TRANSLATIONS:

from Village Forms to a University Housing

by: Joo Kun Lim

B.S.A.D. Massachusetts Institute of Technology, June 1980

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Submitted to the Department of Architecture, M.I.T. in partial fulfillment of the requirements for the degree of MASTER OF ARCHITECTURE at the

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ABSTRACT
This thesis is an attempt to formulate a means to attain an architectural language
that reflects values of traditions and cultures in contemporary environments. The
explorations deal with the search for architectural forms for a university housing
through the study of traditional villages; its formal structure and content beginning
with houseforms and leading to their compositions into more aggregate forms such as
clusters and villages. Such dialogues, as contended in these explorations, are
important in establishing the association between contexts and content in the
making of projections for the design of environments. Such a disassociation between
context and content is an especially predominant problem in developing countries
influenced by foreign technologies, as well as their associated value systems.

Supervised by: John Randolph Myer, Professor of Architecture
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The problem of cultural discontinuity is not one that faces Malaysia alone. It is a fairly global problem resulting from changing structures of societies. Like many developing countries the problem there is more acute. The contemporary trend is to strive for individualization; struggles for self gains and a placement of importance on the individual. An extremity resulting in such a struggle results in the discontinuity from traditions and cultural values. In Malaysia, like in many third world countries, such struggles involve seeking for nationalesteem for the nation and self-esteem for the individual. Modernization is often perceived as a means to achieve such an end. The issue is complicated further by the association of modernization with westernization. By its nature, architectural contributions come from the making of physical forms that have associations with local cultures and traditions. Hopefully, such associations and contributions from traditions can generate an awareness of the values of cultural traditions in a contemporary society. The search for meaningful contributions from local traditions has to begin with finding manifestations of the cultural values in the built environment by observing the structure of the physical forms to find principles that can be meaningful in the contemporary world. This thesis attempts to identify
these principles through observations of the vernacular built environment for the purpose of making projections in a contemporary setting.

This study begins with the analysis of the structure of houseforms which leads to the structure of village forms. The analysis of the houseforms involves a brief analysis of the elements of the basic house from which the growth of the houseform is derived. The study of villages is a means to understand the aggregation of houseforms to create community forms. The structure of villages also comprises access networks, landscapes, etc. This is examined through the observations of three village forms, agricultural, urban, and fishing villages. Agricultural villages were examined because they are the precursors of the other types of village forms. The other two village forms are basically adaptations for the making of more compact environments. Fishing villages are interesting also because of the presence of natural forms such as the land-water edge. The link from analysis to synthesis was done through a series of design projections. Whenever there are projections there are goals. A universal goal for projecting environments is for the projected environments to add value to our existence. The second goal of our projections is perhaps more important for the task of the study -- that is to utilize the structure of the vernacular forms in appropriate situations. The context was chosen so that the structures of forms found in the vernacular world would be
appropriate in the context. The context was loosely constructed with a site and a projective program. The site is located in the Universiti Sains Malaysia. The program constructed was basically a student housing complex. The three sets of projections made were to utilize different aspects of the vernacular vocabulary. Projection #1 explores large building types. The structure of urban village streets was utilized to organize the smaller entities within. Projection #2 explores organizing students into households. The explorations utilized the structure of the houseform and its aggregation into linear groups of buildings to constitute a street with articulated edges. Projection #3 utilized typologies developed in the first two projections to explore continuities of the edges of streets within and without.

A further exploration is done to generate a typology for the communal buildings to make the node a more focused place. The streets and nodes are common to the three explorations. In order to simplify the exploration, a common attitude to the site was maintained throughout. As a summary, some afterthoughts are generated. In certain ways, this exploration cannot be concluded, yet conclusions are drawn throughout the study. For each conclusion there is always a beginning, for each beginning there is a conclusion....this goes on and on.
At the outset, the thesis was intended to be a search for an architectural language that is rooted in the culture of the country whose cultural developments have been stagnated by four and a half centuries of colonization. The earliest civilizations in the Malay Peninsula were rooted in Hinduism, subsequently becoming Islamic around the fourteenth century. The mix of both Hinduism and Islam in many facets of its art and sculptural forms is unique to this region.

While much of the cultural expression may be rooted in faith, there are also value systems that are formed by perceptions. The conditions of the environment may have its part in the shaping of these perceptions.

Located within the equatorial belt, Malaysia experiences a warm and humid climate with lots of rain and sunshine. Rainfall are of two types: convectional and tropical monsoonal. Convectional rainstorms occur in mid-afternoons and are usually brief and heavy. Tropical rainstorms are seasonal. The Northeast monsoon (November – April) picks up moisture from the South China Sea and brings rain mainly to the east coast of West Malaysia. The Southwest Monsoon (May – October) picks up
moisture from the Straits of Malacca and deposits them on the West coast of the peninsula. However, the stretches of sea are not substantial enough for the winds to pick up the power to become extremely destructive, though floods are perennial affairs.
Because of the abundance of rain, the natural vegetation is dense forestation. The plains and valleys especially along the coast are cleared for cultivation initially mainly for food crops like rice. Today oil palm plantations and rubber estates can be seen everywhere. Rubber and palm oil are two important export products along with timber, tin and petroleum. Her resources is making her one of the two rapidly growing countries.

Beginning with her colonial period and compounded by the rapid economic growth, the structure of the society is undergoing rapid change. Material values are beginning to gain overwhelming importance. It is perhaps in this light that questions pertaining to traditional values become important. This does not mean that we should not become rich but that becoming rich should not be at the expense of our cultural heritage.

An architectural tradition that is rooted in local traditions is hopefully a starting point to inculcate a sense of appreciation for the values of the traditional cultures. The traditional culture is not one that encouraged individualisation to the point of self isolation which is frequently the result of zealous adherence to some social polemics. "One man one house" is probably appropriate for nineteenth century England at the dawn of massive industrialization.

Footnotes
1. Rapport, A. "Houseforms and Culture" House-hold 1972, Reference was made to Charles Abrams discussions of the inappropriateness of the one family one house notion in Ghana's context because of a different family structure.
A traditional setting is one with many possibilities for a range of interactions, each with its own meaning. A casual informal exchange may happen in a number of settings. On the other hand, formal exchanges like wedding arrangements, dispute settlements, negotiations, and matters of importance take place in the reception room. Sometimes a passer-by may be greeted at the entrance porch. Exchanges can follow constituting an informal exchange. He may then get invited into the house, usually into the reception room. This is an honor which if accepted, constitutes a somewhat formal visit. The visitor is then served tea as is customary. The reception room is analogous to the court in a palace. The built environment then, has a meaningful role in the activities of the household.
In order to understand the physical form we begin with building a catalog of the elements and identifying their roles in the physical form.

WHAT ARE THE ELEMENTS AND WHAT ROLES DO THEY PLAY?

As an illustration we use the entrance. First it provides a range of spaces that is associated to the entering of the house. It also constitutes the front, making its position of key importance. Its relationship to the access system in the village form further dictates to some extent how it is articulated. Thus, the element has two major contributions to the form.... one, to the construct of the form and two, to the use of the form.

For the observations of the traditional forms to become useful for design, the observations should be able to inform about the principles that organize the form, i.e. the structure of the

Kublai Khan had noticed that Marco Polo's cities resembled one another, as if the passage from one to another involved not a journey but a change of elements. Now, from each city Marco described to him, the Great Khan's mind set out on its own, and after dismantling the city piece by piece, he reconstructed it in other ways, substituting components, shifting them, inverting them.

--- invisible cities --- italo calvino ---
form. Thus the construct of the structure gives the framework to find a place for each element. One important question then is

HOW DO THE ELEMENTS INTERACT TO GIVE THE FORM?

Unlike Japanese houseforms, little has been written about Malay houseforms. What has been written has been mostly of a descriptive nature...giving clues as to the nature of the elements. Noone began to suggest additions to the basic house and Hilton mentioned briefly about accretions of the basic houses. Between Hilton, Noone, Sheppard and Wan Abidin together, an elaborate picture of the elements can be constructed. Thus, discussions about the forms would be more meaningful if the mention of the elements remains brief in order to elaborate on the structure and the determinants or context.

The possibilities of the "growth" of the houseforms by additions and accretions are numerous. However, once they begin assuming meanings patterns emerge. Observing the patterns one could derive principles from which the roles of the elements could be understood. Some of the roles are derived from the nature of the form and others are from conventions of the cultural system.

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They display the perceptions and values of the culture. Then another relevant question is:

WHY DO THE FORMS BEHAVE THE WAY THEY DO?

The clues may lie in the determinants of setting, climate, culture, means and so on. Sometimes the physical forms have meanings on their own, derived from its own characteristics. An analogous study of culture using tools of structural anthropology reveals a great deal about the structure of social systems. The structure unfolds a great deal about the determinants; attitudes toward sexual roles, parenthood and meanings of kinship and so on. However, each of the elements (parenthood, kinships and so on) have meanings of their own. Thus, the operatives that determine the form can be internal as well as external. The relationship between the elements, structure and context is probably non-linear. It is more analogous to an interwoven matrix, where changes in any set determinants could result in a number of possible interpretations. It could be the transformations of any of the elements within the structure. Interpretations derived from understanding the total construct of the form (structure, elements and determinants) provide a tangible means to analyze and evaluate the process of translation. It also allows for the making of comparisons/links between the reference and 13.
the products of the design explorations. This is important if the premise is to retain the essence of the reference forms so that a perceivable sense of the place/places is captured. In similar translations such as the development of the software for man-machine interactions. The essence of the human language has to be retained in order for such a system to be workable.

In this thesis, the construct of the structure could provide the means to discuss links between the designs and the reference. Secondly, it is hoped that the tools derived from the understanding of the structure will provide a means for deliberate decisions in the interpretation of the vernacular forms. The preservation of some of the essence is crucial if the purpose is to inculcate a sense of appreciation of the contributions given by traditions. Like in poetry, grammatical structure is not absolute. However, language in poetry often retains the structure of the language used.

If one is to begin with traditional forms, one must then have a means to understand and evaluate. Such a means will help determine the usefulness and appropriateness of terms that are found. A good reference would then be one that has to have cause for transformations... Then, if the elements within the form have to be changed on good grounds, there is reason to believe that the transformations have led to stronger forms which have allowed
for new perceptions and means to contribute positively as we seek to recognize and acknowledge the contributions from the inherited traditional systems.

It is not absolutely necessary to maintain a logically derived sequence of translation. The systematic process, as purported, is necessary to provide for the demonstration of the linkage between the design resolutions and the traditional forms. We should recognize that there is also a process of accumulation of knowledge through an unconscious process of synthesis which utilizes the intuitive ability to understand the structure of things as in early childhood mastery of language. A child learning a language merely accumulates knowledge of language without being taught the structure. Yet, one knows that he understands the structure when he becomes proficient.
Marco Polo describes a bridge, stone by stone.

"But which is the stone that supports the bridge?" Kublai Khan asks.

"The bridge is not supported by one stone or another," Marco answers, "but by the line of the arch that they form."

Kublai Khan remains silent, reflecting. Then he adds: "Why do you speak to me of stones? It is only the arch that matters to me."

Polo answers: "Without stones there is no arch."

--- 'Imagining cities' -- calamity ---
Since the established premise was that clues for a synthesis could be found in an understanding of the structure of the forms, perhaps the 'construction of the structure' should begin with some understanding of the elements. The elements could be identified from the roles they play or the functions they perform. Such a classification could then be:

<table>
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<tr>
<th>SUPPORT ELEMENTS</th>
<th>SPATIAL ELEMENTS</th>
<th>USE ELEMENTS</th>
<th>BASIC HOUSE</th>
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<td>Elements that carry structural load.</td>
<td>Elements that define spaces</td>
<td>Spaces for activities</td>
<td>Entities that could be added up to make a larger houseform</td>
</tr>
<tr>
<td>Such as posts, beams, joists, rafters, plants, etc.</td>
<td>Such as walls, floors, screens, windows, roofs, partitions, panels, screens, posts and beams etc.</td>
<td>Such as stairs, porch, kitchen, jemoran, rumah, tangga, reception room, anjung, serambi, sleeping quarters, lofts, etc.</td>
<td>Such as rumah dalam, rumah luar, etc.</td>
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EXTENSIONS
Additions to basic houses
Such as serambi, anjung, gajah menyusu pisang sesikat

COMPOSITE HOUSEFORMS
Entities of houseforms as is associated with household.
The construct of the houseform in the Malay culture is one of accretion of basic units. The units remain as entities that are recognizable in the composite form, unlike the Japanese house. In those houses the use-spaces and bay sizes are the basic growth units, although the roof formation may suggest the composition of smaller units. In the Malay houseform the growth could be:

1) EXTENSIONS

or

2) ACCRETIONS

An extension is the addition of bay size use elements to the basic house. The basic house remains as a complete entity. Accretions are the accumulations of basic units into the composite forms. Sometimes the units are separate entities. Otherwise the accretion makes the composite house into a single entity. In such cases, the composite form is only legible from the roof forms.
The basic house is a box-like structure elevated from the ground. It is constructed from the posts that support the house. The roof is usually steeply pitched to ensure ventilation and to provide for ventilation. The separation of the house form from the ground could be for a number of reasons.

GROUND CONDITIONS

Clayey ground generates dust in dry weather and turns muddy and marshy in wet conditions. The separation from the ground ensure cleanliness for the house.

CLIMATIC CONDITIONS

Ventilation is an important means to keep cool in this climate. Winds have a drag which increases near the ground. Elevating the ground exposes the house to better winds especially when the window openings are all the way to the floor (with railings to define the edge).
TRIBAL CONDITIONS

Animal paths give clues to water sources. Tribal settlements often lay along animal trails. Raising the house above the ground avoids interference with animal movements, ensuring safety.

FLOOD CONDITIONS

The early settlements are found in the valleys and the plains which are fertile, cultivated and accessible by land and water. The lowlands are also prone to floods. These floods are desirable for the crops especially rice, but have obvious negative effects for the households. Thus, raising the house above the ground enables them to over the negative effects of the flooding.

LIGHT CONDITIONS

The elevated house allows for the eaves to drop lower with respect to the floor. This is a means by which to reduce direct light into the house. Direct light is generally too strong and generates too much heat when it interacts with built surfaces.
FORMATION OF POSTS AND SHAPE OF HOUSE

The posts of the house are the primary frame for the basic house. It is also the primary support that transmits the load to the ground. In a primitive house form the posts are planted into the ground. This construction has problems in that ground moisture induces rotting of the wood. In more traditional forms the post sits on stone or concrete blocks. This then, reduces the ground moisture problem and makes it easier to control termites.

The plan of the basic house is rectangular and is constructed from the formation of the bays. The 2x3 and 2x4 formations are the most common. 3x3 and 3x4 formations are also frequently used, especially in single unit houses. These single unit houses are very common in urban villages and fishing settings. Such formations can sometimes be conceived as 1x3 and 1x4 formations with a pair of extensions on the long sides. In fact, the roof in such units tends to change pitch over the outer bay. The bays can be square or rectangular, but since the basic house form is rectangular, the bays in 2x2, 3x3 and 4x4 formations are rectangular. However, the total formation tends to be square in many vernacular public buildings like mosques, community centers, schools, etc. In such buildings the inside is separated from the outside by a zone of a continuous verandah. The roof-forms of such buildings usually accentuate its discreteness.
The roof is constructed of a series of trusses formed by a pair of rafters and a tie beam [alang pendek]. Sometimes they support the beams (alang panjang) that runs along the long side of the basic house. The alang panjang could also be framed to the post. The beams and the posts are traditionally constructed to form a completely self stable frame. Customary practice dictates the construction process which is highly ritualized. So the sequence of construction, beginning with the support, enclosure, then partition was very important. The enclosure for the roof is usually constructed from discrete sheets of atap (made of nipah palm leaves and little bamboo sticks as stiffening material.) The support for the enclosure is a lattice of second beams which sit on the rafters and secondary rafters onto which the roof sheets are tied. In contemporary houses, corrugated zinc or asbestos sheets are frequently used instead of atap. The support structure for these materials is basically the same as that for the atap. The sheets are nailed to the secondary beams. Tar is applied over the heads of the nails. In many regions, tiles (clay and wood) are used to make the roofs.
In general the roofs are very steep. When the ridge angle is acute the condition is terms as 'giruf' and when it is obtuse it is termed as 'taraf'. The pitch of a roof can change as in the case of the 1x3 and 1x4 units extended to form 3x3 and 4x4 units. In such cases, the outer bays are called serambis, connecting extensions.

The ends of the roofs can be open (perabong panjang), hipped or partially hipped (perabong lima). The totally hipped roofs are not common because it inhibits roof ventilation. Both types of hipped roofs can have their corners cut to form an octagonal shaped plan for the basic house. However, such condition for the ends of the roofs are used primarily for perpendicular extensions to the basic house.

The open gables can be closed in a variety of ways to provide shelter from rain and ventilation. The most direct method is placing a triangular panel or screen over the open end. This piece is displaced from the exterior partition so that a shelf (peran) can be constructed. Where the triangular piece is a panel, the peran can become quite substantial and porous. It actually becomes a horizontal screen that permits the flow of air. The peran can also be enlarged and incorporated into the basic house as a loft. In some regions this is used as sleeping quarters for the unmarried women folk in the household.
Occasionally, the open gable is closed with a series of narrow panels. They are usually started and overlapping in order to prevent rain into the house. Here the pieces are kept slightly apart so that there can be ventilation. There are usually only two or three such panels. However, in some sub-cultures the numbers of panels are used to provide some means of signifying the position of the household in the society.  

THE FLOOR

The floor is constructed from a system of joists onto which the planks that form the floor sit. This system is supported by the rasuk, a beam that runs across the basic house. The rasuk could be framed into the post, or they could sit on the pelanchar, the beams that run the length of the basic house. Thus, the pelanchar allows for the level of the floor to continue across bays. The rasuk cannot be framed at the same level to the same post from opposite directions. Like the beams for the construction of the roof, the rasuk and the pelanchar completes the house frame as a self stable, support system.
PARTITIONS/WALLS

The perimeter definition (spatial element) is basically the same as the interior partitions. However, the formal structure changes. Despite the absence of load bearing walls, the term (dinding) used for the exterior partition also used to denote walls. The introduction of masonary and concrete can be seen in recent construction of Malay houses in the form of walls to enclose spaces underneath the basic house. Such spaces are usually used for the informal use elements such as kitchens, washrooms etc. In houses in the old Straits Settlements, parts of the entrance extension were frequently constructed of stones and tiles with Arabic motifs; a mixture of colonial and religious influences.

In traditional houses, the support framework generates the framing for most partitions, especially the inside-outside partition. The framing is subdivided into vertical sections. The subdivisions can be even or uneven. However, they are regular and generate symmetry. The spaces between the vertical members can be either closed with panels/screens acting as an infill, or they can be left open to form windows. The windows are generally not glazed. They have louvered shutters to close them when it rains. The windows either have a sill or they go all the way to the floor with a railing/screen to define the edge. The windows that extend to the floor either have a pair or two pair of louver-
red shutters. Those with two pair can optionally be converted to function like those with sills. This would be done to block the glare from the outside when it gets extreme. When left open the larger windows are valuable for facilitating more ventilation through the house.

Conditions 1A exists if the studs run all the way from the floor to the roof beams (alang panjang and alang pendek). Sometimes a header for the studs creates a zone across. Thus, we have two types of primary subdivision.
Conditions 3A and 3B can be converted to the type 2 conditions if there are two pair of louved shutters. They are also substitutable elements. They can exist in the same house but seldom in the same frame.

Since the conditions 3A and 3B can replace 2A and 2B the given permutations can be extended to another set of five.

If we say that conditions 2 and 3 are 'open' and condition 1 is 'filled', then we have two basic conditions with three and four variations. Then we have, for a five subdivision bay, 2 possibilities with 14 variations.

The corners are always built because the infill system actually adds lateral stability to the houseform.

Windows tend to be grouped.

In instances where the partition is continuous across several bays, then each bay could be treated as a separate bay, or they
could become a conjugate system whereby the posts in between the conjugate bay becomes a vertical member like the studs. They are bigger, so that they are used to generate their own symmetry.

The system of subdivision is an extremely simple system that has strong potentials to generate a rich composition of elements that makes the partition.
ACCRETIONS

Accretion is the addition of smaller basic units to form a composite houseform. These additions may be necessitated by increase in the family size. The entire structure could also be built as an entity. Then, the building tradition and perhaps limitations of the materials used may be the reasons making such a type of houseform. For purposes of discussion, let us denote the long axis as the axis of the basic house (x-x), then the axis of the composite house (y-y) is perpendicular to the axis of the basic house. This means that the basic houses lie alongside each other in the composite houseform. They can be separated so that they are connected by a "bridging extension." In such the entities remain distinct. The basic units could be merged to form a single cohesive entity. The distinction of the entities is probably only perceivable from the outside.

Accretions tend to generate symmetries about the axis of the houseform. Most variations tend toward an implication of the completion of the symmetry. By registering all the basic units along a line on the approach side, it gives an initial impression that the basic houses are of the same length. The implied form is then symmetrical. Tendencies for symmetries are much stronger when the site is loose. Variations mostly imply symmetries. Improbable asymmetries are generally forced by the context especially. The density dictates the houseforms.
EXTENSIONS

Basically, extensions are small additions to the basic house. They are subsidiary to the basic form. Since the plan of the basic house is rectangular, there are short sides and long sides. We then have the following possibilities:

PISANG SESIKAT, parallel on short side
GAJAH MENYUSU, perpendicular on short side
SERAMBI, parallel on long side
ANJUNG, perpendicular on long side

The permutations of the variations of the ends conditions in the basic house and its extensions render numerous combinations possible. The short side extensions usually avoid symmetry. The long side ones often accentuate symmetry especially the extensions that are perpendicular in the composite forms. These are generalizations of some norms. Variations can always be found.
The most basic extension is the connection to the ground, i.e. the stair. This can connect on either the long or the short side. In most residential units, such an extension has a roof. All four possibilities of extensions can be used. Parallel extensions are commonly found except when such entrances are used in the composite houseforms. Then, the anjung condition is quite a common feature.

The entrance can be extended to include a covered porch, termed as a "rumah tangga." These porches range from mere landings to fairly large covered outdoor spaces used for lounging, etc. These features are commonly expressed as the "gajah menyusu" in a single unit form, the "serambi" form in many parts of the south and the anjung in the north.
In this thesis four terms are used; serambi, anjung, rumah tangga and reception room. In many instances, the serambi is synonymous with the rumah tangga because the outside covered porches are often found either in the parallel extension to the long side of the basic house or the extension of the anjung. The anjung often houses the reception room. Thus, the anjung becomes synonymous with the reception room. It is then important to separate the terms; 'serambi' and 'anjung' for conditions of extensions and 'rumah tangga' and reception room for use spaces.

The final form for the formal extension is one that provides the whole range of use spaces associated with the reception of the visitor: the reception room, the rumah tangga, the stairs, etc. This can take the form of a serambi which is subdivided to give the reception room and the rumah tangga. The two elements can be expressed as the anjung and an extension. Sometimes a series (2 or 3) of perpendicular extensions are used to make the rumah tangga and the reception room.

In parts of Kelantan and Kedah, an uncovered landing is used instead of the rumah tangga. In some ways they are like the rumah tangga but there is no roof exposing it to the sun and rain. Such landings are less 'enclosed' making it merely a landing rather than an intimate place. This element is called the jemoran.
The reception room is usually at the same level as the house proper. Sometimes there is a change of level, the extension is at a lower level. The separation at most a foot is in part the result of the support system. It is also a means of differentiating between the public and private parts of the house. The frontal extension is a physical gesture of 'welcoming'. The house extends out to greet.

The rumah tangga then acts as an intermediate space between the house and the ground. In many regions, more frequently in the former Straits Settlements, the stairs and the rumah tangga are often made of stones, masonry and concrete. It is often decorated with elaborate motifs. They are usually the most attractive elements and frequently dominate the facade of the building.
Informal extensions include extensions for kitchens, sleeping quarters, washing facilities, etc. In general, such extensions are differentiated from the house proper. The level change is very insignificant but is accentuated by other elements so that it can be easily perceived. The kitchen extensions, though, are generally lower than the house. The extensions for sleeping quarters are usually raised. The lowering of the kitchen level emphasize the importance of the house proper with respect to the kitchen. This is a reflection of the male-female roles within the household. In contemporary houses, where concrete floors can be made, the kitchen is often located at ground level. Precedent for the location of the kitchen on the ground can be found in many tribal villages of related cultures.
The kitchen floor is constructed by stacking logs on the ground and having a decking of split tree trunks (usually of the nipah palm) as the floor planks.

In ancient traditional forms, the washing facilities were separated from the house. They were located near the wells from which water is taken making these facilities more a part of the natural world rather than the built world.

In general, the extensions for sleeping quarters are on the short side. Kitchen extensions are usually parallel extensions on either the long or the short side commonly towards the back of the house. A common feature is that there are no informal extensions on the approach side. This is important in understanding the nature of the use spaces associated with the formal and informal extensions in the houseform.
Sometimes the extensions become discrete separate units added to the main house so that extensions and accretions have unclear boundaries. In most cases, these become primary and secondary houses. In fact, the terms rumah dalam (inside house) and rumah luar (outside house) are frequently used. In other locations 'rumah besar' (main house) and 'rumah dapur' (kitchen house) are used. Private residences seldom have more than two basic units, if they do they almost never exceed three; the main house, the middle house (for sleeping quarters) and the secondary house for cooking facilities and associated use. In very formal houses as in palaces, even the frontal extension can be discrete units so that the reception room may be a unit for the court. The serambi or anjung for covering the entrance is actually then exterior to the court. In more elaborate cases, the court and the serambi can become two separate entities. The accretions could take the form of a tertiary system where a composite houseform could become the palace court. The other subsidiary houses could be added to the main court house in a similar manner, i.e. the axis of the house remains parallel. There would then be a z-z axis which would be perpendicular to the y-y axis which is parallel to the x-x axes for the subsidiary houses. The x-x axes of the basic houses that constitute the composite house denoted by the y-y axis remains perpendicular.
composite houseforms with primary & secondary houses.

Diagram showing accretion of basic units and extensions.
The consistency of finding symmetries in the built structure overlaid with asymmetries generated by use is a major fundamental conclusion which can be drawn by observing the built world in traditional Malay villages. The conscious perception leads to the imposition of symmetry. This bears some relation to the importance of the self as expressed by mirroring his own formal construct. The human image is symmetrical. Use of the building is dictated by a more unconscious process, giving the form asymmetries.

The conscious products relate to the primary elements of the house like the support structure, enclosing partition. Thus accretions often accentuate symmetries. Extensions are usually necessitated by use/need. In most cases they make the houseform asymmetrical, except for the anjung in a composite houseform. The anjung in such instances often accentuates the axis of symmetry. Such extensions are usually formal ones. These conditions are often in houseforms that has its own precinct....as in agricultural villages. Even then the rumah tangga frequently offsets that symmetry. The interior partitions also make the organization of spaces somewhat asymmetrical. In more compact habitats, use considerations become more important. There are then issues of one's own privacy, not intruding on the neighbors, and vice versa. Thus, the houseforms are frequently asymmetrical in an urban context.
The houseform mirrors the differentiation of the roles of the sexes in the household and the society. Internal affairs were associated with the females while external affairs were domains of the males. Thus in the community, business and political affairs were in the charge of males, celebrations were often in the charge of females. Within the household, the formal affairs were given to males, informal ones were given to females, such as cooking, washing and domestic chores.

Thus, the domains associated with the front; the court, the entrance, the reception room were considered the 'male' parts of the house. The domains associated with the domestic affairs -- kitchen, washrooms, etc. were the 'female' parts of the house. In fact, the differentiation is so distinct that in some sub-cultural groups the front entrance is 'male' and the 'back' entrance is 'female.' The meaning was fairly direct, when a couple formally entered the house, the husband would use one entrance while the wife used the other.
In contemporary societies, such conventions are no longer as strong, but some traditions are still retained in ceremonies. Cultural conventions may change but the physical forms manifested by tradition remain pertinent, because of the differentiation and separation of what is formal and what is informal. There is a distinct hierarchy of privacies. The informal parts are considered the private parts and only close associates and relatives are permitted into these domains. New values may change the roles of the sexes, but they cannot alter the perceptions regarding the organization of space within the houseform. New social values do not change such perceptions, they give new meanings to the order of things.

...the male parts.

Tok janggot house
STRUCTURE OF VILLAGES....

In Olinda, if you go out with a magnifying glass and hunt carefully, you may find somewhere a point no bigger than the head of a pin which, if you look at it slightly enlarged, reveals within itself the roofs, the antennas, the skylights, the gardens, the pools, the streamers across the streets, the kiosks in the squares, the horse-racing track. That point does not remain there: a year later you will it the size of half a lemon, then as large as a mushroom, then a soup plate. And then it becomes a full-size city, enclosed within the earlier city: a new city that forces its way ahead in the earlier city and presses it toward the outside.

-- from "invisible cities"-- italo calvino--
### The Nature of the Elements

**roles, functions and adjacencies.**

<table>
<thead>
<tr>
<th>Villages are comprised of:</th>
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<tbody>
<tr>
<td><strong>ROADS</strong></td>
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<tr>
<td><strong>PATHS/ACCESS</strong></td>
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<tr>
<td><strong>COMMON YARDS</strong></td>
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<tr>
<td><strong>FRONT YARDS</strong></td>
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<tr>
<td><strong>HOUSEHOLDS</strong></td>
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<td><strong>BACK YARDS</strong></td>
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<td><strong>FIELDS</strong></td>
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<td><strong>WATER</strong></td>
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These are the elements that are used in the discussion of Malay village forms. The roles of these elements should be fairly clear without further elaborations.
Agricultural village forms are the progenators of most village forms. Agricultural villages have the entire range of elements. The village form generates a very loose context. Because of looseness of the context, the houseform assumes a very formal structure. The orientation of the house and its relation with the access/roads is of primary importance. There is a marked differentiation of fronts and backs of the houses. The formal part of the house is always the front and is located on the approach side.

The formal parts are usually very elaborately articulated and assume a more formal construct. The informal parts tend to be located at the back of the house. They are less elaborate and the structure of the informal spaces is loose. There is normally some distance between the major access elements; roads, highways, paths and rivers from the house. The zone of separation often is used as a front yard. The axis of the houseform is usually perpendicular to the major accessway, frequently a road. The houses or clusters of houses are approached by smaller accessways, paths or smaller roads. These minor access
routes seldom align with the axes of the house. The juxtaposition of access routes, front entrance/formal extensions leading into the house are centered in the facade. The non-built elements are then not likely to have a formal structure.

Clusters of houses are consistent in orientation with regard to access routes. Thus, a cluster of houses may share a minor access (path) and assume the same orientation with respect to the major access. For example, away from a road (major access) along a path (minor access) the orientation of the houseform may change from fronting the road to the path. Orientation changes are often subtle and gradual.

In traditional villages houses are grouped in clusters. Clusters can be associated with kinship relationships. The houses could share an open space: This open space often serves as common yards which help orient the houses within the cluster. The clusters can generate the order in the village form.

While orientation of the axis of the house with respect to the primary access is consistent, the relationship between the house and the secondary access is more varied. Usually the major axes of the houses are similarly oriented. So, the variations of the extensions are utilized to align the front with the access system. The houses, in a given locale, adjacent to the major
access usually have a consistent vocabulary to articulate the front so that when one drives through a farming region, one could be led to believe the houses away from the major access can be varied to give a range of building types as dictated by the context.

The differentiation between the front yards and the back yards is consistent with the distinction between the formal and informal parts of the house. While the front yard is often planted with flowering plants which are aesthetic additions, back yards are often planted with lemon grass, pandan and other kinds of plants that are used for the kitchen. The front yard then is an extension of the 'male' parts and the back yard is an extension of the 'female' parts.

Another interesting feature is that the result can be such that one front yard is adjacent to another back yard. In many instances the access that leads to the entrance serves as the defining element between the two elements. Further separation between the yards could be built; fences, shrubs, etc. This does not result in conflict so long as one person's front is not directly blocked by some else's back.
A LITTLE VILLAGE IN THE OUTSKIRTS OF ALOR STAR

Manifestation of an Agricultural Village...

Alor Star is the rice producing center of Malaysia. Its outskirts are dominated by rice-growing communities. Many of these villages possess the structure of traditional agricultural villages. Some have become more compact under pressure of urbanization.

This particular cluster is found on the way between Alor Star and Penang. Its form is basically that of an agricultural village, although its economic base is probably no longer strictly agricultural. It has most of the elements of an agricultural village. Some of the houses lack front yards. Some are clustered around a common yard. The common yard on closer inspection serves as a node for two crossing paths. This is an important place in the fabric of the village, where many of the children play in the afternoons. It was also interesting to note that some household's possessions were actually kept in this common yard. Hence, there were unwritten agreements that permitted such practice without conflict. This is often because there are no clear boundaries of land. The land belongs to the community or a headman whose benevolence permits the building of houses with minimal rental.
Because of the directions of the two accesses, there seem to be two fields of houses integrating at the node. Many of the houses are actually parallel to the roadway...(perhaps anticipating accretions). However, it is most likely that the houses were positioned before the roadway was introduced since the houses were consistently parallel with the path.

The principles of house orientation becomes clearer if one looks more carefully at the house on the eastern corner of the common yard. Because this house lies at the corner, there is a conflict in orientation. The resolution of the conflict is quite interesting. The extension for the reception (anjung) acknowledges the road. The entrance extension fronts the common yard. Thus, instead of a formal extension for the whole range of uses, the house has two extensions to accommodate some of the uses in each, giving the house two fronts. The reception room extension bears no relation to the entrance. It is a means to create a front facing the roadway.
a little village in the outskirts of our star.
Urban Villages...

Urban development was largely the result of colonialism. At the least, colonialism had catalyzed the growth of urban forms. Thus, most urban forms in Malaysia are manifestations of ideas about cities that were rooted in western cultures. Urban villages are not villages that constitute an urban form. They are mostly adaptations of agricultural village forms that got incorporated into expanded urban domains. Such villages thus retain much of the structure of agriculture village forms. They have their own social and physical problems. However, such villages could inform about the derivations of an urban form from a vernacular vocabulary that is primarily rooted in a rural culture.

Like agricultural villages, the houses do not engage with the roads. The setbacks are usually used for frontyards. The houses that do not front the roads maintain an orientation that is consistent with those fronting the road. As a generalization, the composite houseform aligns its axis perpendicular to the major access. In such cases, the basic units are parallel to the access. This is generally also the case for villages with single unit aggregation. Such consistencies are probably accentuated by urban pressures, though the beginning of this can be found in agricultural village forms.
This means that the facades that face the roads are the long sides of the basic houses. The edges that define the access into the clusters are accumulations of short sides. The compactness of the village forms usually mean the minor access ways are intimate. The minor access are defined by the building edges giving the character of a street, an intimate one. The houses that front these accessways may not have front yards. Some have somewhat defined spaces that are created by the entrance extensions as they project into the access domain. These spaces can be fenced to give vestigial front yards.

In this more urban context, there is a more consistent orientation of fronts and backs. The fronts face the accessways, the backyards are located away from the public access. The front yard-backyard adjacency disappears. The backyards face each other. The boundaries of the backyards, in village forms, are somewhat left undefined so that the backyards can add up to a continuous landscape. There are usually networks through this landscape which are only used by those familiar with the village. However, because of issues of landownership and legal titles, the private domains are often bounded in modernized villages. In such instances, the backyards are clearly defined with clear back alleys. This becomes more like the suburb where the boundaries are clearly defined.
KAMPUNG BENDAHARA
Of Streets and Edges...

Kampung Bendahara is a tiny urban village in the town of Alor Star. As one of the villages that probably originated from an agricultural landscape, its general structure has been discussed. The interesting element in this village is the accessway leading into the clusters of houses. The clusters are linear, so that the accessways actually lead from one road to another parallel one. These accessways are very narrow, at some places only 12 feet from edge to edge. The edges are accumulations of short sides, so that the verticality is accentuated by the support and enclosure elements (posts, studs and panels). The hipped roofs are important in this intimate setting to provide more privacy to the spaces within the houses, especially when the eaves are lowered. The eaves of both the extensions and the hipped roofs help to register the views down the path.

The edges are then a product of the juxtaposition of 3 basic elements:

1) SETBACKS
   Small yards, vestigial front yards

2) EXTENSIONS
   Projecting and recessions

3) EXTERIOR EDGE OF BASIC HOUSE
   Primary enclosure and edges
Extensions projecting into the access channel help define territories that are not in the way of the public movement. These spaces are sometimes claimed as vestigial frontyards. Extensions on the long sides tend to recess so that the unbuilt domain extends into the built zone. The boundary is virtual because the houses are discrete units thus the built edges are not continuous. Sometimes the whole entity of the house is recessed so that a yard is created. This often is used as common yard for two or three units. This enlarged open space gives relief to the narrowness of the streets. It allows for more light and such yards can be used for planting bigger trees which help to give shade to parts of the path. The light into these yards and the parts of the path adjacent is then of a filtered nature. Because of the range of openings the enclosures can create different opportunities for interaction between the inside and the outside of the houses. In many instances, the spaces underneath the house are utilized for some activities, in which case they are frequently enclosed. As such the range of elements that constitute the edge could be:

1) Parallel extensions on the short side (usually composited form) which house the rumah tangga. Though not enclosed, this space is fairly private. It also has views up and down the path. The projection of the extension also helps to create a setback between the public movement and the edge of the built zone. This separation gives the spaces underneath the house more separation from the activities in the street.
2) Parallel extensions on the short sides giving rumah tangga even more separation from the street. Thus, the view is a peek at some section of the street. The eaves and the different levels between the rumah tangga and the neighboring house level helps provide visual privacies. Often, this separation is created by not having windows on the long sides. The extension is recessed from the street creating a landing space from the stair which leads from the house to the ground.

3) Private spaces above ground with views to the path because windows extend to the floor.

4) Private spaces above ground with views to the path only at the edge because window stops at the sill.

5) Private space on the ground with view and access to path.
6) Private space on the ground with view to path but not directly accessible.

Other possibilities that are quite interesting are:

7) Private spaces at ground with access but no view to path.

8) Private spaces at ground with neither views nor access to path.

9) Private space on ground, no definition to separate from path. Such places are often used for afternoon siestas. This unbuilt channel allows for more cross ventilation which makes the street breezier.

The street edge is then an interesting accumulation of a limited number of elements to generate a richness in articulation. Amidst this juxtaposition, the identity of the household is maintained not only by the discreteness of the entity, but also by the physical elements especially the extensions that project
into the access channel. This makes the entrances perceivable from down the street. Besides, the peaks of the roofs help to reinforce the identity of the entities. Such peaks and extensions are even more pronounced in the fishing village in Kangar when the axes of the basic houses are parallel to the accessway. Then each peak and extension together identify the household in the streetscape. The accessway into the cluster becomes even more protected because the houses at the beginning from the roadway are rotated to form a gateway. The two houses are not only rotated, they are also brought closer to constrict the path at this point as if to create an 'internal' world within the cluster. It is so in many ways.
Fishing Villages

consistencies, nodes, links......

An interesting feature of the fishing villages is the presence of the natural elements: sea, rivers, lakes. They set a boundary for the collective form, often generating a consistency of orientation of the buildings. The Malay culture, unlike the others to the north e.g. Indo China and China, does not have cultural rules that dictate the position of elements in relation to the natural elements. The consistencies are generated by some unconscious perception. Most dwellings in the Malay culture are kept away from the edges of water elements. The reason for this could be due to the nature of the swampy edges and the lack of means to alter the natural forms. Perceptions of the water edges are generally not positive. They are the sources of tales about crocodiles and natural calamities often found in their folk lores. These fears may have led to stronger bonds within the community. The stronger relationships may also be due to the nature of fishing operations which are cooperative efforts. The result is that there is a stronger cohesiveness in the built forms.

The major accessway (roadways) are usually parallel to the water edge. The secondary accessway leads toward the water edge. These accessways end in nodes which serve as a transition between
land and water often used collectively for a range of communal activities; as a market, as a place to repair gears for fishing operations and even as play grounds. Sometimes there are accessways connecting the nodes forming a system of movement parallel to the water's edge. Such routes could be mere alleys in small villages. They can also be streets in villages which are often very compact and assume somewhat urban characters. A clarity in the orientation of the house is often manifested, with houses rotated occasionally to generate outside spaces for nodes or common yards. It is interesting to note the discrete nature of the roof peaks which distinguishes the household entities together with the formal extensions.
Along the northern coast of Penang there are many fishing villages: Many are large and constitute a fabric, some are small constituting clusters, often around a node. Many such villages, in particular those which are close to the city do not function as fishing villages anymore because of more lucrative endeavors.

Some such villages are very small with 9 - 10 households. They are frequently clustered around a node which serves as the common yard. There are no front yards which is unusual for sparse villages. However, this enables a more direct association be-
between the house and the common yard. Within this community, one can find sub clusters of houses whose entrance extensions focus on a smaller common territory to make an implied front yard which is shared by the houses in the sub-group.

Although there are no defined front yards, there is an implied sense of territoriality if one observes the location of the equipment during the off-season. In the community, there are many different types of fishing operations. Some are small operations run individually while others are more collective efforts. Many of the fishermen engage in both types of operations. During the off-season, one can find many different types of equipment hanging to dry or to be repaired. As can be expected, the smaller equipment is kept near the houses in the implied front yards, while the bigger nets can be seen hanging in the middle of the common yard.

Such clusters are usually near the edge of the water. Yet, one finds that the cluster is separated from the edge. There is even a change of ground level from the beach to the ground on which the cluster is located. The beach is left unbuilt and is used for keeping the fishing vessels. However, the built elements often extend into the sea as kelongs which are devices to trap coastal species of fishes and shrimp. They are constructed mainly of sticks and wire netting or fishing nets.
section A-A
fishing village on coast of Singapore

section C-C
fishing village on coast of Singapore
PROJECTIONS/three villages.....

It is easy to get lost in Eudoxia: but when you concentrate and stare at the carpet, you recognize the street you were seeking in a crimson or indigo or magenta thread which, in a wide loop, brings you to the purple enclosure that is your real destination. Every inhabitant of Eudoxia compares the carpet’s immobile order with his own image of the city, an anguish of his own, and each can find, concealed among the arabesques, an answer, the story of his life, the twists of fate.

...italic calmo...
Setting for Projections
reasons and exploration choices...

Tepuk sebelah tangan ta'kan berbunyi

If the manifestation of form is a dialogue between the context and the synthesis, then projections of form need a setting. For the exploration, a student housing complex at the universiti Sains Malaysia is thought to be an appropriate one. The university was established in the late sixties, to cater to its increasing technological and educational needs. From a core of science disciplines, the university has expanded to provide training in fields like communication, journalism and so on. Today, its programs cover fields from anthropology to zoology but its focus is still to provide technical training necessary for the country's development.
If the process of translation from the vernacular forms is to inculcate a sense of appreciation for contributions by traditional systems to the built environment, then the academic setting is an ideal place, as it should be the place where questions pertaining to trends of development of the values and the structure of society is supposed to be raised. Moreover, if such a precedence is a successful one, it will then hopefully begin a trend of trying to maintain the continuity of culture. There are signs that such awareness of indigenous cultures is increasing throughout the Third World.

Like traditional settings, student residences can tolerate active interactions, but the needs and values of the inhabitants would differ from those of the villages. At the same time there are means available to improve the conditions and alleviate problems found in the traditional forms. As such, the design projections through translation should be a process of preservation and transformation; taking advantage of contributions of traditional systems as well as modern technologies to reflect the needs of the present; in the hope of a better future.
As part of the same scheme, rural talents are encouraged to pursue higher education. To many the displacement from villages to universities in cities is dramatic. There is no associative link between the new and the old environments. For many, this is the yellow brick road to good fortunes and wealth, away from the impoverishment of the countryside. A good setting that evokes memories of the rural environment can hopefully evoke an awareness that the impoverishment of the countryside is more a result of the social state. The same physical forms manifested in the villages can be used to generate memorable environments. The urban folks on the other hand, could have a taste of the way of tradition.

The focus of the projections was also selected because it permits a range of possible translations from the traditional forms. A university residential setting, it was thought, could be an appropriate setting for a village-like environment. Unlike many regular residential settings, one would have to deal with a range of issues like land ownership, property values, etc. which cannot be resolved in such design explorations. Many of these issues are rooted in the legal systems of colonial days.
The university occupies the site of an old military barrack. It sits on a little hill on the eastern slopes of the island of Penang. The site can be accessed at two points from the main road that leads from the city to the major industrial zone in Bayan Baru and the airport in Bayan Lepas. The university complex is secluded from this road. The playing fields and the administrative buildings are the only visible clues of the university from the road. Many of the administrative buildings are colonial buildings formerly used for housing the offices in the old barracks.

The residential facilities which are mostly new buildings are located along the southwest edge of the campus. The site for the projections presently contains the first group of temporary housing for students which was built quickly and cheaply on short notice as a short-term measure to meet a need. They were constructed of wood and are beginning to show signs of decay. The projections are seen as a theoretical proposal to replace these buildings. For the purpose of simplifying the problems, the projective program retains much of the facilities that were accommodated by the buildings which are being replaced.
The complex is comprised of buildings dispersed amidst the landscape with access provided by the roadway system. The only clue of any potential framework for pedestrian access is the aggregate of buildings that house the library, lecture rooms, seminar rooms etc. This run of buildings makes a fairly continuous pedestrian accessway that leads from the student union to the residential parts of the campus.

This represents a site where a vernacular language would be a strong counterpoint. The approach which is deemed appropriate is to make the site an entity cohesive within itself and linked to the rest of the campus by its access. The physical forms will be a contrast to those around the campus.

The early projections utilized the model of the nodes in the fishing villages except that instead of assuming the role of a collective transititon across a landscape, it would assume more the role of a market place. This is one of the roles of such a node in the fishing village. The pedestrian access through the site is to connect to the parking facilities which are located in the fringes. This is to preserve the unbuilt spaces as a more cohesive entity....with streets and courtyards making a continuum in the two dimensional field. The form of the network for pedestrian access resembles those in the fishing village in principle.
Programmatic Projections

parameters for designing.

Housing for approximately 350-450 students
Mostly in singles some in doubles
Bathrooms, toilets, storage, kitchen, lounges
and facilities to accommodate student residence

Communal facilities
Dining/eating commons
Recreation like carroms, ping-pong....
Outdoor recreation like volleyball, badminton, etc.
Conference/meeting rooms
Study group rooms.
SOME ISSUES ABOUT PROGRAMS

Kitchens are normally not provided in student dormitories in Malaysia. It would be convenient to the students, though, if they could have facilities to prepare drinks, snacks, etc.

Most students either hand wash most of their laundry or send them to local neighborhood launderers where rates are still usually affordable. However, washing machines are becoming more common. Thus, the facilities given to laundry facilities could be thought of as initially for hand washing, eventually given to laundry machines.

Types of bathrooms is an issue. The choice is either to have localised facilities for each household or larger communal facilities.

The types of lounges and their locations are of fairly important consideration.
In a large grouping of 8,000 to 9,000 people, it is common to have a range of entities of different scales to associate with. Within the structure of a university, these entities could be:

1) colleges of 300-400 persons  
2) quadrangles of 90-100 persons  
3) houses of 30-40 persons  
4) suites of 4-6 persons

The vernacular metaphors of these could be:

a) villages as equivalent of colleges the site could be the entity of this village with main elements of association as the dining facility, the central node, the amphitheater the equivalent of the market place

b) clusters as equivalent of quadrangles associating with common yards which would facilitate some recreational activities.

c) streets as equivalent of houses associating with the major access

d) households as equivalent of suites associating with entrance and shared space.
As a typology for exploration, fairly large discrete buildings were used for the house, with the access being more of an interior street similar to those found in urban villages: the public domain at a lower level with the private territories above. Each household of 4-6 rooms has a common shared space like a 'rumah tangga.' This allows for the opening of the room doors to allow cross ventilation without making the room totally open to the street for the activities in the open spaces.

If this rumah tangga projects out into the 'unbuilt domain' a reciprocal form can be produced to make a place in the public domain, off the public access. This is similar to the spaces which often serve as vestigial frontyards in the urban villages.

To create privacy between rooms the primary walls are projected perpendicular to the 'street'. These walls are also the support system. The access is registered by columns that run the length of the building. The protrusion of some of the 'rumah tanggas' is also a means of breaking the severity of these two lines of columns.

The result of such a resolution is a primary support system of a series of walls becoming columns and beams at the 'street'. This sequence creates a sense of transparency and helps to re-
gister the depth of the field. The movement through this se-
quence of columns and beams can be associated with that through
a composite houseform. The addition of the short sides to con-
titute the length means that the access through the house would
have a sequence of 'transparent barriers.'

Because the households are elevated above the 'street' level,
one can have a view of the informal parts of the house, the
courtyards, the exterior paths or the landscape beyond from
the interior street. This also makes it possible to have cross
ventilation through the building. Whenever a door is left open
there can be ventilation through the room, since there are al-
ways openings at the street level. It could also be possible
to create more air movement using low-energy roof fans. Such
fans could help mask the noise in the street.

The washing facilities are communal within the building. To-
gether with the kitchen facilities and some study rooms, they
form the informal parts of the building. The study rooms were
also thought of as possible guest rooms when the need arises as
during commencement or other functions. These informal addi-
tions occupy one side of the ground level of the building. The
other side could be used for storing motor bikes and bicycles
which are common means of transportation around the campus and
the city.

75,
Since the 'street' is elevated above the ground, the collective points for connections to the ground could be used for lounges, and communal gathering places similar to common yards adjacent to the streets. The entrance to the building could be such a node. The intention was to provide a reception area which in the context was quite important since opposite sexes were not allowed into the private domains of the dormitory. Thus, a 'rumah tangga' made into a reception place would be a possible place for some interaction among college mates of different sexes.

The exterior of the buildings could be used to generate edges for the outside access ways, especially with the informal parts of the building fronting the paths. In the middle parts of the site which are not accessible by motor bikes, the unbuilt covered spaces underneath the households could be used in association with the courtyards/backyards e.g. keeping recreational equipment.

The public street should have more light. Since this is a covered street, the natural light should be diffused. Direct light is too glaring and would generate too much heat. Thus the opening for natural light is vertical and is usually oriented away from direct sun.
The roofs are elements of the 'households'. This helps identify the 'household' from without. By making the roofs of different sizes, it is possible for some light to be brought into the 'street' from under the eave on the interior side of the building and from parts of the gable. This makes it possible to catch glimpses of the sky as one moves through the interior 'street'.

The roofs on the sides on the street drains partially into the flat roof that covers the street. The flat roof was eventually reduced to a 4 ft. wide concrete gutter located above the side of the 'street' so that the roofs of the households frequently cover part of the 'street.' This makes it possible to see to the ridge of the roof from within. The roof is constructed from a series of trusses that is fan shaped like the motifs of the screens used to cover the gables in many of the vernacular forms. Instead of draining the water to the outside, a series of U-shaped columns was used to allow the water to drain into the building giving the 'street' a sense of vitality from the running water when it rains. The water is eventually collected into tanks under the 'street' to supplement the water needs for the washing facilities.
The projected enclosure system is one that uses studs for subdivision of the frame set up by the primary system like in the vernacular system. However, the primary system is concrete, the infill system can be made of wood. Instead of using louvres, we can use casement windows so that when the windows are closed, there can still be views out. Because of the many possibilities of the use of the outside edge, a more informal order is used in the articulation of the enclosure. Thus, there is no symmetry in the system, unlike the vernacular system.
Drawing for Projections #1
INTERIOR ELEVATION: SENSE OF INSIDE STREET.
EXTERIOR ELEVATION.
In this exploration we have 4 similar entities of association within the larger context.

1) college  2) quadrangles  3) streets  4) households

The main difference here is that the 'household' entity is larger. Instead of housing 4-6 students, this entity has 9-12 students. These utilities are used as deployed elements. The households are not part of the larger building. They are the vernacular buildings with their own entrances and identity.

The vernacular metaphors are basically the same:

a) villages as equivalent to colleges
b) clusters as equivalent to quadrangles
c) streets and runs of households as equivalent to village paths association with edges, communal frontyards and accessways
d) households

association with entries and own facilities in the informal parts of house....kitchen, bathrooms, etc.
The deployed elements are derived from a support system that is similar to the ones in projection #1. The series of walls are used. Four to six bays are deployed at a time to make a 'basic house'. This house has a formal extension which is used for the 'rumah tangga' and the reception room (common living room). The 'rumah tangga' has a similar importance as those in the buildings in projection #1. Social interaction among collegians of different sexes should not be denied in a more progressive society.

The ground level is used mostly for use-space normally associated with the informal part of the house...kitchens, laundry, washroom, dining or a cove with constant cross ventilation. The cove is necessary because the rooms occupy a significant portion of the exterior edges in the upper level, cross ventilation in the living room depends to some extent on the direction of the wind and whether the doors to the room are open. Three types of deployed entities were used. They are the equivalent of the basic house with extensions.
The basic house is 14 feet above the ground with a formal extension that is 4 feet below the level of the basic house. The 'basic house' contains all the bedrooms in the house which are mostly singles. The reception room actually extends into the domain of the 'basic house', making a spatial interlock between the main house and its extension. This type of deployed house has 3-4 rooms on the ground level, but they are elevated above the ground slightly (about 2 feet 4 ins.) They are located at the back of the house forming the informal extension.
TYPE B

The main house in this type has a split level. One half is 10 feet above the ground and the other is 15 feet above the ground. The extensions are 5 feet above the ground. The extension becomes a transition between the private and the informal parts of the house. The toilet facilities which do not require as much head room can occupy the ground level of the lower part of the main house. The same kinds of uses are provided as in Type A except that the cove is no longer necessary because the living room is exposed to winds in both directions. A similar kind of spatial interlock is deployed for making a spatial continuity between the main house and the extension.

TYPE C

Conceptually, the type C units are the same as the type B units except that the levels are not only split but they are also horizontally displaced. This displacement is a means for the runs of the building to make exterior convexities which can add up to places of larger dimension off pedestrian accessways. Such places could be the equivalent of common front yards. This could be used in association with the activities in the common yards or for outdoor gatherings of groups.
TYPE B.

LOWER FLOOR PLAN

UPPER FLOOR PLAN

section B-B

section A-A

0 8 16 24 ft.
The backyards of these houses could be utilized for those who may need outdoor spaces that are more tranquil to seek solace or to contemplate and read, practice their music etc. In most cases the front is bustling and the back is peaceful....

Generally, the axes of the houseform should be perpendicular to the access. If there is accretion, then the axis of the accretion is the axis of the houseform. Thus, the basic house is parallel to the access. In single unit houseforms, the axis should be perpendicular to the access as in the reference forms like Kampung Bendahara. However, we are basically using one unit houseform aggregates into runs of building. For reasons to be discussed, the basic units are parallel to the access. This is partly because the edges of the house are seen as being more important than the depth of the houses. Even in an urban village like Kampung Bendahara, the roofs are consistently pitched down toward the access using the hipped condition. In an intimate street condition, where the edge of the house is near the access, the lowered eaves give a sense of intimacy within the house. For the same reason, the parallel extension is used. The needs for spaces with exterior edges is much greater here than in the vernacular house which makes the parallel condition more appropriate. However, the partially open gables through the house would permit more roof ventilation. The basic houses of 6 bays of 9 feet in width and 24 feet deep are generally bigger than the vernacular houses. However, it is quite rational
since the projected materials are concrete for the primary support, wood for the infill and secondary structural steel or wood members for the roof construction.

From the edge, the perceived morphology is more that of the fishing village in Kangar. The roof forms are parallel to the street and each house has a roof peak. This together with the extension gives the identity to the household. Because the roof is fairly continuous along the run of building, making some kind of peaks would expose more ends (gable) to the outside to facilitate cross roof ventilation. Some double roofs are used to help make these peaks and allow for even more roof ventilation and penetration of diffuse light to the ceiling. We can therefore have both the roof peaks and the extension to create identity for the households.
Drawings for Projections #2
The projection done in this series was basically to make possible alternatives within the same villages and to explore design implications of two different building types on the same site. A possible setting for such a projection is that the larger building types can serve as the focus for the cluster physically and the smaller units are then used to generate edge with entrances to intensify its utilization. The scenario may be the underclass students live in the larger buildings. In a new environment, they may need to explore the environment and make new friends to broaden their social circles. The upperclass students can live in the 'household' entities as they would already know the environment and have their circle of friends to form groups.

COMMUNAL FACILITIES

The communal buildings in vernacular villages usually take the form of community meeting halls, schools, and mosques. They are frequently expressed as self-stable forms like the square-shaped mosques. It was thought that this building type could be used for communal facilities. These facilities include a place for eating/dining, recreational facilities (at the lower level in association with the central open space) and some meeting rooms/offices for activities in the upper level. Instead of using a dining hall, it was thought that an appropriate interpretation could be to have a number of caterers serving different types of food each maintaining a stall and some adjacent precinct similar to village market places...
Drawings for Projections #3....

102.
no dogmas, 
neither doctrines 
hold our reins 
dog tags like labels 
serve masters 
life's fountain within hearts 
spring releases soul's spirit... to live

—wm. 82.—

Although the problem of cultural discontinuity is rooted in the structure of society and its systems, for architects, the problem has to be translated to a search for appropriate physical interventions. The thesis has dealt primarily with the means for manipulating the physical elements and their structure. While the issues raised pertain more to the nature of the physical forms, we cannot deny the importance of economic, legal and political systems in the shaping of the environment. By beginning with an exploration of the physical environment, we can raise pertinent questions about the structures of the socio-economic systems in relation to the built environment.

The physical exploration was approached from the study of the structure of physical forms to provide a means to understand principles of the vernacular built environment. These principles
can be used to generate a language for making projections for new environments. The reinterpretation of the vernacular language involves the identification of elements, the understanding of the structure and the meanings of the physical forms of the culture. Ultimately, the search is for a formal language that can have a contemporary meaning.

We have discussed the implication of the sexual roles of traditional societies on the structure of the houseform. As cultural trends change, the domains of the sexes are no longer as clearly defined. However, the manifestation of the form has its own effects on the culture's perception of space. The differentiation of the formal and informal parts and the clear separation of the use elements, e.g. the kitchen from the reception room or living room still has a meaning in a contemporary society in Malaysia. As such the link between form and determinant is not directly linear. The mechanics are quite complex.

From the study of the structure of the physical forms, one can begin to project trends in the physical environment. Through observing the villages for formal adaptations to an urban context one can begin to understand how an urban structure can be derived from a built language that is rooted primarily in a rural setting. This is an important issue in light of the disparity between rural and urban environments. Perhaps, there can be a bridge between the urban and rural settings. In a certain sense
the design exploration, especially in the typology used in projections #2, is an attempt at making this link between the urban and rural forms. In dealing with a more urban context, the trend is to begin to utilize the space underneath the house for the informal types of use; washrooms, kitchens.... These parts were not used probably because there were no means to overcome the problems which had been discussed. The informal additions tend to use the spaces underneath the house instead of extensions or accretions. However, it is important to understand how such transformations affect the other aspects of the physical environment. In a very compact village, the physical definitions are fairly 'transparent' thus allowing for ventilation throughout the village form.

The thesis is a deliberate and conscious process to understand the structure of form and its transformation. This is a means to demonstrate a process for projecting, as well as to familiarize with the principles as manifested in the built environment. There is the need for clarity. One important observation about design is that there is constantly a need to utilize the intuitive thought process. However, in order to do that, the comprehension has to be totally internalized. Thus intuition has direct association with familiarity. To quote Arthur P. Mattuck, 'one can solve all problems by intuition, but you can't rely on intuition if you don't have any.'

Footnotes:
5. Professor Mattuck's lecture notes in 1963 Diff. Equations, Spring 1977. This is an often quoted statement from Mattuck's class and has relevance to internal logic or intuitive logic as a build-up of external logic or conscious inductive logic.
From discussions of the formal and informal structure, conscious and unconscious process, one can begin to realize that values that are reflected in the physical forms are complex interactions of order and disorder in balanced harmony. Thus, the conscious/unconscious polarity of the self is closely associated with the formal/informal manifestations of forms in the culture.

It is important to note that the Malay house, as contended in this thesis, is a manifestation from a cultural perception. Thus, there are shared values which are revealed through consistencies in the built environment. The differences are generated from variations that reflect the values of the different sub-cultural groups from different regions, as well as individuals.

While we have dealt only with the Malay culture, it is important to realize that Malaysian culture and identity is of a multi-ethnic nature. Malaysian culture is not Malay culture, to say so is to say that American culture is Indian culture or Anglo-Saxon culture. Just as the different ethnic groups have contributed to the socio-economic growth, the cultures have a way of diffusing across racial boundaries. Malay houses have adopted elements from Chinese houseforms and certainly Malaysian Chinese houses have similarly adopted aspects from Malay houseforms.
To end this beginning discussion, something has to be said about methodologies. Methodologies are means of attaining goals. For architects making projections for places, the goals could be:

For places to be memorable
....the nature of our senses
For places to evoke memories of heritage
....the values of traditions
For places to continue practice of culture
....perceptions, values
For places to respect the nature of things
....orders of the universe

Ultimately, the methodology is the means towards these goals. It is not the goal. Remember!

"Set out, explore every coast, and seek this city," the Khan says to Marco. "Then come back and tell me if my dream corresponds to reality."

"Forgive me, my lord, there is no doubt that sooner or later I shall set sail from that dock," Marco says, "but I shall not come back to tell about it. The city exists and it has a simple secret: it knows only departures, not returns."
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To my aunt, Cheng Eu, mum and dad...
dedicated to my nephew, Charles and niece, Macy.
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And perhaps many more......