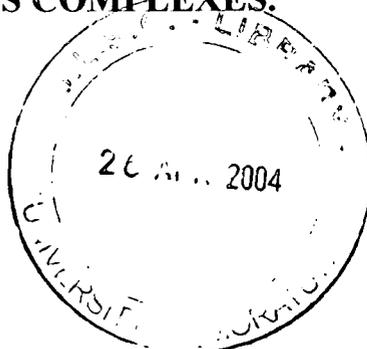


LB/D.011/20/13

**AN EXAMINATION OF THE LIVABILITY IN HIGH-DENSITY
MULTI-STORY HOUSING, WITH SPECIAL REFERENCE TO
LUXURY APARTMENTS COMPLEXES.**



**A Dissertation Presented to the Faculty of Architecture
University of Moratuwa, Sri Lanka,
As a Part of the Final Examination in
M.Sc. (Architecture) and to the
Royal Institute of British Architects, for the
RIBA Part-11 Examination.**

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March 2002.**

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ABSTRACT

With the technological advancement of mankind the world over, the severe constraints on the ever-depleting resources have contributed to man changing his lifestyle. His adaptation to this changing pattern of the environment requires an insight to reveal to what extent he can endure these constraints. In this context it is necessary to explore the most vulnerable group of the society, the upper income group, who has the means to obtain anything at any cost, compromise on this issue of luxurious living style.

Density is defined as mass over volume. Applying this formula to make life livable can lead to innumerable theories, which in actual terms can be extremely complicated. Deriving a conclusion is almost impossible. What are the parameters that can be formulated to comprehend a yardstick and finally say it as the ultimate? In order to come to a compromising conclusion we require to analyse some of the attributing factors such as the orientation, identity, individuality, privacy, territoriality, and sociability for an acceptable livability.

Work is complete



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ACKNOWLEDGEMENT

I am extremely grateful to Dr. Samitha Manawadu, Senior Lecturer, Faculty of Architecture, University of Moratuwa, for instructions, guiding and encouragement given to me through out the course of study.

I owe a deep debt of gratitude to Lecturer Raween Gunawardana and Lecturer Waruna De Silva, for their resourceful discussion, advice and comments that aided both in the organizing and the structure of this study.

I am gratefully indebted to Architect Jayantha Domingo, Deputy General Manager, Special Projects, National Housing Development Authority, for continuous guidance and incisive comments directed many aspects of this study.

I am grateful to Mr. Cassierer and Architect Damayanthi Jagoda, Special Projects, National Housing Development Authority, for their valuable help in various ways and guided me from the very beginning and criticisms and observations.

Especially with heart felt gratitude to my Amma and Aiya, for their valuable guidance and encouragements in this effort.

Finally my thanks to Chandana (Kalu), for always there to carry the burden of my troubles and irritations in most of times and encouragements.

Hemamali Wickramarathna.

March 2002.

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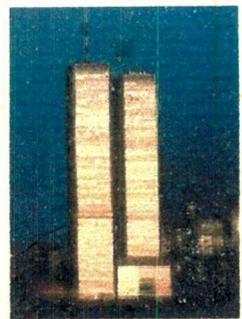
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INTRODUCTION



INTRODUCTION

BACKGROUND

The unprecedented progress of industry, education, technology and sciences has pushed people to live closer to such facilities. This in turn had created more concentrated centres of human activities and human settlements. Mans need to live near his aspirations (as usual) has made the problem of space a worst one. Accessibility, distance, time and cost have become most critical issues to be considered in deciding a place for living

Being a developing country, Sri Lanka also faces the problem of livable space as a pressing need and it seems to be more critical in the near future than it appears today.

Various scholars the world over have viewed the issue of a livable space from different perspectives. Since the fast changes of physical and non-physical properties make the ultimate threat on living conditions, the word livability bears lot of meanings with it and every action exercised in the globe has a bearing on the issue, and the degree of exploration varies with their relative definition of livability or the interpretation, at that particular situation.

In architectural terms the word livability implies rather a deep meaning compared to the other subject areas. It runs from physical to non-physical and even to a spiritual meaning. Accordingly the immediate fulfilment of livability can be categorized as;

1. Physical aspects and attributes of livability.
2. Non-physical or Spiritual aspects of livability.

These two divisions do not show a clear separation and they are woven together to form a single matter, of concern. In other words all those aspects have impacts on each other and only the successful marriage of them could be the real meaning of the word livability. However for the convenience of this study the above mentioned categorization will be used to understand livability.

Some scholars state that environment (designed or not) has a great impact on the change of the users behaviour in that particular environment. The question is **what makes the so-called change of behaviour of the people.**

Lord Buddha has preached that **mind precedes things, dominate them, and create them.**

AIMS AND OBJECTIVES

The primary objective of this study is to review the current housing trends with focus on the problem of space and space utilization and its livable qualities. It is expected to derive criteria or conclusions and then search for a viable solution within the high-density options, when reaching the ultimate goal.

In doing so it hopes to examine the availability of an alternative to mushrooming ready-made, unliveable housing spaces in high-rise housing schemes with special reference to the upper income group.

LIMITATIONS

The attributes mentioned in this study scrutinises the limitations and constraints the most critical sector, **the high-income group** will endure in an urban high-density multi-storey housing complex. Two examples from Sri Lanka and one example from an Indian housing project have been chosen in order to emphasise the relevant attributes.

METHOD OF STUDY

It is expected to highlight the importance of the livability in urban high-density housing with the available literature.

For this reason it will examine the theoretical implications of high density livable spaces and the relevance in existing noticeable densed examples, found both local and an Indian perspective.

The concept of density will be examined with its Social, Cultural, Psychological and Political parameters, and within the regional and local context.

The study will focus on local and Asian case studies where, livability and density can be examined in detail.



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CHAPTER ONE

MAN, ENVIRONMENT AND LIVABILITY

MAN, ENVIRONMENT AND LIVABILITY

1.1 THE IDEA OF LIVABILITY

It is difficult to find a Universal definition for the term livability. Although it is easy to define this to a specific place, time or specific group of people. People of different cultures define and seek different degrees of livability. This is identified for a specific group of people. Adlercrestz says (1995) that,

“ How to define the term liveability depends on cultural and ethnic background but also one’s aesthetic moral values are the one’s that eventually make a building or an environment survive and give it a place in history.”

The environments such as water, food, air is vital to function as an organism. These are the first concerns of livability. Shelter, clothing is protections against wild and natural attack are also considered as vital for order. The organism can live if these basic needs are fulfilled. Human beings are organisms; they need esteem and self-actualisation an essential for man in his environment to be livable.

Certain aspects that lead to determine the notion of livability in the contemporary sophisticated world needs attention at this point since they are not taken as a priority in any detail studies. Mainly it is because they are based on primarily commercial oriented objectives. There are the modern means of communication such as telephone, fax, email, Internet, transportation, automobiles, lifts. Aircrafts seems essential for most societies. The global commercialisation has indicated that lack of these will not make cities liveable. But they are inhuman and materialistic goals that lead the contemporary society.

Livability has a psychological, which is qualitative; and a physiological, which is quantitative dimension. The aspect of livability is therefore given a more human approach. The city looked at it in terms of a place for people and an organic entity. It is thought as a place for the habitation for the organism, primarily for the human

being. Therefore the qualitative aspects like the buildings, streets, open spaces are needed to provide a livable space for a social group.

1.2 LIVING IN THE ENVIRONMENT

Living in an environment as a human being is basically regulated by the physical and psychological needs and demands of an individual. These factors will again vary with respect to his individual and social functions. Man as an individual has to satisfy his natural functions, which enables his survival. In the same way, man as a social animal has to fulfill his social obligation as well. Therefore in the process of living, both these needs have to be satisfied, which are again governed by the physical environment.

Moreover, man considering his behaviour patterns, is a readily mobile, goal directed organism. The places of his activity posture, (how he positions himself, whether he is lying down, sitting up or walking) and indeed the duration of his occupation of a given space, are all contributory factors to his experience of a physical setting.

This experience is also modified by the environmental conditions such as light, sound, and temperature etc. affects him. These factors influence and moderate his experience in a behavioural context.

These characteristics of man in relation to his physical environment, however, are also true of many animal forms, which are also goal directed and mobile. They too are capable of handling their physical environment or changing their position in it. What make man distinctive are his cognitive capacities. He not only 'sees' but also applies meaning to what he sees. On this basis he can link the present with the past and extend both in to the future. These capacities permit him to control his environment according to his needs beyond the immediate situation.

Further, considering the characteristics of human behaviour, physical and psychological needs and demands of man can be identified individually as well as socially. These human needs can basically be identified as primary drives for preservation of organism such as hunger, thirst and respiration which influence

individuality. As the secondary drivers, social motives such as need for sense of security, belongingness or self-esteem may just influence or act upon the well being of a person as effectively or critically as primary drum. These primary and secondary human needs have been identified by Maslow as **five hierarchical categories**, namely survival needs, security needs, belonging needs, esteem needs and self actualisation needs. (Maslow, 1950)

Survival needs are the needs, which must be satisfied for the survival as an individual and continuation of mankind. These include hunger, thirst, elimination and sex. **Security needs** are the conditions to be provided to establish one's sense of protection, about his life. **Belonging needs** can be explained as the needs to include into a group external to the self and the tendency to expand the group follows. **Esteem needs** are identified as the needs to ensure one's position within that group. **Self-actualisation needs** arise only after the fulfilment of four earlier needs. That is the realization of man and his environment for an individual. All the other complex needs would be rooted in these five basic needs including spatial needs. Thus it becomes clear that an environment becomes habitable or livable only if its inhabitants are fulfilled and catered to; and that the livability of an environment will depend on its capacity to cater for the physical and psychological needs of its occupants.

All human needs, both primary and secondary are in the last analysis, the product of individual experience in series of social cultural and economic systems. These may be family, neighbourhood, geography, region and so on. Therefore it can be stated that human needs are extremely versatile and are influenced thousands of factors. In the same way, they change from person to person and time to time. Therefore in the process of identifying the relationship between man and the physical environment parameters, which govern this, have to be analysed. The analysis of variable factors, which govern "living in the environment", would help to distinguish the basic parameters. In this study culture, space location and time are identified as basic parameters.

1.3 PARAMETERS OF LIVABILITY

Livability basically determines the parameters of space or location, culture of the people and time. How these parameters influence livability in different situations and cultural patterns and the changes it makes after a period of time needs in depth analysis.

1.3.1 SPACE OR LOCATION

Each and every individual experience the environment as spaces. In the same way, environment is a collection of spaces. Living condition of an individual or society affect the physical and environmental conditions of a specific space.

“An environment occupies a specific part of space and therefore is situated within a large space (spatial Context). An environment is not identified in isolation but in relation to its setting.”

(Shultz, 1971:16)

Further the physical components of a space such as location; topography and environmental conditions will affect the needs and demands of occupants. In the same way, built structures and microenvironments will moderate the space and its living conditions for people. For example living conditions in a space in the Northern Hemisphere differ from that of one in the tropics. The two situations, which have different environmental conditions, lead to different livable conditions.

1.3.2 CULTURE AND SOCIETY

The livable condition of a specific environment also differs according to the specific society or a certain cultural framework. The same physical environment creates different livable condition for different cultural groups. The meaning associated with the environment to a specific group of people is the differential factor of its livability. The differences in the structuring of ideas are essentially what make a particular culture different from another. Therefore meaning and value systems are both within the culture and differ from one culture to another, and make a specific environment livable for a specific group of people. Though all the physical parameters of an environment are satisfied, it will still not be livable for a society if it is not organized according to their cultural values. As an example, aborigines society in an underdeveloped area will never be satisfied by the conditions in a “habitable place” of a developed city, whatever the state of livability in it. In the same way the livability of an individual will be satisfied only according to his cultural values and meanings. Therefore, the meanings and cultural values, which associate people, with the environment, are parameters of livability.



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1.3.3 TIME

Livability of an environment evolves and changes with time within the same cultural group and within the same physical parameters. Moreover, it contains different livable conditions at different times. The event that takes place within an environment has a significant relationship with it changes, socio- cultural and economic context. Changing needs and demands of people from time to time, affect the living conditions of a particular environment. On the other hand in this evolving process of a society and space regulate the value system and thus influence the living conditions of that society. For example, the cities of ancient time then had a livable condition, which is totally different to what they have today. They would have livable conditions according to the context at that time. In the present context, livability may be totally

different with different sets of values, even in the same space. Evolution of culture, society and physical conditions in such cities change their livability from time to time. The above description leads to an understanding of the parameters, which influence the livable conditions of a particular environment. The relationship between man and the physical environment, which is governed by the above parameters, would help to understand the proper components, which will make up the livable environment. Therefore it is necessary to understand what makes this livable environment, and as a quality of experience how it can be achieved. It is not only a matter of what is physically there, in the experienced environment. Therefore the question will arise as to what are the determinant factors of this livability.

1.4 COMPONENTS OF LIVABILITY

It is fair to say, livability is totally a psychological concept. It emerges in the mind due to the act of living satisfactorily. It is a quality of experience given through the relationship between man and the physical environment. Further, it is not only a matter of what is physically there in the experienced environment but also it is something more than that. It is a combination of both the physical and psychological attributes and human functions.

Therefore to identify the determinant factors, which are responsible for this quality of experience, their sub qualities have to be understood. Each of these sub qualities is brought forth by the physical organization of the environment. The principal determinant factors of livability can be identified as the qualitative and the quantitative attributes of the living environment, which are related respectively to the physical and psychological comfort of human beings. Therefore, the following forms the concept of “livability” within a person:

1.4.1 QUANTITATIVE ATTRIBUTES

The capacity of an environment to stimulate the five basic senses of a person and to enable him to make a comfortable perception of the given environment is imperative. The quantitative attributes of the living environment depict the dimensions of physical environment and its sensibility. This sensation which owes to provide physical comfort gained as a natural functions as well as the social function; in other words physical comfort ability as an individual and social animal.

Livability is influenced by this organization, as it is directly subjected to the sensibility of a person. Moreover the sensible organization of this physical environment includes both static elements such as natural landscapes, man made structures, and dynamic elements such as movement of people, vehicles, flowing of water and air and other infrastructures facilities.

Further, the sensibility of a person depends on natural elements such as temperature, rain, sound wind etc., which are directly subjected to the five senses of a person.



1.4.2 QUALITATIVE ATTRIBUTES

The qualitative attribute of an environment mainly depends on the ability of a person to sense and perceive the environment. This is a personal factor, which varies from the individual to another, and the other changing parameters, which have been discussed earlier.

The perception of the environment is directly a consequent of its physical organization. It is the psychological interpretation of the experienced built environment by the users. Therefore the qualitative attributes gained from this composition of physical organization can influence the psychological comfort through the **sensible imagination**.

“The measure of the livable city lies not only in the imminence of its structures, but also in the quality of the spaces that surround them or are planned in between.”

(Simond, 1995 : 181)

The qualitative attributes are essentially supported by the perceptual organization of space. This organization, which possesses an identity for a specific location and specific social group, contributes different sub- qualities. The contribution of perceptual organization is seen on two fundamental principles of the qualitative attributes.

1. Image evoking capacity of the environment – imageability.
2. Relationship between man and the environment – connectedness.

Basically this image evoking capacity of the built environment determines the physical qualities such as **identity, orientation, permeability, and visual appropriateness**. In the same way perception of a space is also characterized by the relationship or the connectedness and beliefs of a man. This relationship is characterized as territoriality of the belongingness of a space.

1.5 LIVABILITY AND SPACE

In this chapter, livability has been explained as a quality, which is gained from the qualitative and quantitative aspects of the environment. Therefore, this psychological phenomenon is a result of physical environment or a product of quantitative attributes of the living environment.

Living experience is cognised as individual spaces and qualitative and quantitative attributes of that. The legibility of the environment is limited only for the immediate surrounding captured by the human mind or his field of vision. In this process the perception of different spaces and its connectedness brings forth the total experience

of the environment. Therefore to understand the livability of the environment it is necessary to clarify the quantitative and qualitative attributes of **the space**.



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CHAPTER TWO

DENSITY AS A PROBLEM



DENSITY AS A PROBLEM

2.1 DENSITY

Density gives an impression of percentage occupied or disturbed by an organism or an object. Density is a term, which applies in various fields, with subtle differences. Density in spatial or architectural terms also does not bear a single meaning. It can be the density of people, or the density of movements etc.; but all these applications of density denotes about intensity of a given situation. Thus in architectural terms density is not merely density of people or density of built objects, but a multifaceted concept. Hall (1972) refers the term density as the distribution of objects in space. The question here is what kind of objects, and what kind of space this refers since space can be mathematical space, psychological space or cultural space?

There is no universal standard, which can be used to determine density. Not only people move constantly in space at different rates and of different ways, but also each of them carries a concentric series of bubbles around them, which vary in size.

Densities can have negative connotations and give rise to unpleasant impression as well. Density can be referred in a positive way and give rise to **social cohesion; security stability** etc. Densities can foster social contacts and proper densities can lead to shape civilization. It needs a minimum density to function as society. (Hall, 1972:214). There is a minimum to function of a society properly, thus a maximum may result a malfunctioned situation within that society. In other words density can be a kind of a parameter for the function of the existence of a society.

2.2 DENSITY AS A PROBLEM OF LIVABILITY

Livability of a given environment is a subjective issue. It cannot be assured with the provision of single variable, either does not have universal standard to measure. Livability is a compromise of number of different attributes, which represent areas

such as psychological, physiological, social and cultural requirements. This shows that the livability is a complex issue, which is governed by number of variables. What is the livable space requirement per person, or what is the livable density is a subjective matter. As livability of a space and density are relative at times it is very difficult to derive standard guidelines to maintain desirable conditions in physical dimensions. Most researchers have found a relationship between livability and density and extremes of them, but generally it cannot be stated that, lower the livability or vice versa.

Both livability and density are variables, which changes with other factors such as time, technology, socio- cultural norms etc. out of all reasons; culture is the most affecting variable in livability. This means livable density is very much a reflection of that social- cultural setting.

2.3 PROBLEMS OF HIGH-RISE AND HIGH-DENSITY LIVING

The heterogeneity and more privatised life styles in high- density living have indirectly contributed to a more isolated, anonymous and helpless group of community. Hence it could be seen how the internal corridors, covered stairways and introverted nature of housing blocks have emerged as a consequence of that sort of a privatised life style, specially in urban situations. The repetition of similar layout pattern of housing blocks in sub- urban areas too, have forced the users to a more privatised life styles. Therefore the inhumane character of the built- environment has inevitably contributed to create impersonal atmospheres.

*“Impersonal streets make anonymous people...
it is a matter of what kind of tangible
enterprises sidewalks have, and therefore how
people use the sidewalks in practical everyday life”*

(Jacobs: 1961:63)

Further she deplors the absence of public responsibility that contributes to enhance this anonymity, which is a threat to secure and safe life styles in a neighbourhood. Therefore Architects should concentrate on mechanisms of enhancing this public responsibility in social housing projects. This is an aspect that stems from stabilizing the **sense of community** within the neighbourhood.

It is on these grounds, that Newman discovered certain issues attached with high-density living as contributors for the self-isolation and anonymity. He proceeds to explain how the number of storeys, the number of people using the same entrance, size of the block and the nature of sharing community spaces and the inability to control over the space have led further to increase this aspect (Coleman, 1985:14-15). Coleman agreeing with the above aspects further describes how the number of escape routes between blocks and the orientation of entrances has inevitably correlated with the aspect of self- isolation and anonymity. Above will express the legitimate right for the accessibility, which deters the sense of control in such semi-public spaces.

2.4 FACTORS LEADING TO DENSITY



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While the central conception of density is the relation of number of inhabitants to units of space, these figures can be misleading, if used to calculate the livable density in the absence of commonly accepted set of ideas for the measurement. Such set of criteria would relate to various aspects of human activity to the different spaces in which they take place. i.e. workplace, recreational space, etc. Still most of the researchers measure the density in terms of more physical dimensions. Such as number of square foot per person per room, number of rooms or persons per dwelling or number of dwelling in a neighbourhood, and number of people in a particular area of the city etc. mathematical and non-mathematical researchers have derived the practical expressions. Thus it is common in practices to use a mathematical expression to locate or identify livable density of a certain spatial setting keeping all other non-mathematical issues in the background. Problem of different densities comes as a basic problem of human needs, verses, resources, and context.

The major issues effecting density can be categorized as follows;

- I. Land
- II. Increase of population
- III. Economic & political climates
- IV. Socio- cultural aspects

2.4.1 PROBLEM OF LAND

Ever since the dawn of civilization man's effort to keep alive has been involved with the land. The starting point of the issue of density in urban context is, the container available for human activities that is the earth surface, is strictly limited. The current land problem springs from man's need to live near his work. Despite the abundance of land, the space for all the uses demand by man is still limited by time, accessibility distance and cost and speed of travel. He has not been able to rationalize the use of that space. Spenser say's "man would soon have no room to keep soles of his feet, and that landless man might equitably be expelled from the earth altogether".

2.4.2 INCREASE OF POPULATION

The growth of population has consequences for individual, the social system and for the environment. One of the main reasons for the increase of density is population explosion. Major reasons for the population growth is, lack of individual understanding of the magnitude of the problem and it does not make immediate consequences to the immediate individual. Thus the problem keeps on progressing.

“Human being can produce diverse means of controlling the environment, they have failed in attaining corresponding control over them selves”

(Abrahm :1966)

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Increase of population in urban centres take place due to number of reasons. As the urban centres acting as magnets, which attract people, migration from other areas to the urban centres is inevitable and enormous increase of population due to the migration overwhelms change of population due to the birth and death rates.

In many species, number of animals increase form year under desirable conditions until a maximum population is reached; then suddenly an enormous mortality descends. This phenomenon is known as “population crash” (Dubos 1972). It shows an indication of undesirable environment due to the increase of density. Because of the new innovation of the medical technology, the age or the life span of an average individual has given more assurance. Therefore risk of population crash too has been reduced, and as a result, birth to death ratio has a different or proportion than that of several decades ago. Population crashes caused by epidemics such as a plague, yellow fever, etc. have been controlled or even eliminated. All necessary precautions are taken against to arrest any recurrence. These technical developments have resulted is an increase of population. Although population growth is controlled by several contraception methods, the overall population growth in most developing countries remains the same.

It is clear the how the limited area of land sets affected by the increase of population and creating higher densities.

2.4.3 DENSITY AND SOCIO CULTURAL BACKGROUND

There are various factors affecting the density of space. The culture is probable the most significant single variable in determining what constitute a stressful density.

Level of density, which would stress Western people, may not likely to bother Easterners. Even within Easterners it may differ, i.e. Indians may feel better in a certain density while Sri Lankans may not feel comfortable in the same density.

Socio-cultural background adjusts people biophysical system to a certain form and it results perception of space differently.

Man in any geographical location is a social animal, and need to be with others. (Magarat, 1969)

Socio cultural frame therefore is a vital in keeping a society in balance, like any other need such as food, water or shelter.

“Culture is an abstraction from the body of learned behaviour, which a group of people who share the same tradition transmit entire children or and in part to adult immigrants, who became members of the society. It covers not only the arts and sciences, religions and philosophies to which the word culture has historically applied, but also small intimate habits of daily life, such as the way of preparing food or making a child to sleep”.

(Magarat, 1969)

Even within a given social group the aspirations and needs of the people conflict with each other and their differences further would lead ultimately to the disintegration of such social groups. Studies of both animal and human groups have found that they are always forming groups and they make great effort to retain their group from destructions, and maintain their stability (Proshansky.1970). With an eye to keep the social stability people adapt agreed values and norms and it reflects in the socio cultural frame.

Each society of group of people has their own values and norms, which help to keep their environment as they wish. This in terms ensures their stability.

Thus the relationship of the socio-cultural aspects and the human satisfaction has a vital role in terms of their built environments and its livability. This socio-cultural environment effects changes over a given density. The space requirement of a given culture is a specific and variations over a given density. The space requirements of a given culture are a specific and variations of that space eventually have a bearing on the behaviours. Thus the socio-cultural attributes of a given group have a great impact on density.

2.4.4 POLITICAL & ECONOMIC BACKGROUND

When man became more and more of a complex social animal, his systems of interacting among others became advanced. Today one may find numerous complex applications of political, economic systems within societies and among societies. One of the main variables, which measure man's power and wealth, is economic stability. Cost has bearing on any thing; livability and the density too have impact over it. Livable environments (house) have become just another commodity (Perera 1995). Political and economic climates of a country have influence of the potential density. Some societies have ideology that private enterprises is essential for countries development and should be encouraged by appropriate laws, inducements, guarantees etc. this encouragement leaves most responsibilities to the private sector, and in contrary some societies have the ideology that land has belongs to the state, neither private enterprise nor private ownership has place in a society. In one situation the ownership of land it's subdivision, maximum profit orientation of entrepreneurs, cause higher density in urban areas, often creating undesirable living conditions. When people do not have ownership of land, it often has shown that no genuine interest in taken for themselves to develop the available property to get an optimal use of that, and it generate a seems lethargic. (It clearly indicates of the economic changes of Sri

Lanka (after 1977) and its reflections in housing industry by the number of private housing condominiums.)

In the same way one society may have an open economy and the closed, resulting in different consequences inherent to that system. In the open economic system, it opens out the economy and its connected activities comprising social, cultural, behavioural etc. due to them reason the single variables cannot be separated from the others. Once the economy is opened, it opens to a number of other paths, a well. Thus the change of economic system brings lot of implications of socio- cultural climates, and it helps to shape one's attitudes and needs of livable environment and possible densities of it. In a close economy system the variables are state controlled and the society has limited choices in determining their livability.

In the light of this it is somewhat clear that the political and economic system, which exists at that moment, affects the livable density of a given society.

2.4.5 TECHNOLOGY AND DENSITY

One of the main factors,  which allow achieving higher densities of living, is technology. As Delos (1972:214) states, the effect of increased densities upon retaining of human values in a given situation with its culture, technology and economic wealth.

***“ Technology has been accused of destroying both
nature and man, of poisoning spirit of flesh.”***

Severino (1970:1)

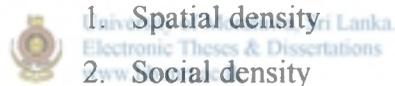
It is true that the densification was accelerated rapidly as a result of industrialization, in the Western world. Man has limited his dimensions of densities in the past; modern technology has given the opportunity to go beyond those dimensions of density. Like the development of technology in medicine and engineering resulted in longer life and thereby a higher population, the development of automobile technology keeps people

in different distances and time formulas in a close relationship. In other words the speed has invented a different dimension to the density of the environment. Scale and speed have been changed to the extent of the change of the perception of people.

Living in higher elevations was not easy in technical terms few decades ago, but with the sophisticated techniques of vertical transportation has made more provision to live in upper levels. Dimension of accessibility changed in both horizontal and vertical axis, given more room for higher densities, but resulting in some unforeseen or hidden consequences.

2.5 TYPES OF DENSITY

Density has different appearance according to the situations. Stockols (1980) mentions two types of densities,



Jain (1983) categories density in a different way as;

1. Inside density
2. Out side density

Social density can occur when an increased number of people occupy a space, formally occupied by fewer, as when commuter train fills up on its way into work.

Spatial density occurs when a constant number of people come to share a small area, as when a crowd of people tries to fit into the same elevator (Stockols; 1980).

Inside and Outside densities are two relative categories, depending on its location properties. A large number of people living in a small dwelling are referred to as having a high inside density; where as a large number of people in the neighbourhood

is referred as having a high outside density. This inside or outside connotations depends on the individuals determining definitions and perceptions of it. The implications of these perceptual differences have more relevance in determining a particular density in a space.

For example,

1. A person in highly dense dwelling with a large number of people in the very deserted neighbourhoods.
2. Same person in a very low dense dwelling in highly dense neighbourhoods.

In both these situations the person would experience a higher density, still the amount of space inside and outside are giving contrasting differences.

This leads to the idea that, the importance of density in relation to the context plays a significant role.

2.6 DENSITY AND CROWDING



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Scholars have addressed the issue of density both in negative and positive ways. Through it seems that crowding and density are close terms, clarification of its specific meaning is worthwhile. According to Stockols (1980) “density is the **physical** description of people in relationship to amount of space necessary but not sufficient condition for crowding.”

Crowding is the psychological or subjective experience that result from recognition that one has less space than one desires. Thus the issue of crowding can be stated as a function of the relative space allocated for that particular activity in a particular setting. The enough and sufficient space is always a subjective amount.

Rappoport (1977) points out that 340 square feet per person is recommended as a minimum for housing in the United States where as in Europe the figure is 170 square feet. In Hong Kong 43 square feet per person does not seem to be unreasonable, but for another society definitely would cause a crowded situation.

This project, in high-density living condition, the concern is not merely the physical dimension of the space but the sense of crowding that felt by the user. In other words the density as immaterial in terms of livability is it doesn't create the sense of crowding.

2.7 CONSEQUENCES OF DENSITY

The association between high-density living and personal or social problems is not automatic one.

“Density to have negative consequences, the presence of others must somehow disrupt the development, maintenanc and regulation of typical or desired pattern of behaviour.” (Sawyer?)

High-density living definitely has the capacity to be stressful. (Krupat: 1987, Saegert: 1978). It creates problem to co-ordination among people, and it reduce the peoples ability to control their environment, by encroachment as privates, boredom etc. (Jain: 1987). Under this issue several theoretical models have been proposed by number of scholars. Jain (1987) says that there is a general consensus among researchers that high-density living does not always lead to negative effects. The negative effects of density are mediated by several non-spatial factors and psychological mechanisms. Effects of high-density living have been extensively studied by several scholars but to the fact that, it is so complex and evidence of cognitive control in human beings do not allow such generation; Also research on such spatial densities and effects on human behaviour has been so difficult because the methodological situations and non availability of a pure density.

Consequences of high-density living can be categorized as follows for the convenience of study.

1. Psychological consequence
2. Physiological consequence
3. Sociological consequence

2.7.1 PSYCHOLOGICAL CONSEQUENCE

Psychological consequences of density cannot be counted independently, as it has complex connections with other aspects such as social and physiological etc.

Out of the theoretical models discussed above, the first two models provide more evidence of psychological consequences. One common element in all is the loss of control over environment at high-density situation. The attribution model describes that only if the individual attributes his arousal, he may feel uncomfortable. It can be stated that the psychological consequences are subjective to individual or personal attributes.



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2.7.2 PHYSIOLOGICAL CONSEQUENCE

High density living at a glance has bad connotations. It evokes diseases pestilence, and group generated attitudes. These congested spatial settings may make the mind unhealthy, resulting harassed behaviour.

Population crashes have been reported in high-density environments even in the history. The problem of livability has been associated with industrialization, epidemic outbreaks and chronic forms of microbial diseases.

High-density living has several independent effects. Dubos (1970) said that in fact the high density affects the response of the individual and social body not only to infection, but also to most of life stress. The reproducibility of the response to various abnormal states, such as barbiturate, aesthesia, is effected by high social density.

The toxicity of central nervous system stimulants such as amphetamine is remarkably enhanced, when animals are placed in crowded environment; central depressants, protected to some degree against the aggregation effect. (Dubos: 1970)

2.7.3 SOCIOLOGICAL CONSEQUENCE

When human come across their social desires, in the high-density situation, social existence often seem get affected. Living in high-density setting obviously implies a high density of people as well. Studies on the effects of high density living on social behaviour by and large have revealed the negative effects. In conditions where people anticipate high density they show reduced liking for their fellow being, lesser interpersonal attraction, and limited interaction as compared to the persons anticipating low density (Jain: 1987). In number of field studies, with high density was found to associate with lower frequencies of interaction. The density effects on non-verbal behaviours such as eye contact, facial expression, and compensatory gestures have been observed.

Through the reduction of interaction is a social consequence it arises as psychological consequences of stress.

Withdrawal is another major consequence, which occur in high-density living.

Withdrawal presupposes the aversive ness of situation because of potential threat or low capabilities to meet the demands of the situation because of the interpersonal conflicts. While the high densities have been found to lower interpersonal attractions, some researchers have found withdrawal as avoidance of interaction, and Baldassare (1975) could not find any relationship between household density withdrawals.

With a mediator view and observation, in the Sri Lankan context, withdrawal form social interaction is difficult to be expected of Sri Lankans, Honoring guests compared to the western cultures, irrespective of the degree of density or people, generally are used to maintain social contacts with neighbours, relatives and friends. This shows, most of the research finding should be make use of local situations, after adding flavours of Sri Lankan dimension with utmost sensitivity.



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CHAPTER THREE

HIGH DENSITY MULTI STOREY LIVING



HIGH DENSITY MULTI STOREY LIVING

3.1 EMERGENCE OF THE MULTI STOREY LIVING

In accordance with development of cities, people concentrated more and more towards the urban areas. The scarcity of lands and other valuable resources brings a critical issue. As a result of that, the value of land has become very exorbitant. This situation mostly affects the low-income and middle-income earners. Cities need more open spaces for parking and for other human development. So, the concept of vertical development came into being as a solution to overcome this problem. When considering the international situation, the origin of the multi-storey apartments goes back to a century and a half in the western world.

3.2. THE APARTMENT CONCEPT IN GLOBAL CONTEXT

During the World War II, it destroyed thousands of buildings including dwellings. As a result of the technological development, the invention of new materials that took place after the war, the architects and engineers used these new materials and techniques for those new constructions. As they realized the need for the vertical growth, the new materials such as glass and steel were used in putting up new multi-storey apartments. The inventions of these materials also made the concept of vertical growth much feasible. Therefore, providing an effective solution to the problem of meeting the quantitative requirements of housing in the urban sector commenced.

The history of the multi -storey apartments goes back to the 18th century in New York. Early buildings were very narrow apartments. For example, Bed Ford Street. Second Street and Lexington in Manhattan, Graham court in Seventh Avenue designed by Clinton and Russell (1921). Such multi- storey buildings emerged in Europe, Russia, and France and in other countries too. With the invention of the passenger elevator, multi-storey buildings had become very popular. But, those days most of the multi-storey buildings were used as offices.

“Steel frames of construction have come in to use and it has given first authentic recognition and expression in the exterior treatment of the WinWrite building, a multi - storey office, structured by Levis Sullivan’s on hand.”

(Sullivan 1956:37)

3.3 EMERGENCE OF THE APARTMENT CONCEPT IN SRI LANKA WITH REFERENCE TO THE CITY OF COLOMBO

Colombo was once considered the garden city of the east with large graceful mansion set amidst lush lawns and huge expanse of green open spaces everywhere; with trees as old as the land itself. It must have indeed been paradise.

Today private housing has taken a vastly different turn. The gradual fragmentation of land that began in the last century escalated after the change of government in 1977. The resultant transformation of economic policies had a tremendous bearing upon the physical development of the country.

As Colombo began to reap the benefits of the open economy, business and industry expanded creating a magnet for urban migration (it is estimated that the floating population is 3 times as many as the resident population); the subsequent demand for land resulted in fragmentation.

Fragmentation also occurred because the landed gentry in Colombo, who held most of the land, blocked it out and held on to it as a form of dowry or divided it amongst their children. Migration of certain section of the country also resulted in large tracts of private land being available for development.

These changes have transformed our social and cultural lifestyle and affected the way we build. The approach to urban housing began to change from expensive bungalows in luscious green gardens, to one of compactness, practicality and economic feasibility.

One of the symbols that typify this change is the multi storey residential block, a concept not new to Sri Lanka. The Baur's flats by Swiss designers Egender & Muller

date back to 1941 and the Senanayake flats designed by Minette De Silva was completed in 1954.

But **condominium apartments** as they are so called have arrived in recent times in a scale and dimension never seen before. Condominium housing is a common feature in most metropolises of the world where quantity prevails the housing problem. In Colombo the “condos” began to proliferate around 1990 and today there are around 25 within Colombo and many more in the pipeline. New regulations in containing the fragmentation of available land has also attributed in construction of buildings with a vertical approach.

The most prominent features of these apartment features of these apartments are centrality of location, security, parking, and maintenance. The sale price of many of these apartments range from Rs. 6 million to around Rs. 13 million and a penthouse apartment would be in the range of Rs. 35 million. A majority of such apartments are aimed at the more affluent classes of society and display an architectural aesthetic, which is unique within them. Most such projects satisfy the basic requirements for building regulations such as light and ventilation with maximum capacity of rentable floor area. Yet in terms of visual aesthetics and architecture they merely present a very cosmetic façade to the road. Many of these apartments seem to interact with each other, indeed there is no space to do so except, probably, in the lift; the inherent need to interact itself, does not seem to be a priority among the occupants.

Notable exceptions to the above are Queen’s Court and Royal Park, which has facilities such as swimming pools, gymnasiums, restaurants etc. The facilities at Royal Park & Queen’s Court are exclusively for residents.

This change in social and cultural lifestyle also gave rise to small residential communities located in relatively small plots of land. These provide pre-built houses for owners who did not want the hassle of constructing their own homes and are in keeping with housing trends in other parts of the world, where homes are built as neighbourhoods with common community facilities.

3.4 MANIFESTATION OF THE LIVABILITY OF HOME IN MULTI- STOREY HOUSING

The attributes of home in housing for all categories of people, as established earlier are the same, the differences being only in socio- cultural variations. Therefore, whether the housing is for low, middle, or high-income categories, the attributes will be the same. In the luxury category what differs is the luxury amenities such as air conditioning, heating and mechanical vertical circulation. Also the increase in size of spaces, and the addition of extra spaces such as a study, roof terrace, and such exclusive features that would be possible due to affordability, but not bare essentials for a home.

Therefore, the manifestation, or the ways of expression these attributes of homes would be discussed in general to all multi- storey housing category, which are designed and built by various housing authorities as suitable for them. A visible constraint is that due to reasons of affordability, cheap construction methods and materials are used, thus reducing flexibility necessary to achieve some attributes. Yet these seem to be no reason for the luxury category to lack any of the attributes, as affordability is not a constraint. Research into constructional methods, which could be flexible enough to achieve the necessary attributes, would be valuable, to enable all categories of people to have a home, and only the elite or the affluent.

In the case of multi-storey housing, the attributes will not only have to be discussed in terms of individual units, but in considering the form of the whole complex as well as the layout of individual units, but in considering the form of the whole complex as well as the layout of individual units in relation to each other. This overall form, which creates an image, is important to any housing situation but is critical in the case of a high-condensed built form.

In identifying the image necessary for a housing complex and evolving a generic form considering any cultural variations would be useful in the realization of the concept of a home. A study in this respect would have to be very comprehensive, analysing built forms cross culturally, studying vertical developments of all variations to suit all cultures.

This study would concentrate on how each of the attributes is reflected in high-rise homes. It would be meaningless to study each attribute separately. All these attributes are interrelated, and should be integrated mutually reinforcing one another. Therefore, the attributes will be discussed in a collective manner. The attributes of livability, namely orientation, identity, privacy, territoriality and sociability, covers the whole range of attributes discussed above, and would be the basis for discussion in the following section.

3.4.1 ORIENTATION

In the past, tall buildings were used to orientate one self, with reference to that point. However, in the contemporary urban environment, with an abundance of high-rise buildings, another tall building would lack identity, thus making it difficult for people to orientation themselves.

One way of achieving this is by having an identifiable form, where the high-rise apartment itself could act as a landmark (fig.01) and the other would be to give it a name unique to the lifestyle of the future occupants. But when creating landmarks out of housing environments, one should be careful, as the task is not to create monuments, but to provide homes for a large number of people.



Figure 01. Housing as a Landmark

When considering the layout within the geometry of the site and the various axes created by the surrounding environment could be helpful in gaining orientation. When there is more than one block in a housing complex, each block should be identifiable in order to identify one's own block. If all blocks appear identical in size, shape, height and the nature of its placement, one could get **lost** in space. Therefore, by changing the height, size, shape and nature of placement of blocks with reference to another factor, orientation becomes possible. (fig.02)

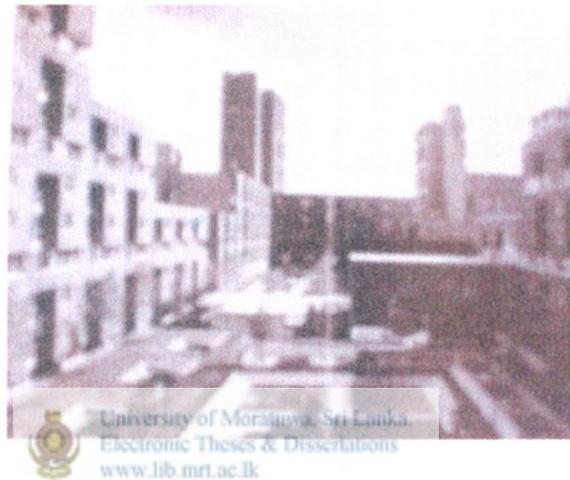


Figure 02. Difference in height contributes to Identity.

Orientation within the individual units of the complex is also necessary, or else when inside, one could lose his or hers orientation or even lose the **sense of place**. The positioning of individual units, the approach paths, and the views and vistas along the way that could be used as references, are ways of achieving orientation within a complex. (fig.03) Composition of the form and layout becomes important, as a central focal point in a composition would enable man to orientate himself within the complex. (fig.05)



Figure 03. A view from within gives Orientation.



Figure 04. Directional views give sense of Orientation.

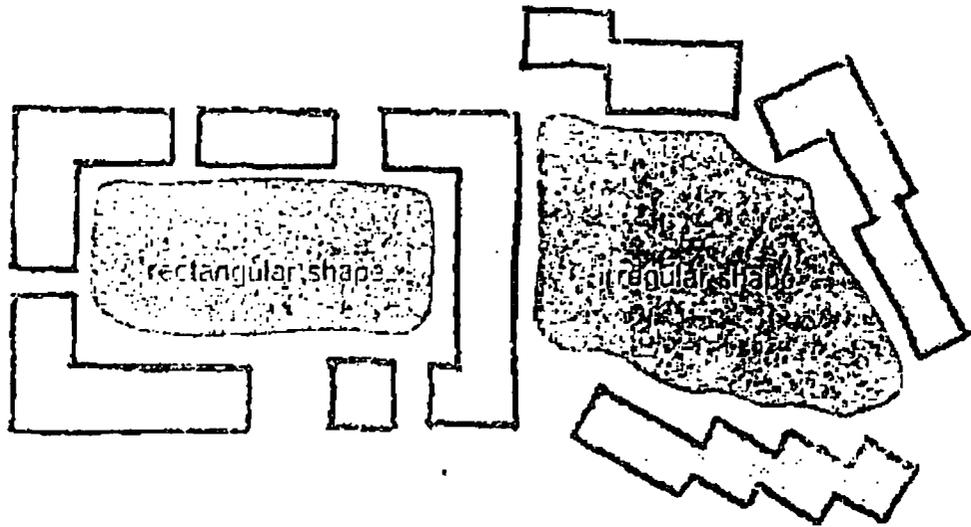


Figure 05. Composition of the layout gives Orientation to the complex.

3.4.2 IDENTITY

Built forms are considered as means of self-expression. In a multi-storey housing situation the form should communicate the meaning of a residential building, thus giving identity to the building. This ability to identify a particular type of building is necessary in order to differentiate between offices, commercial, institutional and residential buildings.

To express a residential identity, such a building should have a certain generic form, which basically conveys the meaning of it as a residential building. Due to the necessity for increased privacy, the form of a residential block would have a higher degree of enclosure to that of an office block. Figure 06 & 07 indicates a housing block that lacks of identity, and appears similar to an office block.



Figure 06. Housing block similar to an Office block.

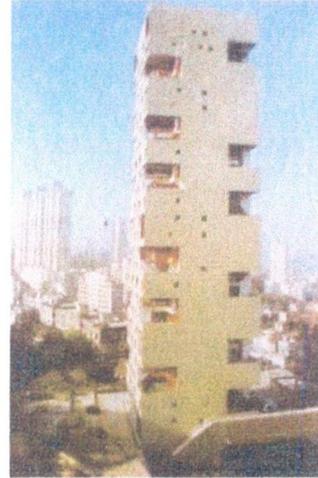


Figure 07. Identifiable housing block.



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The need for the families living there, identity their own unite will result in individuality of units. This could be achieved by breaking up the total form into individual units having a uniform appearance would not express the presence of units occupied by different families. (Fig.08 & 09)



Figure 08. Individuality expressed through the built form.



Figure 09. Lack of Individuality.

The proportion of such a unit is an aspect worth considering; as it is an important factor that man associates himself with. (Fig 10&11)

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Figure 10 & 11. Each projection proportioned as a golden rectangle.

3.4.3 PRIVACY

Privacy of the total form is dependent upon the nature of the enclosure and the enclosing elements. For instance a form, which is enclosed by a transparent medium, could not create a sense of privacy within even though the spaces within are organized to do so. This makes it clear that as much as the total form of an individual house matter to the people's perception, the built form of the multi- storey complex is also an important aspect to allow socio-cultural variations.

Therefore, the overall form of the complex should have an enclosure with a certain solid-void relationship to evoke the sense of privacy within. Identifying & establishing the relevant solid-void ratios could achieve this.

The organization of privacy in the layout of individual units should be done carefully to maintain required privacy levels. For instance, spaces should not be organized to allow visual penetration of one unite from another.(fig.12 & 13)

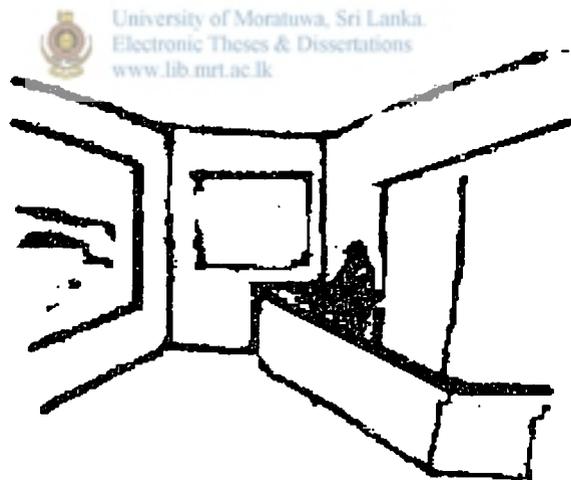


Figure 12. Lack of Privacy.

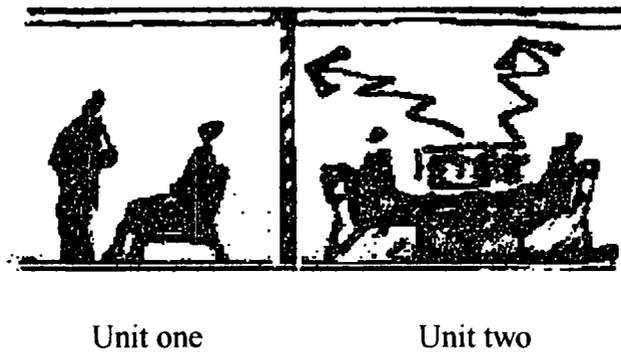


Figure 13. Lack of Privacy due to party walls

In high-density houses, privacy is a problem not only in visual terms, but also in acoustical terms. Therefore, to achieve acoustical privacy individual units could be arranged in such a manner that common living spaces within a unit (living room, bed room and even kitchens) are not attached by common walls. (fig. 14) If partition walls cannot be avoided it would be advantageous to articulate the spaces and locate, store rooms, utility rooms and even terraces on adjacent areas. (fig. 15)

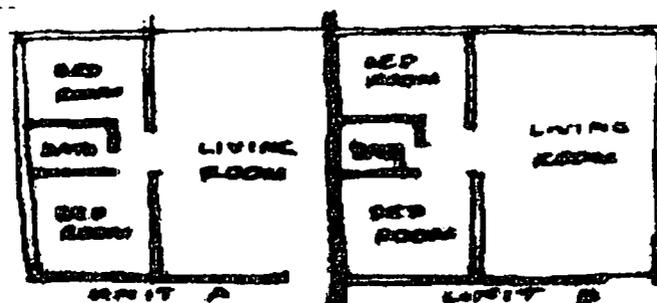


Figure 14. Lack of Privacy due to poor organization of spaces.

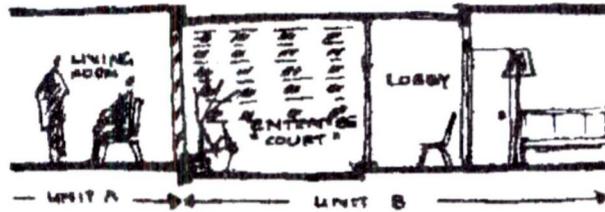


Figure 15. Privacy achieved through organization of adjacent spaces.

3.4.4 TERRITORIALITY

Territoriality in high-rise housing needs to be considered at different level of interaction. Firstly, considering the entire complex a certain degree of defining the territory is necessary to evoke a feeling of security among the occupants. Having physical territorial markers would bring about a sense of security and belonging allowing them to defend their place of unwanted intrusions, rather than a security guard. Several ways of defining the entrance to the blocks is shown below. (fig. 16,17, 18)



Figure 16. Territory defined by a building –within gap.



Figure 17. Territory defined by an entrance arch.



Figure 18. Territory defined by the composition of buildings

Even within the complex, having territorial markers rather than a doorman or a security guard hovering around the corridors, and a complicated electronic surveillance system, would be more effective to create a sense of place. The latter would only add to the lack of privacy.

It was established earlier that a number of units served by a common entrance or path should be limited to a small group in order to be able to define one's territory. Thus a few numbers of units should be defined within one territory to enable them to defend it from any intrusions from strangers. If the territory is not defined and anyone is welcome to walk right up to each front door of homes, it would result in anonymity and as stated earlier, lead to crime and vandalism.

Furthermore, if collective territorial defence cannot be depended upon, the defining of one's immediate territory of an individual unit is necessary. As such the same principles adopted for the individual houses could be reinterpreted and used here. Thus a change in level, a change in path, corridor, a front door step or a recessed entrance door, could be adopted to mark the immediate territory of a unit. (fig.19)

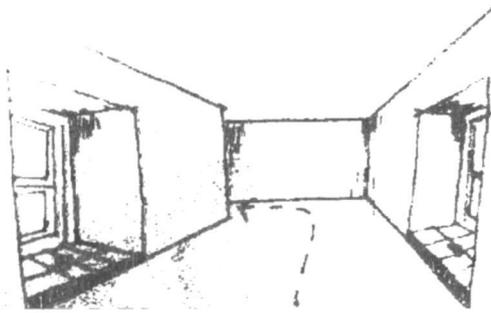


Figure 19. Territory defined by a change in level; recessing the doorway, change in direction.

3.4.5 SOCIABILITY

The aspect of sociability in high-density housing should be achieved with utmost care so as not to cause irritation among the occupants. This should be achieved by maintaining the desired levels of privacy required by the people living there.

When considering individual units, apart from meeting the neighbours on the corridor, a common roof terrace or such a space could be organized to encourage social interaction, (fig.20) but indeed must refrain from using private balconies for such a purpose. (fig.21 & 22)



Figure 20. Roof terraces overlooking each other.



Figure 21. Balconies facing the common street encourages Interaction.

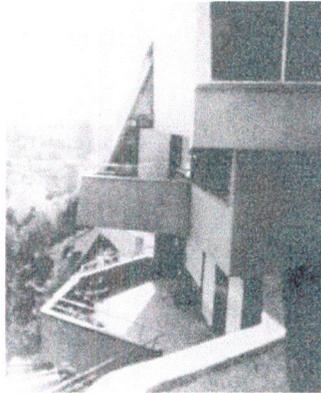


Figure 22. Private balcony overlooking each other – reduces Privacy.

In addition, as discussed earlier, if a territory is defined for a group of units, then a common space could be created where individuals from those units could interact. Even children may be able to wander off from their own home to this common space and play with other neighbouring children.

When considering the complex, common gathering spaces for leisure and recreation would enable interaction among a wider cross section of the residing population. A commercial or shopping and a sports complex could be incorporated where the occupants not only meet their own community, but people from the neighbouring communities as well. These spaces could be articulated in a manner that would encourage the use of it by both categories, that is internal community and external community, thus encouraging interaction.

In a housing estate with several blocks, they should be organized in such a manner that an enclosure is created thus enabling interaction. Otherwise it would result in creating a No man's land. (fig.23)



Figure 23. A layout of housing blocks creating a no man's land.

In addition to the attributes discussed above, the need to be close to nature, to have fresh air, plants and flowers around is apartment in home environments. Therefore an outdoor space even in multi-storey apartments is an additional requirement for the well being of human beings.

Moshe Safdie, having discussed the significance of an outdoor space, has demonstrated the ability to achieve it in multi- storey housing, (fig.24) thus creating an environment similar to a low- rise housing estate with individual houses.



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Figure 24. Habitat in Montreal by Moshe Safdie.

The addition of an outdoor space can be considered a **luxury** in luxury multi-storey housing complexes. Kin Yeang, a Malaysian architect, well aware of the necessity to be environmentally sensitive has designed luxury high-rise housing adapting to the local climate and open-air lifestyles. The MBF Tower in Penang, Malaysia demonstrates this and has been designed for cross-ventilation by incorporating a series of recessed and shaded sky courts or gardens. The spiral configurations of the sky courts are designed to achieve a self-sustained maintenance system. (fig. 25 & 26)

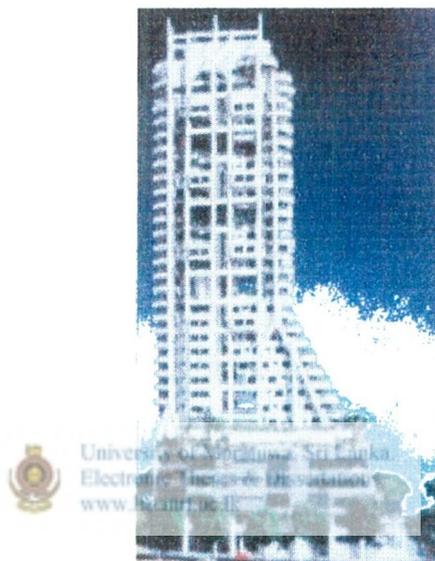


Figure 25. MBF Luxury housing tower Malaysia.

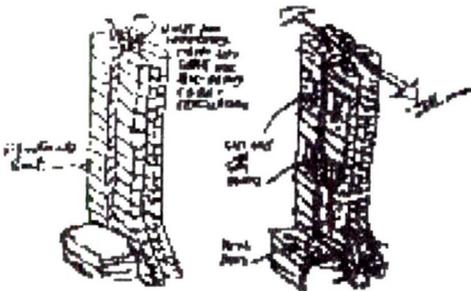


Figure 26. Basic principles of the design of the MBF tower.

When considering luxury-housing complexes, it could be argued that these luxury condominiums, which represent the ultimate in luxury city living, are designed and built for super rich, who may have reached a degree of sophistication where traditional norms of community interaction bear little or no relevance. However rich or sophisticated one is may be, territoriality, sociability is all human needs. These needs should not be neglected due to the interpretation that the rich and the affluent need no interaction; otherwise they could end up as a community that lacks the essential humane qualities. This should not be the fate of the rich and the powerful, of our country. Architects and housing administrators should have a social responsibility towards the people they cater to. Therefore, the values and attitudes of this community of the rich, affluent and powerful, should be carefully understood and the aspects of sociability should be handled within reasonable grounds.





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CHAPTER FOURE
CASE STUDIES

CASE STUDIES

The schemes illustrated in this part would examine the range of attribute discussed in the preceding section. The three schemes are presented are luxury high-rise condominiums from the tropical Asian region. The designs are examined with reference to the attributes discussed above. Both the negative and positive reflections would be highlighted.

In the search for case studies it was noted that some of the existing **Luxury** apartments, advertised by developers as **Luxury homes**, are in fact merely used by expatriates, foreign businessmen or are reserved for people who are employed abroad. However, the local examples, **Royal Park** condominium at Lake Drive, Rajagiriya and the **Queens Court** apartments, Queens Road, Colombo 03, was selected on the basis that they are actually being used as homes by the local population.

The other example The Kanchanjunga Apartments in Bombay was selected to show the reflection of some of the attributes, which are lacking in the local examples.



CASE STUDY ONE

ROYAL PARK CONDOMINIUM, LAKE DRIVE, RAJAGIRIYA

This luxury apartment complex located just outside the city limits in a four-acre land at Kotte is one of the tallest apartment blocks in Sri Lanka. It is a twenty four-storey building consisting of 248 apartments including four penthouses suits at the top most level. Introduced to people as, **Royal Park condominium, the one address of high distinction for Sri Lanka's powerful elite** has been designed on the concept of to quote the developers themselves, as a **resort condominium in Colombo that truly matches the aspirations of Sri Lanka's privileged elite**. It is a concept of a **Country Club Resort** just outside the city, with 5-star residential facilities.

In this case it is important to identify what is meant by luxury homes. It is evident that the complex has all the high quality finishes, services and appliance that are practically possible. The additional luxury amenities are in abundance. What needs to be identified is whether it has the required qualitative attributes as homes for the affluent or the elite or for the expatriate or business community who will be in transit. Thus the form and layout of the entire complex and individual units would be examined with respect to the key attributes of orientation, identity, individuality, privacy, territoriality and sociability.

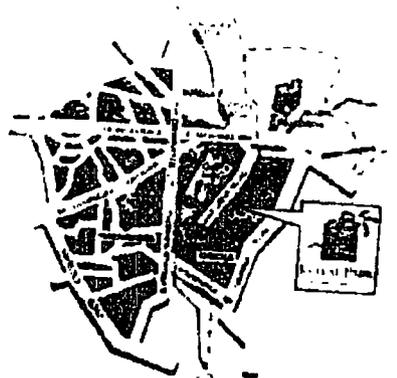


Figure 27. Location map of Royal Park condominium.

1. ORIENTATION

Regarding the total built form, it is apparent that this has an identifiable form. At present since there are no tall building in the immediate surrounding it is identifiable merely by its height. But in the vent of the area being highly built up in the future this building would still reflect its own identity as a residential high-rise building. This is due to the fact that not only the type of enclosure it suggests with its solid-void relationship, but also owing to the fact that the total form with its series of roofs at the top gives an image of a house.(fig. 28)



Figure 28. Royal Park apartment complex.

Further the grand entrance lobby focusing on to the recreation area and the vast expanse of greenery beyond give a sense of orientation as one enters. (fig.29) Within the building some of the approach corridors and living areas have a view to the outside towards the greenery on one side and the city on the other. From the upper floors even the sea is visible. However some of the glimpses of the outside given from within the corridors are so insignificant that they would not give a sense of orientation.

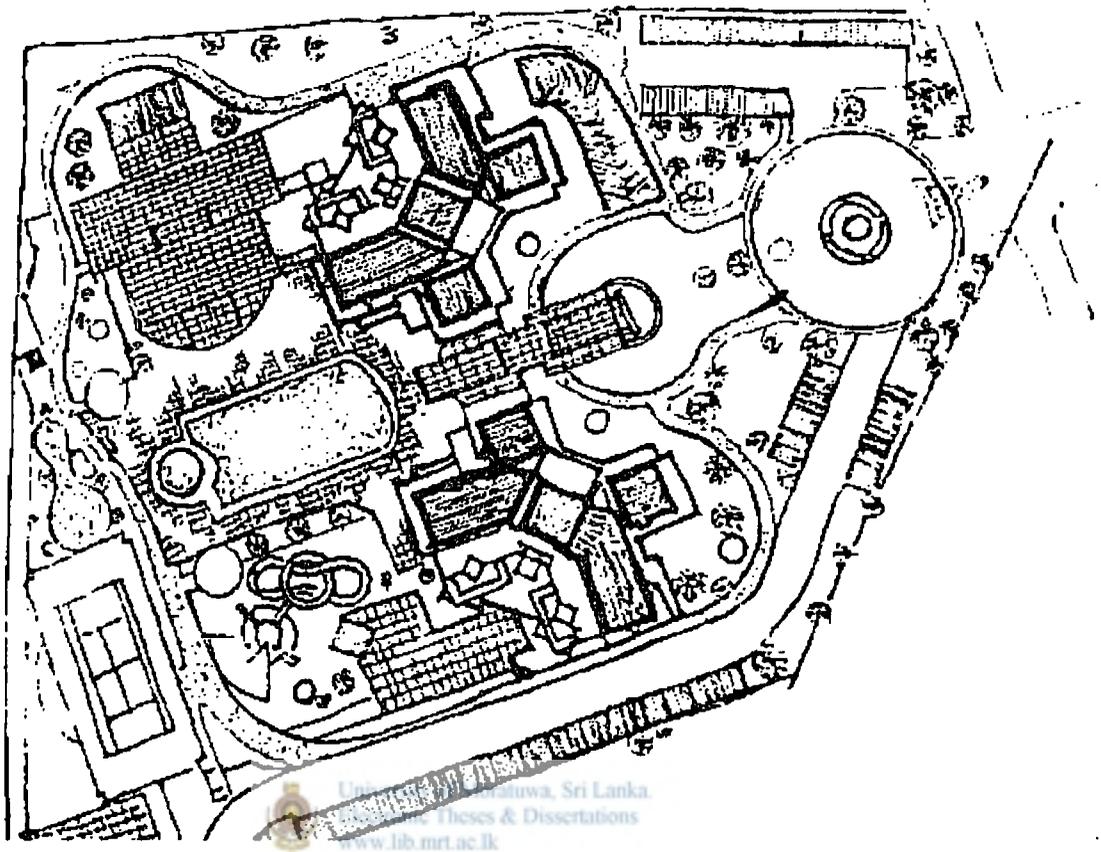


Figure 29. Layout plan – Royal Park.

IDENTITY & INDIVIDUALITY

In terms of identity the total form has an identifiable form, where it reflects the form of a traditional villa, (fig.30) thus giving the form a residential identity. Where individuality is concerned people may find it extremely hard to recognize one's own home and in this case whether the individual in transit is not concerned for such an attribute. In the external form it does not denote the presence of a series of individual homes. as indicated in figure 32 it is difficult to tell what portion of the building

denotes a single home. Considering the sense of proportion, the portion that makes a home, does not give a sense of place.



Figure 30. Identifiable roof from of a traditional villa.



Figure 31. Proportion of a single unit.

Considering the layout within the building, each floor is a typical floor, and unless one notes the floor number or apartment number it is difficult to identify one's own home. As discussed above if there were view or objects of interest along the approach route that vary in dimension and quality in different parts of the building, then orientation and identity becomes possible.

3. PRIVACY

Privacy between units is very low, as the living rooms of adjacent units have common walls. Also some of the bedrooms can be directly viewed from a private balcony of another unit at an upper floor. This is due to poor composition of units within the layout. Also the electronic surveillance security system, with its cameras and monitors constantly watching reduces the privacy within the complex.

Considering the entrance to each unit, privacy is maintained by recessing it from the approach corridor, or by changing the direction of the entrance path from the common corridor.

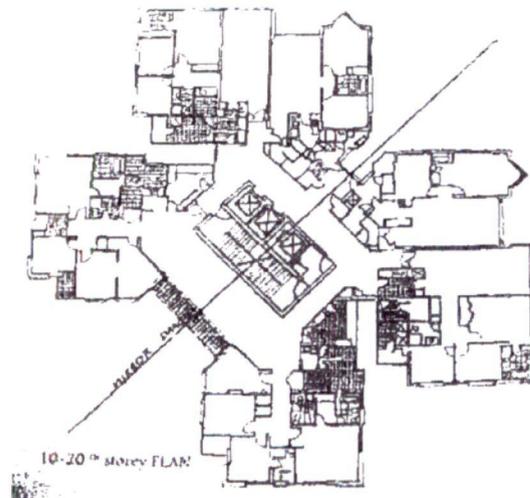


Figure 32. Part plan of a cluster of units.

4. TERRITORIALITY



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Considering the territory of the entire complex, the entrance is defined, marked by a barrier gate and security guards, giving a feeling of entering a formal institutional building. This does not give the feeling of a home territory. (Fig.33)



Figure 33. Entrance gate to Royal Park.

Considering the layout of units, a positive reflection is that a few units are grouped together. This makes it possible to question any strangers who might intrude to this area. The entrance to the units themselves are demarcated either by a change in the level from the corridor, or by recessing the entrance doorway. Yet the territory defined in this manner is not proportionately sufficient to evoke a sense of home territory.

5. SOCIABILITY

Interaction among occupants occurs mainly at ground level. The entrance lobby creates a feeling of grandeur rather than a home environment. It was identified earlier that the number of families served by a single entrance affects the aspect of sociability, which would result in indifference and anonymity an impersonal environment. (fig.34)



Figure 34. View of entrance to the building.

The recreational areas at ground level; pool area, garden and clubhouse, are some of the places where occupants could interact.(fig.35)



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Figure 35. Recreational spaces at ground level.

Interaction in the rest of the building complex only happens in the lift lobbies or the corridors, which have very little potential as a sociable environment. They are merely

circulation spaces that makes you move towards your destination, but not to stop and socialize. One may argue that circulation spaces are meant for just that. Yet considering people's behaviour in the normal home environments, the streets are essentially places where social interaction happens. In a high-rise situation this same principle could be adopted by treating the corridors and lobbies as streets and squares. In one portion of the building, a bay that opens out from the corridor giving a view toward the greenery beyond was identified. But it seemed as if it had been created merely to a while and interact with other. It has a large high windows with the harsh sunlight streaking in, and in rainy weather, the space even gets wet.(fig.36& 37)

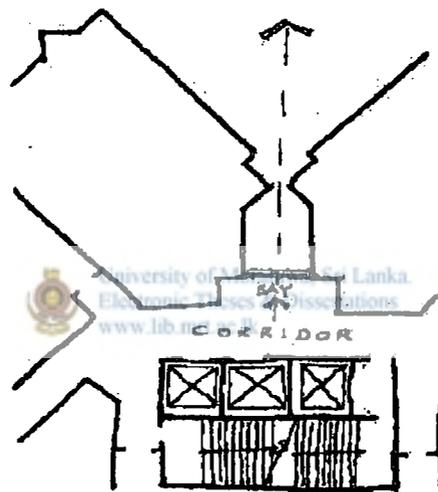


Figure 36. Part plan



Figure 37. Recessed bay of corridor.

The recessed bay that defined the entrance to tow houses is so small that rather than being a sociable place; it could result in lack of privacy and annoyance. (fig.38)

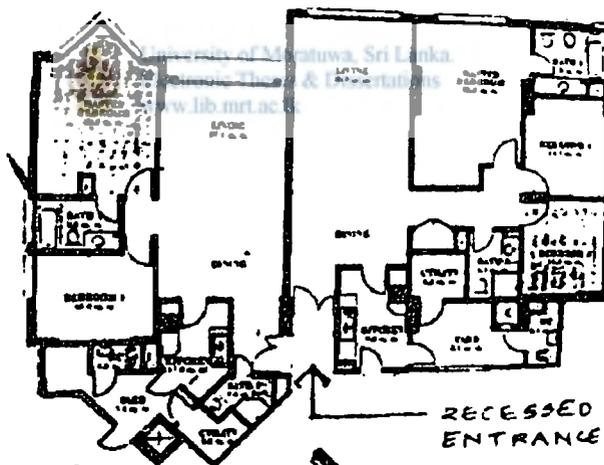


Figure 38. Recessed entrance of two units.



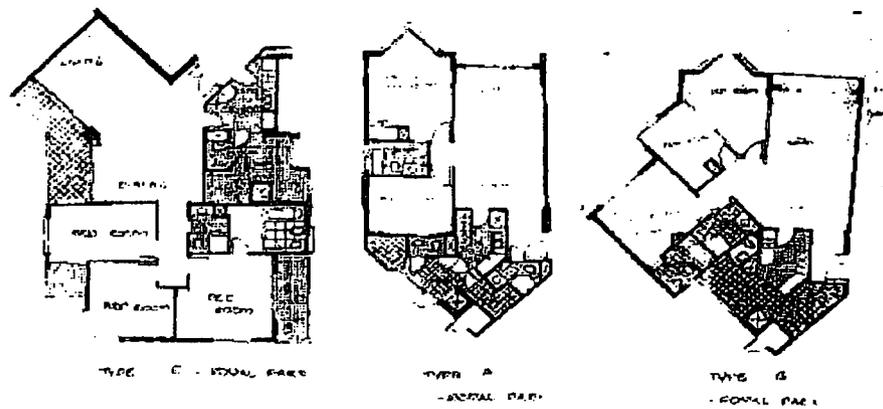


Figure 39. Floor plans.

Considering the penthouse suites at the top most level, it could be said that all attributes are present. Identity of unit is apparent, as they are at the top level with a difference in form and the cost of such a unit is higher than the lower level units.(fig.40)

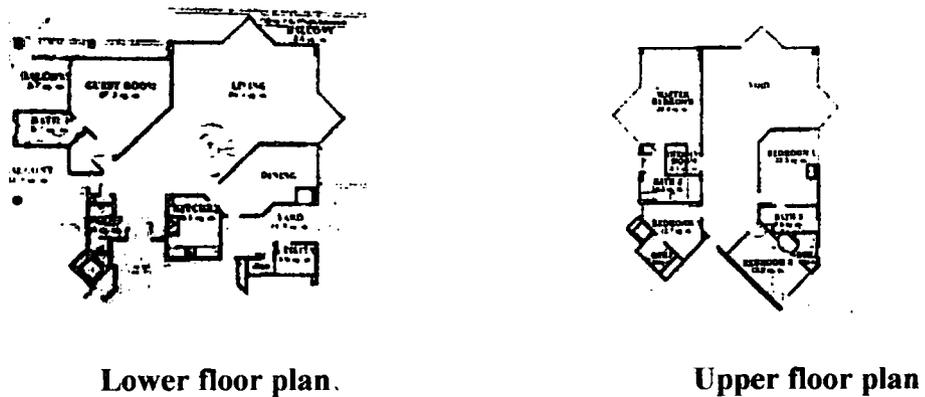


Figure 40. Floor plans of penthouse suite.

CASE STUDY TWO

QUEENS COURT COMPLEX, QUEENS ROAD, COLOMBO 03.

The 12-storey luxury apartment complex in a prestigious location within easy distance of the Colombo city commercial Centre. Major shopping centres, schools, restaurants, banks and parks are within close proximity to this complex. It has 72 apartments with 6 different types on each floor, with varying dimensions.

1. ORIENTATION

The entire complex is orientated to the North- South direction, with indirect views of the Indian Ocean.



Figure 41. Location map.

Considering the internal layout the access corridors has an opening at both ends with a view towards either East or West.(fig.43)

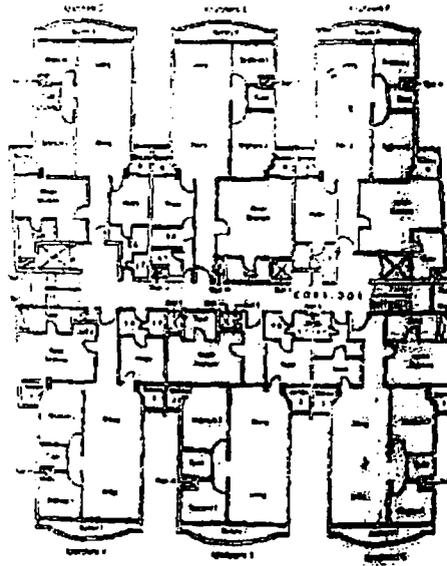


Figure 42. Layout of Queens Court complex.



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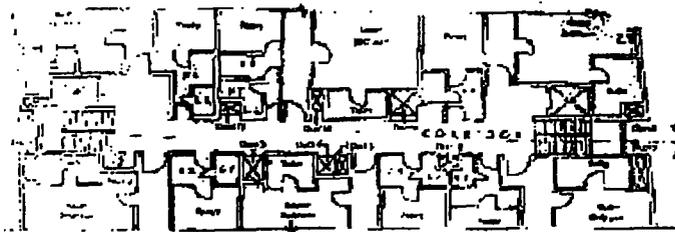


Figure 43. Part plan of access corridor.



Figure 44. View of stairs with opening at the end.

Considering the orientation within the unit a small passage leads one to the dining and living area with the bedrooms located on one side. The articulation of spaces does not create to enable one to orientate oneself. However, the living room at the end with a view towards the city and the sea gives some sense of orientation.



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Figure 45. View from the entrance hallway.

2. IDENTITY & INDIVIDUALITY

The solid enclosure, appearance of individual units and private balconies express the identity of a residential building. The individuality of units is reflected to a certain extent by the horizontal separation of having a gap between units. However as the units are identical, identification of each unit is difficult.(fig.46)

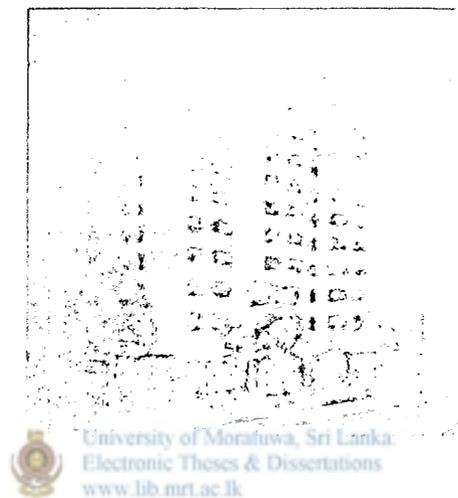


Figure 46. Queens Court residential complex.

3. PRIVACY

Privacy between units is maintained to a great extent by the separation of units by a between living areas. Here, although acoustical privacy is maintained between units, visual privacy is less since the bedrooms of the opposite unit and the unit below has a direct view from the living room of one unit.(fig.48)

The master bedroom of each unit has privacy, as it is located away from the other areas. But the other two bedrooms have little privacy being almost directly accessed through the living area, with the toilet door in direct view from the living room.(fig.49)



Figure 47. View of the bedroom window of the unit beyond.

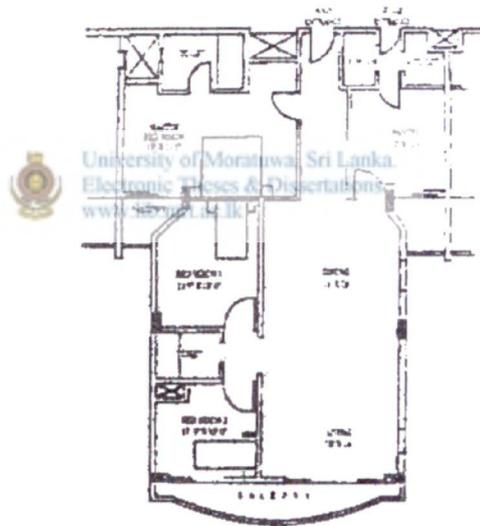


Figure 48. Plan of individual unit.

4. TERRITORIALITY

Territoriality of the complex is maintained to a certain extent by the fact that the complex borders the edge of the street and the territory is defined and marked by the entrance to the complex.(fig.49) The entrance floor consists of parking areas, security and lifts and stairs that take you directly to each home. The entrance is not guarded and barricaded by security guards, even though there is a guard, thus giving a homely atmosphere.

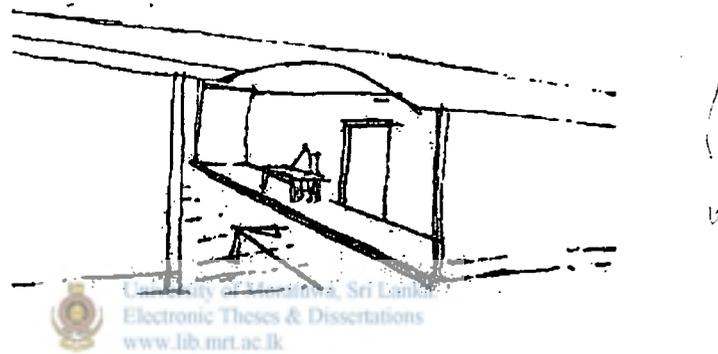


Figure 49. Entrance to the complex.

Considering the territory with regards to the access and entrance to each unit, 2 of the unit on each floor have a recessed entrance. However, the effectiveness of its territory is lost as the elevator doors open right into it, and thereby disturbing the privacy and the ability to defend it.(fig.50&51)



Figure 50. Entrance territory of a unit.



Figure 51. Entrance of a unit.

Inside the unit the personal domain or territory is well defined due to the fact that the living areas are accessed by a narrow passage, so that the front door does not open directly from the corridor to the living room.

5. SOCIABILITY



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The parking garages being on the ground floor instead of in a basement provides a homely atmosphere. However, it provides no opportunity for social interaction. The lift and staircases are not defined by a lobby, thereby not enabling any positive interacting. Apart from this, the only other common spaces in the complex are the access corridors, which are narrow and allow interaction only in a passing manner. Even the few-recessed areas provide no opportunity for social behaviour.

The complex offers no community space, nor does it have any open space for children to play and people to relax. Even the balconies provided for the living room area can hardly be considered an open space or a place, which enables interaction, as it is only a small strip (4- 4.5 feet in width). Disregard for social interaction within this complex concludes the theory that the individual wishes to sacrifice this attribute mainly due his conveniences in having a residence in an affluent part of the city and use the common open spaces around the city.(fig.52)



Figure 52. View from the living area.



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CASE STUDY THREE

KANCHANJUNGA APARTMENTS, CUMBALLA HILL, BOMBAY

Kanchanjunga is a condominium of 32 luxury apartments varying in size from 3-6 bedrooms each. Designed by Charles Correa in conjunction with Pravina Mehta, with the images of Corbusier's skip-level sections and Safdie's Montreal's Habitat, and his own un-built housing experiments of Cosmopolis, Boyce Houses and Rallis Apartments.

The Bombay climate and location presented the architect with a contradictory situation. The East- West axis affords the best views (of the Arabian sea to the West and the harbour to the East) and catches all the sea breezes, but also brings into the buildings the hot afternoon sun and the hard monsoon rains.

The building is square in plan, 21m x 21m, and 85m high thus forming a tower with the width and high proportions of 1: 4.(fig.53) Because of the orientation of the tower, there is continuous cross ventilation, throughout the year.

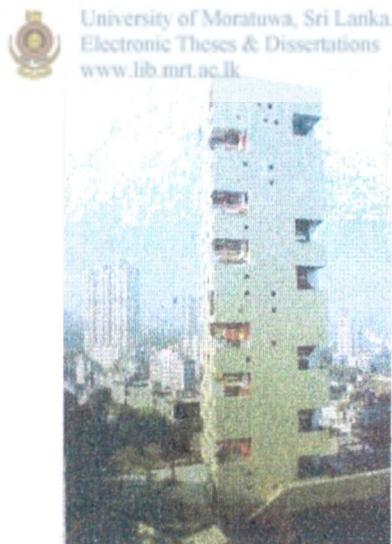


Figure 53. kanchanjunga apartments.

1. ORIENTATION

A sense of direction is brought about by the views to the sea and harbour by the orientation of the tower to the East –West direction. The problem of hot sun and monsoon rains has been overcome by the organization of the bungalow of wrapping the main living spaces with a protective verandah.(fig.54) Each apartment is protected by a zone of verandahs and bathroom and a large terrace in the corner, which forms the focus for the whole apartment.

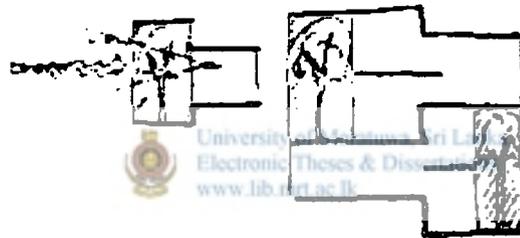


Figure 54. Verandah to protect living areas.

This principle of the bungalow was further developed by turning the verandah or buffer zone into a garden, which not only protects the living areas from the sun and rain. These terraced gardens are said to be a truly extraordinary experience (Hasan Udin Khan 1987:56), cantilevered from the building poised high above the city. (fig.55)



Figure 55. Roof terrace with a magnificent view.

2. IDENTITY & INDIVIDUALITY

The type of enclosure with its solid-void relationship suggests a housing environment.(fig.56) By this portion of the building can be identified as individual units, and is further enhanced by the terrace garden of each unit.



Figure 56. Enclosure suggests individual units.



3. PRIVACY

Considering the entire built form privacy is maintained by the solid enclosure with the required amount of openings. The focusing of each unit to different directions and avoiding visual penetration of one from another to achieve the privacy of individual units. Within the unit the division of spaces instead of having an open plan maintains privacy. Also the common wall between units of one floor is between bedrooms, kitchens, and bathrooms so that noise from living rooms is not a problem.(fig.57)

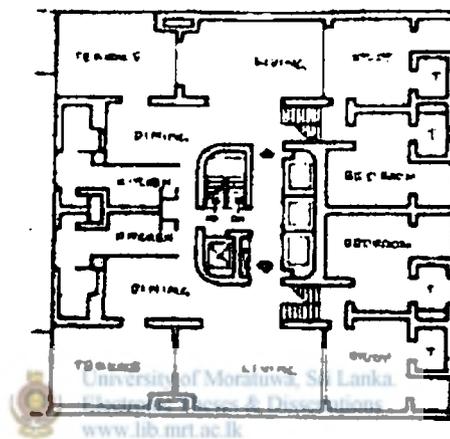


Figure 57. Plan of the single floor.

4. TERRITORIALITY

Personal territories are maintained within the unit by private balconies and in certain instances the master bedroom is on another floor level.

The common territory between units is merely circulation spaces with the front door of units is a few feet away from the elevators and stairs. A territory beyond the front door is not marked.(fig.58)

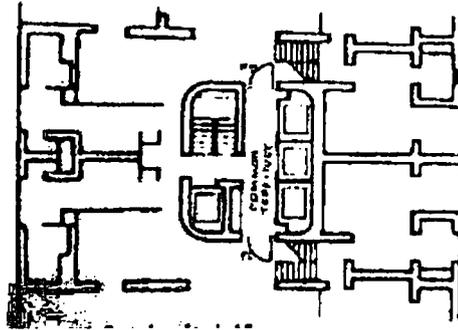


Figure 58. Part plan of typical floor.

5. SOCIABILITY

Continuity of space within gives a coherence of the living environment and maximum opportunity for interaction. The basic interlock is of a 3- bedroom and a 4-bedroom unit, with larger apartments formed by adding an extra half- level of bedrooms. Thus, as can be seen in the section,(fig.59) there is a continuous variation in the internal spaces, which are expressed in the elevations formed by the shear walls on the north and south faces of the building.

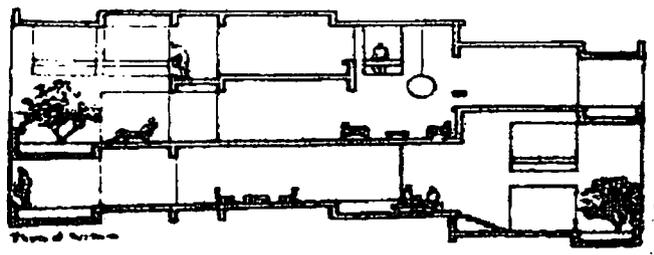


Figure 59. Typical section of an apartment.

Considering the entire complex, the podium at a lower level provides opportunity for interaction among all the occupants.

The presence of a garden space for each apartment unit is a plus point as compared to low –income or middle-income flats, and could be considered as a requirement of a luxury apartment. It could then be said luxury apartments should include additional spaces for man's well being (such as a roof terrace or garden). If such a space cannot be included for whatever reason, the apartment block should have the necessary features to gain such an experience from the surrounding environments. Therefore, such luxury towers should not exceed a certain height where one is made to feel as if he is living in the sky, but be low enough to gain this experience from the surrounding. (fig.60)



Figure 60. An outdoor spaces.



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CONCLUSION



CONCLUSION

Liveable house in an urban context comprise of number of complex issues related with it. Different kinds of needs are found and there is a hierarchy of needs in any liveable housing setting. Secondary needs such as self-esteem needs; aesthetic needs etc. than basic needs have more potential to get violated in the densed environment.

As a result of an opportunity to fulfils those aspirations, alternative methods which perhaps not desirable for the well being of that society are likely to be born. Some of changes already give signs for a re-thinking of the design environments. House and needs are so diverse and dynamic. Imposing of strange spaces for people may result disasters. Therefore it is crucial that the social responsibility with the architect must be carefully understood before articulating spaces in a human settlement.

The above discussed physical organization, which is characterized by the qualitative and quantitative attributes can influence the liveable condition of an environment. The resultant of physical and psychological comfort, which brings forth the liveability does not act independently but is interdependent. It is a combination of both quantitative and qualitative attributes that enables to induce a satisfactory living environment. To be liveable the qualitative attributes of the environment has to be compulsorily provided. Therefore it is necessary to understand how physical organization influences the liveable condition of a space and what makes this experience of liveability.

What is finally relevant to ponder is Lord Buddha preaching, which mentions that, **mind precede things, creates things and dominate them. All kind of bondages or anchorages of the materialistic life is the mind.**



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