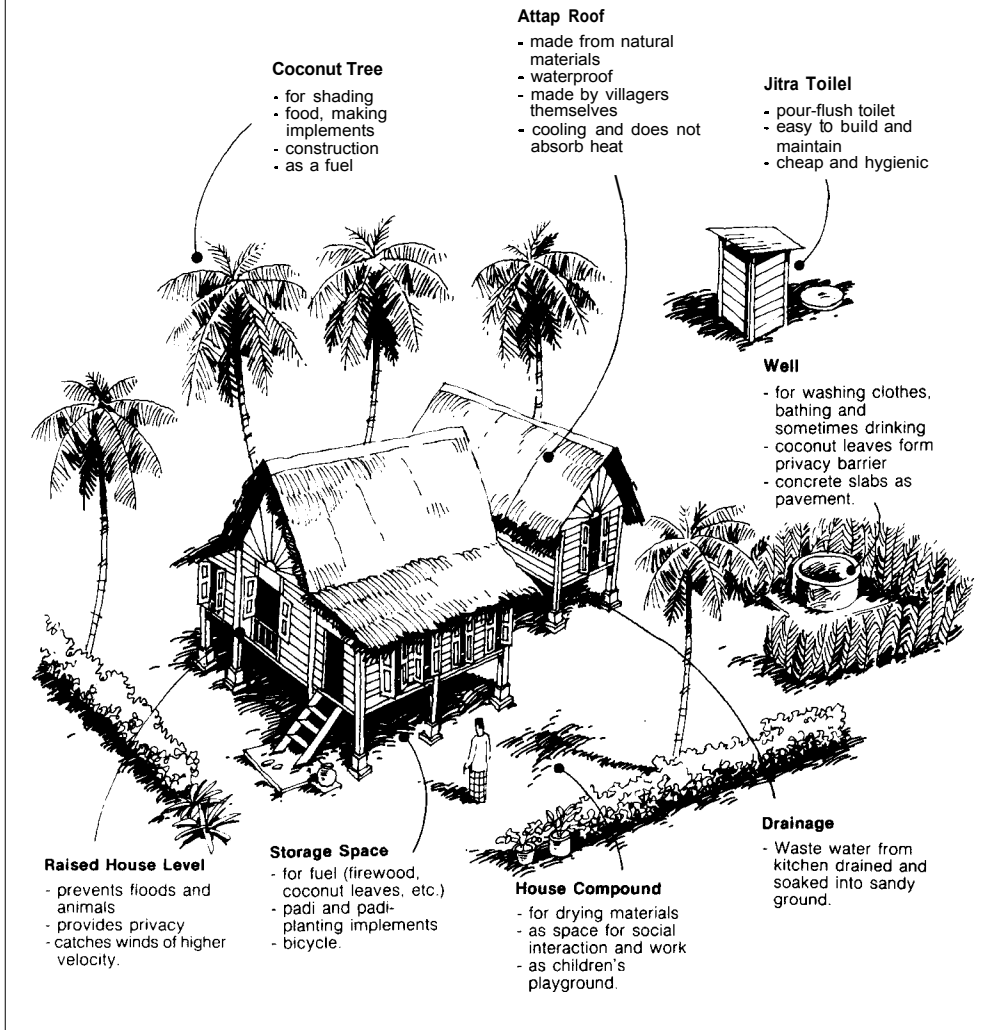
Kampong environment and house compound

The *kampong* or village is a rural settlement sustained traditionally by subsistence activities like padi-growing, fishing and other agricultural practices. The house compound in the *kumpong* is meticulously well-kept, with the compound well swept and planted with vegetables and fruit trees, especially with coconut and banana and, to a lesser extent, with guava, pineapple, papaya and rambutan trees. The wells and toilets are usually located in the compound, spaced far apart and kept away from the house.

The well-shaded compounds are favourite places for play and social interaction, but are also used as working areas. *Attup*- and mat-weaving, drying, rice-pounding and carpentry are some common work activities carried out in the house compound. Another semi-private space commonly used for work is the open bottom of the stilted Malay house. Besides being a popular workplace and chatting place, it is also used to store padi, fuel (firewood, coconut fronds, etc.), building materials, implements for planting padi, the *kaki lesong* (a large pounder operated by leg-power), bicycles and even cars.

Diagram 3

The External Environment of the Malay House



The kampong layout

The *kampong*, on first encounter, may look haphazard to many observers. It has few clear visual landmarks or focal points which may help a person to locate his orientation. The *kampong* is randomly distributed with Malay houses,

trees, compounds and paths. The houses look similar and blend harmoniously with the environment. There are usually not many main roads in the *kurnpong* except occasionally for the access road leading into the *kurnpong*. Instead, paths link the village, leading from one house to another, winding through the houses and leading to other parts of the village. Paths are unclear as many of them merge into sandy open compounds of houses.

There is no clear geometric order in the layout of the *kurnpong*. Instead, the layout is determined by the social relationships and the culture and lifestyle of the villagers. House sites are traditionally selected by observation and religious rituals. Houses are spaced far apart for future expansion, tree-planting and privacy. Adequate privacy is provided by the dark interiors and the distance between the houses in most cases.

Houses are joined by free-flowing paths winding around the houses. House compounds flow into each other. Few obstructive physical barriers are used to demarcate territories. Instead, very subtle and unobstructive markings are used. Fallen coconut tree trunks and a cleanly swept compound can already define a house compound. In the *kurnpong*, the definition of public and private areas is unclear and overlaps.

Even the boundaries of *kumpongs* are largely indistinct although boundaries in padi fields are more clearly defined by the bunds and irrigation canals. Although not much importance is attached to the demarcation of house territories, much importance is attached to the usufructuary rights to the fruit trees and coconut trees.

Social interaction is maximised by the free-flowing, open and unobstructive public-private areas. Children can play safely anywhere in the house compounds and in the public areas. The *kurnpong* is under a huge canopy of coconut and other trees which keeps the *kumpong* well shaded and allows use of the open compounds even during hot afternoons.

The random layout, the natural setting, the use of local building materials and the lack of physical barriers give the *kurnpong* an informal and open atmosphere which is conducive to intimate social relations. The *kurnpong* environment is an expression of the culture and needs of the users, unlike modern settlements which are expressions of a larger socio-economic world order which has imposed its physical, social and economic structures on us.

Extending the house: The addition system

Like the design flexibility found in other user-designed traditions, the traditional Malay house caters well to the varied needs of the users. This design flexibility is clearly expressed in the addition system of the traditional Malay house. This is basically a system in which new extensions are added on

to the basic core house. The new parts may be built as extensions at various stages and times as and when the need arises, for instance when the family grows in size. The system grew out of the needs, means, constraints and socio-economic contexts of the users. It is a very well-developed and sophisticated system which is based on addition principles which are sound in design, construction and aesthetics, and causes minimal disruption to the original house.

The traditional Malay house is set in a rural setting where the main economic activities of the people are farming and fishing. The seasonal patterns of work leave much spare time to the villagers during the off-seasons for housebuilding, mending nets and boats, making household implements and doing other part-time economic activities. The addition system of the Malay house is well suited for this seasonal pattern of work by facilitating housebuilding during the off-seasons, and thus allows the house to be built up gradually at a pace controlled by the users.

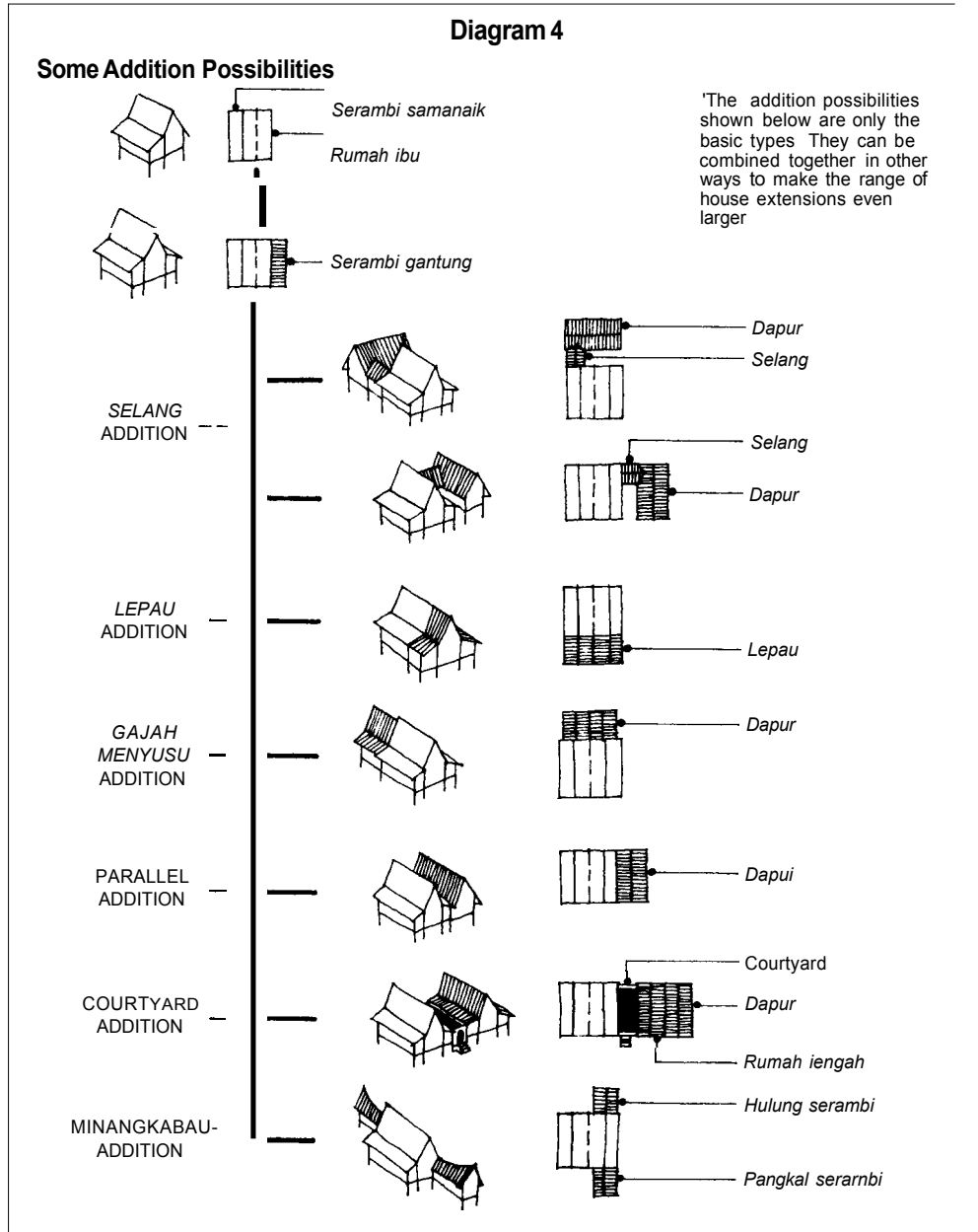
The addition system also fits well with the economic means and the needs of the users. As a family accumulates savings over time, or as the family needs grow, or where there is a desire for a more comprehensive dwelling place, additions to the house are made. The addition system which allows the house to grow slowly also does not create heavy financial burdens on the users by allowing them to build according to their financial resources over time.

The addition system in the traditional Malay house is not an *ad hoc* system of extensions like those made to modern houses and other non-traditional houses such as the spontaneous squatter houses. The addition system is a highly developed and sophisticated system following certain principles that integrate and grow well with the core house.

The core house

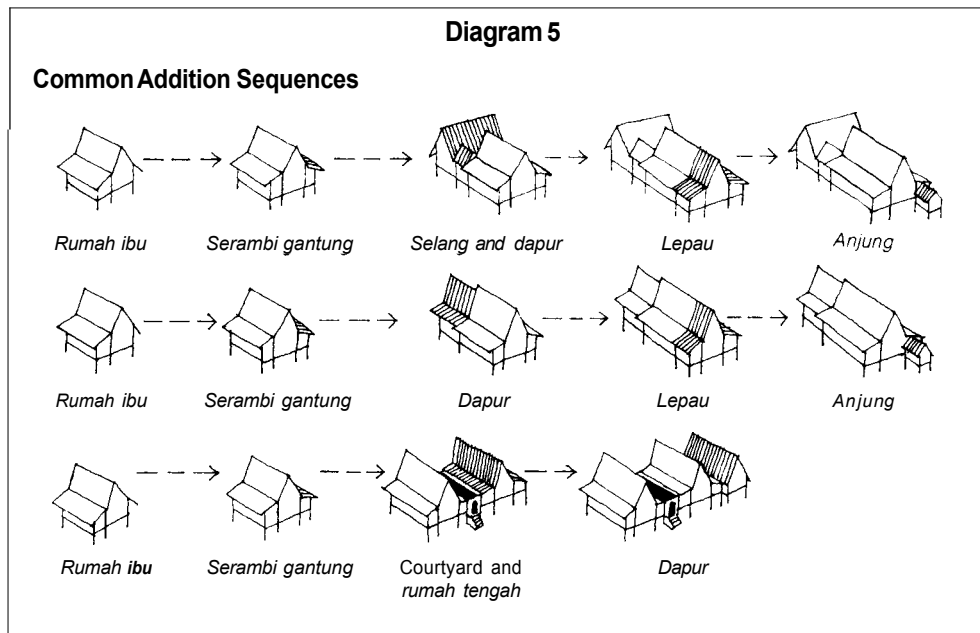
The basic core house of the addition system is the *rumah ibu*. The addition system is built upon the extension of this core house and this necessarily makes it the most important and central part of the house. The *rumah ibu* is the most basic housing unit which satisfies the basic needs of a small family.

The core house can be big or small depending on the needs and affordability of the family. A small *rumah ibu* can, in fact, be converted to a kitchen if the family decides to build a much bigger *rumah ibu*. This is made possible by the use of standard houseforms and a variety of construction methods.



Addition possibilities

The addition system of the traditional Malay house offers a wide variety of choices to the user seeking to extend his house. Through adaptations and



use, the users in different parts of Peninsular Malaysia have evolved a wide range of possibilities, some of which are peculiar to localities and some of which are found throughout the Peninsula.

What is described here is only a basic range of possibilities which are found throughout the Peninsula. In actual fact, combinations of the various possibilities are also possible. The range of possibilities can be enlarged in accordance with the variation in size and quality depending on the priorities of the users.

The concept of incremental housing shown in the addition system of the Malay house is a flexible approach which grows with the needs and means of the user. This housing concept is most appropriate for housing the poor as the house requires only a small initial capital investment and grows when the family has the means to expand the house. This lessens the financial burden on the poor.

Incremental housing seen in the traditional Malay house can also be found in other vernacular houses and other autonomous houses such as those built by squatters. But incremental housing for the poor is today obstructed by rigid bylaws which require many bureaucratic procedures of housing approval, use middle-class and Western standards and require expensive housing materials.

The incremental-housing concept is also hindered by the modern concept of housing as a highly finished final product rather than as an activity which changes and grows. Housing as a highly finished final product for the poor is

oppressive in a sense that the heavy financial burden placed on the buyer or user removes the opportunity for the use of financial resources for other basic needs and social mobility. Special allowances for flexibility in the use of building materials and building design standards must be made to cater for the special needs of the poor.

4. DESCRIPTION OF THE INSTITUTION RESPONSIBLE AND ITS ORGANISATIONAL ASPECTS

The Malay communities in Malaysia make up the largest population amongst the various ethnic groupings in Malaysia. The Malays have evolved the traditional Malay house over generations, adapting it to their needs, culture and environment. With a direct dependence on nature for their resources and a deep knowledge of ecological balances, the Malays have designed the house very efficiently to suit the local climatic conditions.

5. PROBLEMS OR OBSTACLES ENCOUNTERED AND HOW THEY WERE OVERCOME

The traditional Malay house is undergoing many changes and is faced with constant threats to its continued existence. Economic and socio-cultural values promoted by modern development are making a strong impact on the Malay houseforms. The status of the traditional Malay house is being lowered and traditional Malay houseforms are being vulgarised and replaced by modern houseforms. Appropriate local building materials and the coherent and holistic design principles of the traditional Malay houseforms are being replaced and disintegrated by modern influences.

While houseforms should change to fit the changing needs of the users, modern changes in the Malay houseforms are disruptive and inappropriate because such changes are often imposed from external sources and are not understood by the local communities. These changes are often irrelevant to and disregard local and socio-economic, cultural and environmental conditions.

Erosion of confidence in indigenous technologies

A major cause of this problem is the erosion of confidence in local technologies and products as a result of Western-style models of development. The bias towards modern science and technology by policy-makers, academics, researchers and professionals has led to the neglect and decline of local technologies and cultural forms such as the traditional Malay house.

These trends erode the confidence of the users and lower the status of indigenous technologies. On the other hand, modern science and technologies are often overglorified by the mass media and the Western-educated elites of our society.

In the case of the traditional Malay house and wooden houses in general, their status is lowered by the overglorification of the Western-style houseforms and modern building materials. Mud buildings which provide shelter for more than half the population in the developing countries across Asia, Africa and America have also come under the same threat, due to the low status accorded to mud as a building material.

Unless there are positive steps taken to lift the status of the traditional Malay house and to provide a climate conducive to the building of the house, it is bound for extinction in the near future despite its superior design principles and suitability to our environmental, economic and socio-cultural needs.

The bias against wooden houses

Besides the problem of the low status of wooden houses, there are various other reasons for the decline in popularity of wooden houses in Malaysia. Since the traditional Malay house is largely made of wood, the reasons described below for wooden houses will be largely applicable to traditional Malay houses.

First, the Malaysian timber industry is heavily export-oriented. This has affected the quality, quantity and cost of timber available for the local market. The export-oriented timber industry has pushed up local timber prices and since most of the high-quality timbers are exported, the local market is deprived of high-quality hardwoods.

Secondly, restrictive, archaic and stringent building bylaws to control fires have deterred the building of timber houses in the urban areas. The uniform building bylaws which are based on stringent standards demand a high degree of scientific treatment of the timber. Unless the timber used meets these requirements, the house would be classified as a temporary dwelling.

While timber houses are considered a fire risk, it has been proven that large timber beams actually perform better than steel or concrete in a strong fire. Under intense heat, steel buckles and concrete crumbles, causing the total collapse of a building. Timber, on the other hand, after initial ignition, smoulders at a rate of around 0.6 mm per minute.

Thirdly, the discrimination against wooden structures in housing finance and higher premiums for insurance have deterred many from building timber houses. Insurance agents have been reported to charge 50% to 400% higher than normal rates on insurance premiums for protection of timber buildings

against fire.

Lastly, the majority of architects in Malaysia have relatively little timber technology know-how. This gap is not likely to be filled, given the present difficulties resulting from restrictive building bylaws and the general prejudice against timber houses.

Vulgarisation of the Malay house

The use of the traditional Malay houseforms as mere decorative ‘cultural symbols’ in modern architecture is another retrogressive step in the development of the Malay house. This can be seen in the use of traditional Malay roof-forms in the big hotels, the Penang Airport, the Bank Bumiputra headquarters in Kuala Lumpur, other commercial and recreational buildings and even in the little pondoks of local police bases and taxi stands. This attempt to create a ‘Malaysian’ architecture is not only superficial but vulgar. The traditional Malay houseform has been brought down to the most simplistic and vulgarised form – just as a decorative piece – denying it of its deeper significance and uses, and putting it completely out of context.

What such buildings have popularised among the Malays are in fact pseudo-traditional houseforms which have funny-shaped and inefficient roof-forms and the inefficient use of modern materials for the traditional Malay houses. Such pseudo-traditional Malay houses are now gaining popularity and are accorded a high status by the villagers. Without a proper understanding of both traditional and modern design principles, the pseudo-traditional Malay houses become deformed with inefficient adaptations and designs.

Instead of using the traditional Malay houses as mere cultural symbols, positive steps must be taken to promote and adapt the qualities and lift the status of the traditional house, specifically for housing purposes.

Inappropriate use of modern materials

The use of modern materials like zinc, asbestos, cement, bricks and louvre windows has significantly changed Malay houseforms. Zinc and asbestos are replacing the *attap* roofs, creating very hot and cold interiors during the day and night respectively, and also very noisy interiors when it rains. It also allows the creation of complicated hybrid roofs which are difficult to be roofed by *attap*. These modern roofing materials are unsuitable for the Malay house because of their high thermal conductivity and the low roofs of the Malay houses have no ceilings.

The use of cement and bricks has had a good impact by creating easily maintained surfaces in the wet areas and the kitchen. But this has also signifi-

cantly changed the Malay houseforms – the kitchens have been dropped from the raised platforms on stilts to the ground level. This has created new additions and changed the scale of the building.

Sometimes, the stilted open bottom of the house is raised and closed with cement, bricks and louvre windows. This creates a space which is usually used as a hall, making the Malay house a two-storey building with a very low ground floor. Such extensions change the proportions, scale and character of the house, creating a more solid-looking house, uncharacteristic of the traditional house which is light and airy.

The glass louvre windows have replaced the fully openable full-length wooden windows in many Malay houses. The louvre windows with iron bars create a barrier which destroys the quality of openness for ventilation and views in the traditional Malay house. The louvre windows have **also** closed the bottom of the traditional full-length windows, making it less efficient in ventilation.

Modern furniture has also cluttered up many traditional Malay houses which have been known for their large, open and uncluttered interiors.

Diminishing resources and skills

Diminishing resources for building the Malay house are another big problem. Building materials, which were once freely available, have to be bought at a very high cost today. Many materials, which in the past could be gathered free from the environment, are no longer easily accessible because the natural surroundings have been increasingly cleared for development projects and agriculture. *Attap*, which was once the main roofing material for Malay houses, is today becoming scarce. **So** too are bamboo, the *nibong* tree and other trees which supply free timber for building the houses. Unless there are positive steps to rehabilitate the resource base for appropriate local building materials, one can foresee increasing dependence on modern materials in the building of the Malay house.

The general lack of appreciation of the traditional Malay house by the younger generation and the lack of rural labour are additional factors causing the erosion of the traditional Malay house. The carpenters, wood-carvers, *attap*-weavers and other artisans involved in the building of the traditional Malay houses are a dying breed. This trend is caused by the diminishing popularity of the houses, inappropriate legislation and the lack of interest among the young people in continuing in the trade.

The threat of building bylaws

Another threat looming over the traditional Malay house is the imposition of inappropriate building bylaws in the rural areas. In 1978, the Penang State Government drafted laws to include the rural areas under the jurisdiction of building bylaws which were formerly applicable only to the urban areas.

The traditional Malay house is designed, managed and financed by the user. It is built by the users and the village carpenters. But the building bylaws extended to the rural areas require that formal building plans be drawn up and approved by the local authorities before a house can be built or extended. The building bylaws are made in relation to modern buildings in the urban areas and are wholly unsuitable for the rural areas where traditional Malay houses predominate.

The enforcement of such bylaws means that villagers wishing to build or extend a Malay house would have to get building plans drawn up and approved. Such plans will have to be prepared by registered architects, very few of whom in Malaysia have any deep knowledge of traditional Malay houses. In rural areas, most villagers cannot afford the expensive services of architects. Besides, traditional Malay house users and carpenters do not build according to plans but by experience. They are unable to read or follow formal house plans. Consequently, commercial contractors from the urban areas have to be employed to construct the houses according to plans. This completely goes against the principle of the traditional Malay house where the user controls the design and construction of the house.

Thus, the extension of the bylaws poses a serious threat not only to the continued existence of the house in the future, but also to the existence of traditional carpenters, craftsmen, attap-weavers and others involved in traditional-Malay-house construction. The bylaws, in effect, will displace and replace them with contractors, developers and professionals.

Such a development is most destructive because it erodes the important housing contributions made by the users and the informal sectors. It was estimated that three-quarters of construction in the developing countries take place in the informal sector. According to another estimate by Constantin Doxiadis, a famous Greek architect, only 4% of the world's buildings had received any input from trained architects.

Housing layout will also have to conform with the planning standards of the bylaws. This means conforming to regular lot lines and clearances of houses from the lot lines. This leads to regimented and monotonous rows of houses

typical of modern housing estates and government-built *kampongs*. This contrasts with the unique informal housing layout in traditional villages.

Thus, the principles and rationale of the traditional Malay house – the control of its design and construction by users; its addition system to suit the user's needs through time; its particular characteristics designed to suit the culture and lifestyle of the user; self-help and mutual-help approaches of housebuilding – are now threatened with complete ruin due simply to the enforcement of a wholly inappropriate set of building bylaws. This, more than anything else, reveals so clearly the complete lack of understanding and appreciation among planners and architects of the traditional Malay house in terms of utility, culture, climate and economics.

6. EFFECTS OF THE PRACTICE/INNOVATIVE EXPERIENCE

The documentation of the positive aspects of the traditional Malay house and a general trend of young and innovative professionals returning to local ideas and solutions have created a renewed interest in local housing solutions. The traditional Malay house and other local design solutions are now given more emphasis in local institutions of higher learning. The real challenge now is to learn and adapt the lessons provided by traditional Malay housing to create low-cost housing solutions which are appropriate to our local needs, not just for the poor but for a broader spectrum of the Malaysian population.

The traditional Malay house is an existing low-cost housing system which has been practised by the people themselves in the rural areas in Malaysia over many generations. This, however, goes unrecognised by the authorities which actually promote other systems of low-cost housing that are less appropriate to the users' needs and local conditions.

The traditional Malay house offers a ready-made low-cost housing solution especially in the rural areas in Malaysia and offers significant ideas for housing the poor not only in Malaysia but also in other countries in the Third World. It shows that we should study and rediscover our indigenous solutions because they have been evolved over many generations by our people and are properly fine-tuned to meet our own socio-economic, cultural and environmental conditions in a way that can never be matched by what a group of consultants can offer.

Clearly, lessons can also be drawn from the climatic design of the traditional Malay house for housing in the modern context. Although the use of appropriate building materials like wood and thatch for housebuilding may not be suitable for high-density living in the urban areas, wooden houses and lightweight construction can be promoted in the suburban areas in the housing estates where densities are not so high.

Like in the *kampong* environment, more greens should be grown and pavements should be reduced in the modern housing schemes. Roads and pavements are known to take up to 40% of the total site area in modern housing estates. Trees should be kept and not indiscriminately chopped down in housing development as they are the most important element for the creation of a comfortable thermal environment. They provide shade, help to reduce glare, prevent the storing up of heat in the environment, act as a filter against noise and dust and provide oxygen and fresh air.

The maximisation of ventilation exhibited in the traditional Malay house should be emulated in modern house design. However, windows and other openings for ventilation must be protected from solar radiation, driving rain and glare. The use of open verandahs and large overhangs should be encouraged to overcome this problem.

The good solar-radiation and glare controls in the Malay house are other examples of good climatic design which are applicable to modern housing. The orientation of modern houses must be carefully designed so as to minimise solar heat gain in the building. Roofs, being the most important element in the control of solar radiation, should be made from low-thermal-capacity materials.

While bad climatic design in modern housing is often associated with the use of inappropriate materials like bricks, concrete, glass, zinc and asbestos, the problem can also be attributed to the larger problem of the prestige and status of such modern building materials and the modern bricks-and-concrete house. Such status should be demystified and demolished and the use of local building materials and building designs should be promoted, especially in the suburban and rural areas.

The problem of housing scarcity must also be overcome if we are to improve housing quality. Conventional housing solutions which price houses beyond the means of the majority create acute housing shortages, especially at the lower end of the market. Under such conditions, compounded by the current mad rush for houses, the majority of the people have no alternative but to accept any house within their economic means, regardless of quality. These circumstances perpetuate bad housing quality.

7. SUITABILITY AND POSSIBILITY FOR UPSCALING

The traditional Malay house offers much to the housing needs of especially the poor. The traditional Malay house is a sophisticated modular housing system which can be prefabricated. It can lead to the development of an industrialised prefabricated housing prototype which will save labour and provide a more efficient delivery system.

8. SIGNIFICANCE FOR (AND IMPACT ON) POLICY-MAKING

Appropriate and adequate housing and shelter policies is a vital component in development. The traditional Malay house provides many valuable lessons that can help in the development of such policies. First, instead of focusing only or mainly on modern Western-style housing forms, the authorities in developing countries should look at the traditional and vernacular shelter systems as providing a major part of the solution. Secondly, the Malay house shows that local people, through generations of experience, can design and have built houseforms that are suited to their climatic, geographical, social and cultural conditions. Thirdly, it does not require the commercial enterprise or professional architectural skills of the modern and expensive housing industry to provide housing for the masses. The Malay house has been built by ordinary members of the local communities, using skills passed on through generations, cooperative labour of the community, and the use of local and mainly natural materials in the vicinity.

Another lesson, however, is that traditional house forms have come under threat from changes in perception and from changes in economic, social and environmental conditions. In the case of the Malay house, the following policy issues should be addressed.

The image of the Malay house needs to be built up so that the users themselves can regain their confidence in the houses they construct and live in. Then, obstacles which hinder the development of the traditional Malay house should be removed. This requires concrete and practical government policies, and, most of all, a political will and active commitment to promote the traditional Malay house.

Many existing building regulations which were drawn up on colonial lines should be reviewed. Instead, building standards should reflect the people's socio-economic needs and local cultural and ecological conditions. Building research should also incorporate the non-physical aspects related to buildings such as the Malaysian socio-cultural use of space and buildings as a source and reflection of Malaysian identity.

Probably the most important condition for the promotion of traditional Malay houses is the creation of accessibility to resources like finance, land and building materials for the poor to build their own houses themselves. Availability of land and land tenure security are key factors required to improve the quality of housing for the poor and to increase their housing stock. Without land tenure security, the poor will only build low-quality houses and will not improve them because of the temporary and illegal status accorded to the houses.

Finance is another constraint to better housing quality for the poor. Since

finance for housing the poor is impossible to obtain from the private sector, government intervention in this area would be most needed.

Instead of imposing bylaws, rigid middle-class standards and bureaucratic procedures which hinder and restrict the building of houses by the poor using self-help, mutual-help and informal housing approaches, the government should take positive steps to encourage and develop the potential resources of the poor and informal sector to create housing for themselves. The importance of their contribution cannot be denied since most of the housing stock in the world today, especially in the Third World, are not created by architects, governments and technocrats but by the people themselves.

The government can encourage self-help, mutual-help and site-and-services approaches by providing land, resources and finance. This will also help reduce the strain on scarce capital resources in developing countries as these approaches require much less capital input compared to conventional mass housing. The traditional Malay house, which is a highly sophisticated building system, can be developed as a prototype for such approaches. The incremental-housing properties of the traditional Malay house which allow the house to grow with the increasing means and needs of the users are most appropriate to housing the poor who do not have the resources to build their houses all at once.

The depletion of indigenous building materials caused by the destruction of natural resources through modern agricultural and development activities must be checked. Measures must be taken to renew natural resources by the setting up of forest reserves for building materials all over the country. The indigenous building materials industry should be revived to produce the climatically superior *attap* thatches, bamboo wall matting, *nibong* flooring and various wooden panels. However, research should be undertaken to improve the durability and quality of these building materials. New indigenous materials and new designs should also be developed to supplement and stimulate the indigenous building materials industry.

In this vein of development, the governments should promote timber houses and timber as a building material. This will greatly enhance the status of traditional Malay houses, which are synonymous with timber houses in the rural areas. Good timber should be made cheaply available for building purposes. Export of timber should be controlled so that quality timber will be available for local use and timber prices will be kept low in our timber-rich country. The availability of good-quality timber at cheaper prices will become an encouragement for Malaysians to build high-quality timber houses. Other obstacles to the building of timber houses especially in the urban areas should be removed. The promotion and building of high-quality timber homes in the urban areas will help remove the present low status attached to timber

houses. The building of timber houses in the urban areas is vital for lifting the status of timber houses in the rural areas, since values and trends in the rural areas are greatly influenced by what happens in the cities.

9. POSSIBILITY AND SCOPE OF TRANSFERRING TO OTHER COMMUNITIES OR COUNTRIES

The traditional housing process offers much scope, possibilities and lessons in relation to the massive housing problems faced especially by developing countries. The autonomous housing process of the traditional Malay house removes the middlemen (architects, developers, contractors and other professionals) in the housing process and places control in the hands of the user. This not only produces a better fit with the user's needs, it also removes the role of the intermediaries, thus removing the extraction of profits by them in the process.

A study of the history, role and experience of the Malay house can be of great value to people and policy-makers in other countries. This is because such a study can reveal the value of traditional house forms, the relevance of traditional housing as a vital component of national housing policy, as well as the contemporary problems faced by users, builders and advocates of such traditional housing.

10. OTHER COMMENTS

More information on the traditional Malay house can be obtained from *The Malay House: Rediscovering Malaysia's Indigenous Shelter System* by Lim Jee Yuan, Institut Masyarakat.