

UNDERSTANDING URBAN HOUSING TRANSFORMATIONS:

A Case Study of Bhogal - India

by

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at the

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June 1985

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**ABSTRACT**

This thesis attempts to describe dwelling transformations in the case of Bhogal, New Delhi. It is hoped to clarify the links between socio-economic forces and their resultant impact on physical form, through its transformation. The project is a refugee housing program, undertaken by the Government of India in the early 1950's to cope with the large influx of refugees during the partition between India and Pakistan.

Over a period of twenty years, the project like other emergency measures, has become permanent. It is rapidly transforming to provide a livable environment.

India, like other Third World environments, is on the verge of another emergency, facing unprecedented urban growth. It is obvious that the government with its limited resources, cannot cope with these pressures. There is a general agreement that the government needs to play the role of a "support" rather than a "producer", especially with regard to housing for the lower income groups.

The case study exemplifies developments and transformations of existing dwelling environments in Delhi today. It therefore might help to identify some basic principles and directions along which future research might take.

The case study provides a useful insight into the circumstances that allow a group of people to upgrade their circumstance both socially and economically with minimum formal assistance. The thesis also attempts to clarify informal linkages and networks that evolve to form a crucial part of the process of upgrading in this environment. This forms the bulk of the argument of the "supportive" role of the government and the need to understand existing linkages and networks to identify areas of intervention.

Thesis Supervisor: Nabeel Hamdi

Title: Assistant Professor of Housing Design



## ACKNOWLEDGEMENTS

I would like to thank the People of Bhogal who provided me with a unique insight into their daily life.

I gratefully acknowledge the support and guidance of Assistant Professor Nabeel Hamdi, who apart from being an excellent advisor helped me systemize ideas and concepts into a tangible form.

I would particularly like to acknowledge Professor John Habraken and Professor Bill Doebbel, who have been much more than just readers and whose experience have been invaluable in the preparation of this term.

In addition I am indebted to my parents for their support and understanding.

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Last but not least, sincere thanks are due to the Inlaks Foundation, the Hebrew Technical Institute and M.I.T Department of Architecture, whose financial support made my studies possible here.



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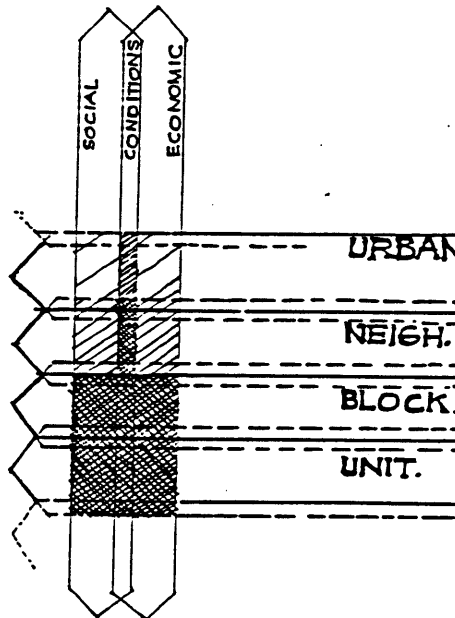
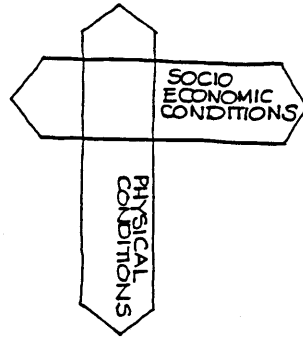
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#### SCOPE AND FORMAT OF THE THESIS

This thesis analyses the evolution of dwelling spaces in order to clarify links between socio-economic forces and their resultant impact on the transformation of physical form. It is hoped that this investigation will provide an insight into the circumstances and processes which allow a group of people to upgrade their living conditions, both socially and economically, with minimal formal intervention. The thesis also attempts to clarify informal linkages and networks that evolve to form a crucial part of the process of upgrading in this context.

#### THE OBJECT OF THE INVESTIGATION

The case study used as the basis for this study is a housing colony in Central Delhi, in an area known as Bhogal. It was one of a number of housing projects built by the Government of India in the early 1950's to deal with the wave of refugees resulting from the partitioning off of Pakistan. Like many other such projects in and around Delhi, and in other parts of the Third World, this product of an emergency measure has become a permanent resource. Through on-going occupation and adaptation such projects have been made increasingly viable by their inhabitants. In the face of current unprecedented growth and



chronically limited resources, it is becoming increasingly clear that governments of developing countries are not capable of maintaining these resources, let alone duplicating them. It is therefore essential to understand in detail how the users themselves manage their housing.

#### LIMITATIONS

The thesis is primarily of a qualitative nature. It does not provide estimates, statistics, and above all, solutions for prototypical housing projects. What it does attempt to do is provide a way of seeing and understanding the complex manner in which decisions are made and changes take place as a government built housing project is appropriated by its users over time. As outline for a method for uncovering the informal networks at the root of the changes taking place in this built environment, it becomes a tool for evaluating the more qualitative aspects of user initiated dwelling transformation.



## STRUCTURE AND FORMAT

The thesis is divided into four parts:

### 1. Introduction:

This section sets the context of the Bhogal project as it exists today. It deals with past and present government attempts at housing the poor and the limitations of its efforts. It also outlines the emergence of the informal sector as a major, fundamental force in transforming the physical fabric of the city.

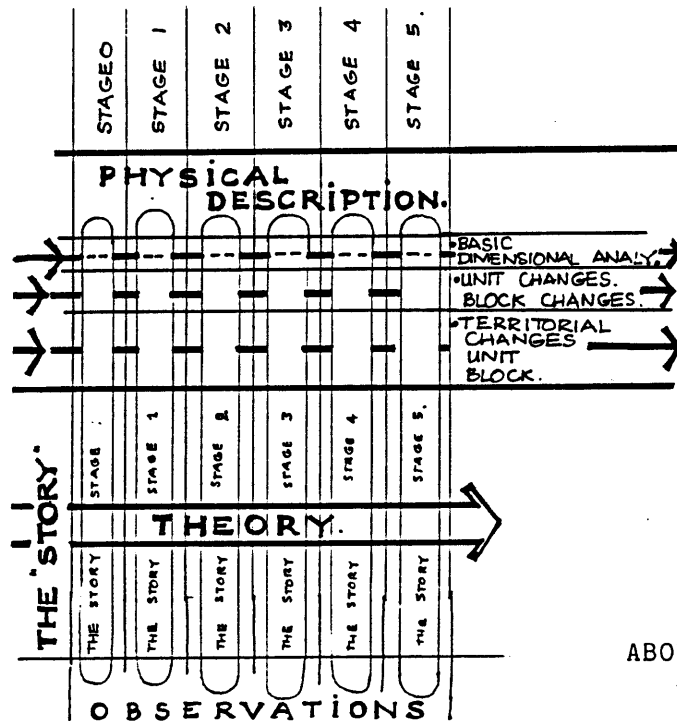
### 2. Physical Description of the Block and Unit Transformation:

This section includes plans and sections at the block and unit scale; a description of territorial changes at the block and unit scale; additions and alterations; marginal structures; and temporary structures.

### 3. `The Story`:

This section provides a description of five stages in the evolution of a family living in and adapting the project to its needs over a thirty year period. The five stages correspond to different stages of transformation of the built environment and can be summarized as follows:





Stage 1. 1954-1960 -a newly arrived refugee family occupies a basic unit in the housing project.

Stage 2. 1961-1966 -the dwelling is adapted as the extended family expands to include a cousin who has recently migrated to the city.

Stage 3. 1967-1972 -the family enters into a collaborative venture with a neighbouring family upstairs which needs to expand its dwelling space.

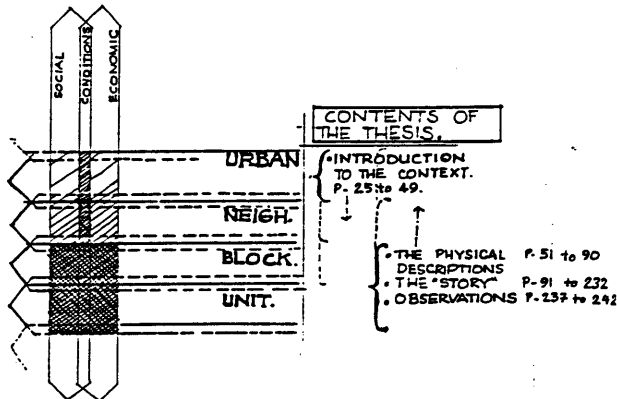
Stage 4. 1973-1978 -the cousin gets married and the family adds a room to their dwelling.

Stage 5. 1979-1984 -as the family adjusts to the marriages of the children, the dwelling undergoes a series of incremental changes.

#### ABOUT THE STORY

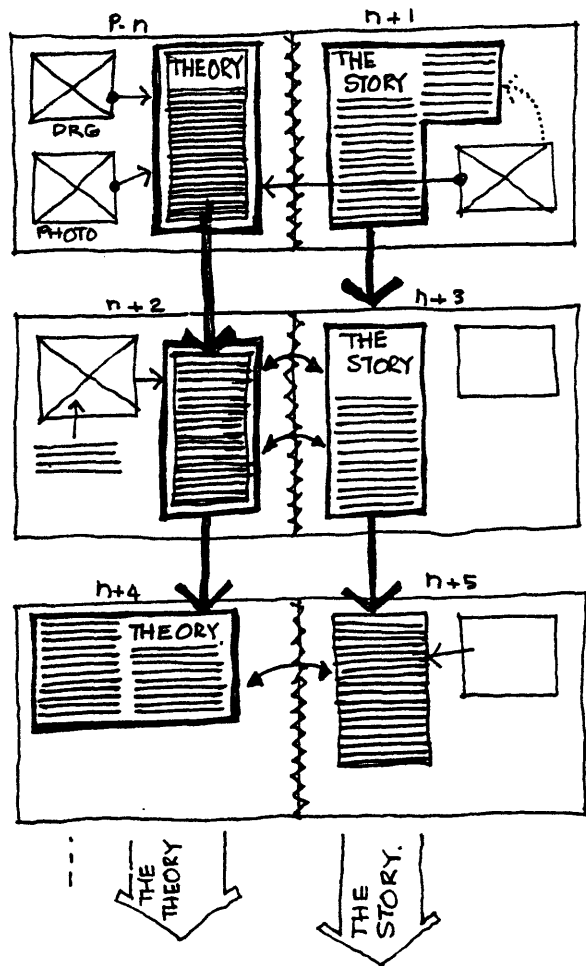
The purpose of the story is not to provide a site specific case history of one family, but rather to use it as a tool to tie together a series of issues and illustrate the linkages and conditions under which people upgrade their physical environments. It is also used to highlight the socio-economic forces and demonstrate how they impact physical transformations.

Although the story is fictitious - Suresh' family does not in fact exist - the incidents and processes that form the components of its structure are real. They are taken from a combination of interviews with five families living in the









PAGE FORMATING.

project and from the personal experiences of the author while living in the area. In this sense, the "story" is a composite of real incidents and actual transformations set within an artificial framework. An alternative approach would have been to illustrate the issues as a series of short case histories. However, in that case, the continuity of the transformations would have been lost and it would have been difficult to trace significant linkages backwards in time.

The "stages" defined in the story are basically defined by the nature of the physical transformations. Within the narrative, they have been treated as discrete entities so as to be able to clearly identify each step of the process. In reality, they are completely intermeshed with each other. This becomes obvious as one examines the photographs throughout this study.

The story presented here is relevant to a larger scale of understanding urban transformation. Given the vast numbers of people upgrading their environments, each with their own unique socio-economic circumstances, it seems irrelevant and misleading to attempt a detailed and comprehensive survey. Such a survey would end up as an unwieldy collection of case histories or a



stack of meaningless statistics and numbers. Even where surveys do provide an effective record at a general level, they remain too isolated from the real situation to provide an understanding of complex linkages at a grass roots level. It seems more useful to understand the full implications of the actual conditions of one particular story rather than deal with many "products" in isolation.

The shift of focus from product to conditions is an important one. Most product oriented approaches and solutions have ended up as a justification for a particular physical form and used to legitimize the role of the professional in the housing process. Most of the resulting "demonstration" projects are never really replicable.

The "conditions" approach is inductive rather than deductive, comprehensive in nature, yet respectful of the power of incremental actions. This approach recognizes a need to define territories of professional intervention working with existing structures and networks.

There is no such thing as a "perfect" set of conditions. Rather, there already exists an array of alternative options and safety mechanisms which allow a process of upgrading to continue without unreasonable loss or disruption to daily life. It is not



the job of the professional to establish perfect conditions for the transformation of housing. Rather, his or her job is to uncover the existing ones so that they can be fostered rather than disrupted by arbitrary and insensitive policy or intervention.

#### METHOD OF DOCUMENTATION

The documentation for this thesis was carried out in two phases. The first phase provided an opportunity to become acquainted with the site and gain a general understanding of the neighbourhood context within the larger framework of the city. The second phase became a short, focused survey.

The author lived in the neighbourhood opposite one of the housing blocks for about two years. This provided a valuable insight into the way the local community functioned. Through on-going observation, it was possible to gain an overview of some of the processes and linkages operative in this particular locale.

The second phase was a focused process of documentation done in an intense two week period. During this time, five families were interviewed. The questions followed a basic set of guidelines but the bulk of the conversations were directed by immediate family concerns. The aim was to uncover significant



issues through investigative research rather than to impose the predetermined format of a survey.

Another valuable source of information was the landlord of the author, Mr. R.L. Talwar. Having been one of the first people to settle in the colony, he had many useful insights to share. Mr. Talwar was interviewed during both phases of the documentation.

100-1000



# INTRODUCTION

## THE CONTEXT:

### STATISTICS FOR BEGINNERS.

At present about 20% of India's 700 million are concentrated in urban areas. In twenty years, when India's population is close to a billion, 40% of it will be urban. Delhi's population will rise from a present 4.5 million to about 15 million, a majority due to internal growth, unaffected by migration policies.

At present at least 40 percent of Delhi's population lives in illegal colonies. Yet compared to the rural hinterlands containing 80 percent of India's population, Delhi is a haven - it has the highest per capita income with one job in the formal income generating seven others in the informal. The informal sector provides the poor with life, some form of shelter, employment and hope for a better tomorrow.

Government and any other agency do not have the resources to intervene directly. Its past record, and that of other less developed countries attempting to catch up with the numbers by mass housing programs have shown that. A shift is needed from 'to

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house' to 'to enable', as outlined by John Turner. It is important to recognize the roll of the informal sector in evaluating what the city itself can accommodate through densification and consolidation of illegal colonies. There should be a shift from the present programs of developing vast housing programs on the periphery to one of supporting central densification.

#### **CONVENTIONAL APPROACHES AT HOUSING THE POOR:**

##### BUREAUCRACIES TO CHECK BUREAUCIES.

As part of the post independence desire to prove its worth, the government assumed responsibility for providing housing to the lower income group. Government bureaucracies trained to think in numbers perceived the issue as a "problem of numbers". The numbers were always swelling, initially with the influx of the post partition refugees, and now the migrants from the deprived rural areas, and the internal growth of the city itself taking over. Thus resulting in mass housing produced to specifications drawn up by centralised bureaucracies, to be supervised by other bureaucracies. After conventional methods proved too slow, speed



was thought to be a goal, thus attempts at prefabrication. This proved un-successful due to its centralization, divorced from the reality of site conditions and available skills.

At the same time land became a key issue especially in times of inflation. To curb large scale speculation policies restricting ownership of sites, and favouring group housing were introduced. This was one of the more positive policies towards a more equitable distribution of land. The approach was partly effective in combatting excessive land holding by the upper classes, but it could not offer hope to lower income groups; four story walk-up housing schemes were still far too expensive. So forty percent of Delhi's population were not able to afford the cheapest houses built. This had two impacts; illegal colonies grew up across the river and slums "infested" the city center.

#### SLUMS AS AN IMAGE PROBLEM.

While unauthorized colonies were built out of sight, the slums provided the city with a serious image problem. Delhi being the capital, has always been a status symbol, thus the focus of a series of several beautification schemes. The image of the garden city, with large tree lined avenues.



This resulted in large scale rehabilitation schemes on cheap land at the periphery of the city. The projects in the form of site and services were away from employment sources, and suffered from lack of adequate transportation. They were thus plagued by people selling out because they could not afford to live there- a classic "locational" issue with site and services projects all over the world.

#### ATTEMPTS AT DECENTRALIZATION

To reduce congestion in the central parts and to spread job opportunities, attempts were made to de-centralize some government offices along with development of district centers. In addition huge chunks of semi-rural land were acquired from surrounding villages in an attempt to ease the demand on land, especially for the lower income group. In theory, the district centers were supposed to cross subsidise housing for the lower income group. Although these policies did have some effect of de-centralization, and generating commercial activity, the intension of cross-subsidies never worked-out to have any significant impact. The land acquired, was auctioned to the highest bidder and the massive scale of district centers resulted in a drastic increase in surrounding land prices. Housing schemes constructed





for the lower income group were soon bought out. Thus apart from displacement, increase in land value gained from the intervention was in-equitable transferred to the upper income groups.

#### Housing as a issue..OR IS IT ? AND FOR WHOM ?

In spite of the difficulties faced by the government to provide low income housing, the poor still manage to find some form of shelter, and access to employment. This has happened due to the evolution of the so called informal sector. It provides access to housing in the form of slums, illegal colonies, and access to jobs at various levels. Delhi was initially a service oriented city housing the government bureaucracy. This is now shifting towards retail and small scale manufacturing playing a dominant role in its economy . Within this sector the part played by its informal component has begun to play an increasingly important role. It provides an important stepping stone for the poor and the newly arrived migrant to better their circumstances and a chance to get into the system.

Land use has been transformed from rigid zoning to mixed use.



## HOUSING - MULTI-FUNCTIONAL AND TEMPORAL

Housing has been one of the key elements of this transformation. Links have developed between income groups. Community participation and interaction based not through formal institutions but through informal territorial negotiation. Through negotiation a range of complex tenure systems have developed according to the priorities of the group directly concerned.

Housing in this context means shelter as a component within a whole range of activities. These are secondary sources of income, and social institutions vital for the functioning of the family and community at large.

The construction process is deeply ingrained in the skills and resources of the informal sector. Over a period of time, the sector has become sophisticated in an evolutionary learning by doing method- a day to day process. New options and innovations in construction technique emerge in this day to day technique. As well as providing the building process itself, the informal sector generates components ranging from cement grills to sanitary ware. The growth of these markets provides access to materials and skills at a small scale locally. The poor can



therefore upgrade their environments in an incremental fashion which they can control themselves.

The evolution of these networks are interdependent upon their formal counter parts, often filling the gap in processes of manufacture or providing labour. These informal networks in addition support a large number of men, women and some times children in forms of employment that range from transporting bricks as most womenfolk on construction sites, to manufacture of metal grills for windows.

Policy makers often make little or no attempt to support such networks and institutions due to professional self interests or sheer ignorance. Thus they are excluded from legal recognition, forced to pay additional amounts for basic services, unsecure of tenure and almost no financial security in a seasonal markets.

The development incremental yet persuasive does not fit into the conventional notions of "good urban form", and aesthetics. The professional, formally trained, accepts it with a contradiction. It is viewed as a disease of a decaying city, the product of bad taste, yet dependent upon its source for vital parts of the building process.



Most of these transformations are categorized as illegal, as they do not confirm to conventional standards, bylaws, and land use regulations. While some aspects of the construction (especially with regard to sewage, water-supply and fire regulations) most are irrelevant dating back to the 20's and 30's. These regulations were products of over-specified, over-designed standards confirming to a foreign notion of private usage.

To get back some of the vitality missing in formally designed housing, attempts are made to "learn from the vernacular". While some cases are genuine attempts to understand underlying principals, most are superficial imitations of colour and form, divorced from the original socio-economic context. What is forgotten that these incremental development today have strong roots in their past, modified by the people according to what is relevant to them today.





#### A WAY OF SEEING.

Whether one agrees or not with the notion of aesthetics or good urban form these implicit networks have become and will continue to be a major force in providing a foothold and shelter for the vast number of urban poor. The implications are important.

First informal networks and organization must be recognized as being a major force in the positive growth in the city, and ultimately of the larger region.

Second, the informal must be seen as a dynamic process rather than a static product, where the user plays a key role in decision making. Conventional housing, designed for numbers assume that the users are the same with similar socio-economic characteristics. The solutions, reflective of that "block image" are mass-produced products. Ingenuity in design, measured by being able to create complexity through geometric jugglerly and a sense of place through vernacular imaging of the past.

What is forgotten is that socio economic characteristics are not the same for one family to another and they cannot be



generalized into static programs.

At the same time it is almost impossible to create designs that reflect the users unique circumstances if not because of the uncommunicated values than from the sheer numbers of users to be designed for.

What then is the role for architects and designers, given the need to produce a good and compatable urban environment? What is the alternative to leaving everything to an ad-hoc process?

Third, a way out of this dilemma might be to be able to define territories within which a professional operates - where he can be most effective - leaving the rest to be under the control of the user and the way he or she interacts with the formal and informal construction markets. It must be realized with such a relationship between professionals and users is itself transitory affected directly by the skills ands resources of the local informal construction sector.

Fourth, there is a need to develop tools and methods to understand implicit networks and their socio economic implications.



How can either a professional or centralized agency intervene the process of upgrading and densification? With limited resources, it becomes important to focus intervention into key areas. Given the dynamic nature of the process, it is important to distinguish between the temporary and the permanent. Instead of seeking radical change, minimum alteration should be sought within the existing structure.

Some issues in focus would incorporate the following:

- 1) Access to land an equitable distribution of benefits of urbanization. Implications of monopolistic agencies either public or private.
- 2) Access to materials and implications of hidden subsidies.
- 3) Spatial implications of non-physical policies.
- 4) Effects of densification on existing infrastructure and service networks.
- 5) Institutional interventions on the issue of externalities.
- 6) Standards evaluated within the dynamic process of upgradation. Standards linked to the skills and resources existing in the informal sector.
- 7) Re-evaluation of zoning laws to allow induced mixed use.



This shift in attitude has an important implications for architects and urban designers. Instead of being a professional know-all attempting to create urban structures, they should adopt less authoritarian positions and create within an existing structure. A great deal of sensitivity and perceptiveness will be required.

The change in attitude implies limits to official intervention. This does not necessarily mean the emergence of non-architecture, but that the design process should be holistic in its approach, yet able to define areas of focus.

Apart from this political shift, the change in attitude calls for story relationships with other disciplines. A basic knowledge of a broader range of tools and methods is needed so that architects can operate in a creative but democratic process of negotiation.

Such a way of working would be site specific in most cases. This is directly related to the architectural education. Instead of the traditional continuous process, it could be in stages. Learning should be encouraged in the field instead of being regimentalized into a five year program.





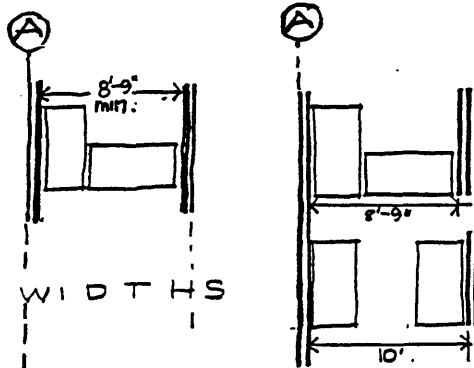
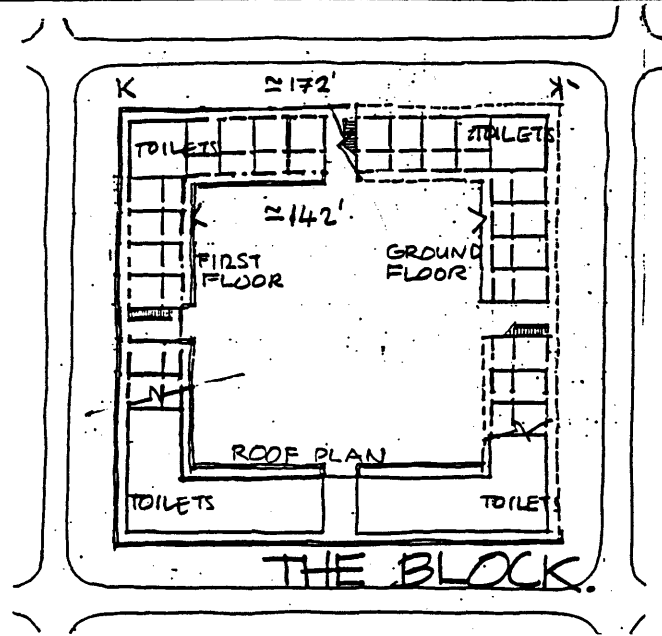
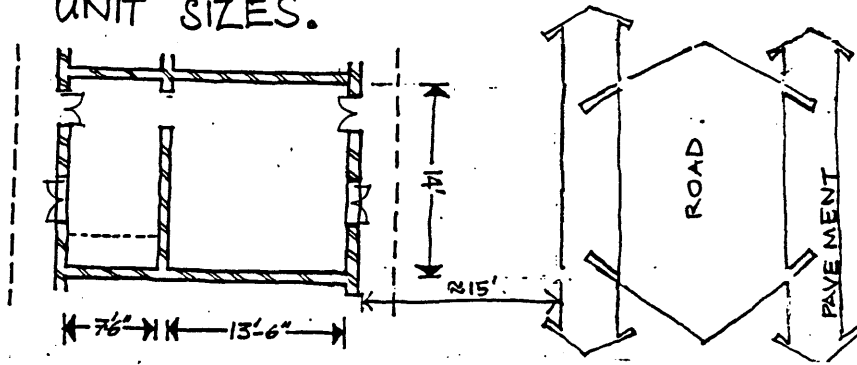
Such a position is not as radical as it seems but part of a process already underway. The disparity between the official codes of practice and what happens on site is bound to increase, especially with the increase of small scale architect-builders. It is vital for professional and educational institutions to be able to cater to these changes.



- DIMENSIONS & CAPACITIES • FLOOR PLANS • SECTIONS.
- ADDITIONS & ALTERATIONS • TERRITORIES • MARGINAL STR.

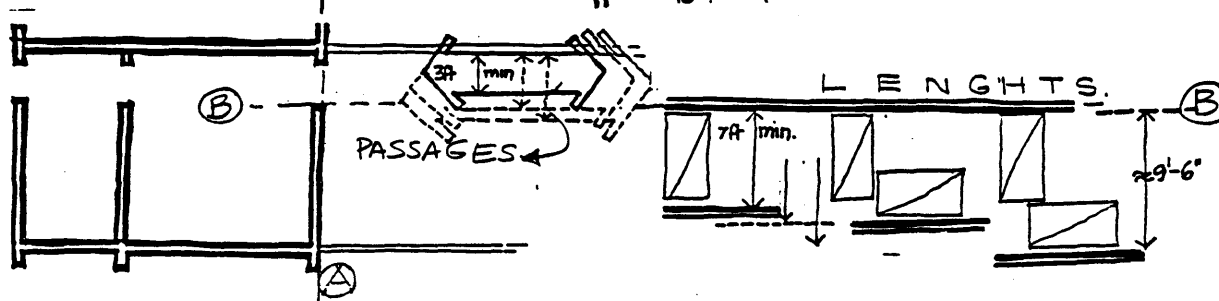
# PHYSICAL DESCRIPTION

## UNIT SIZES.

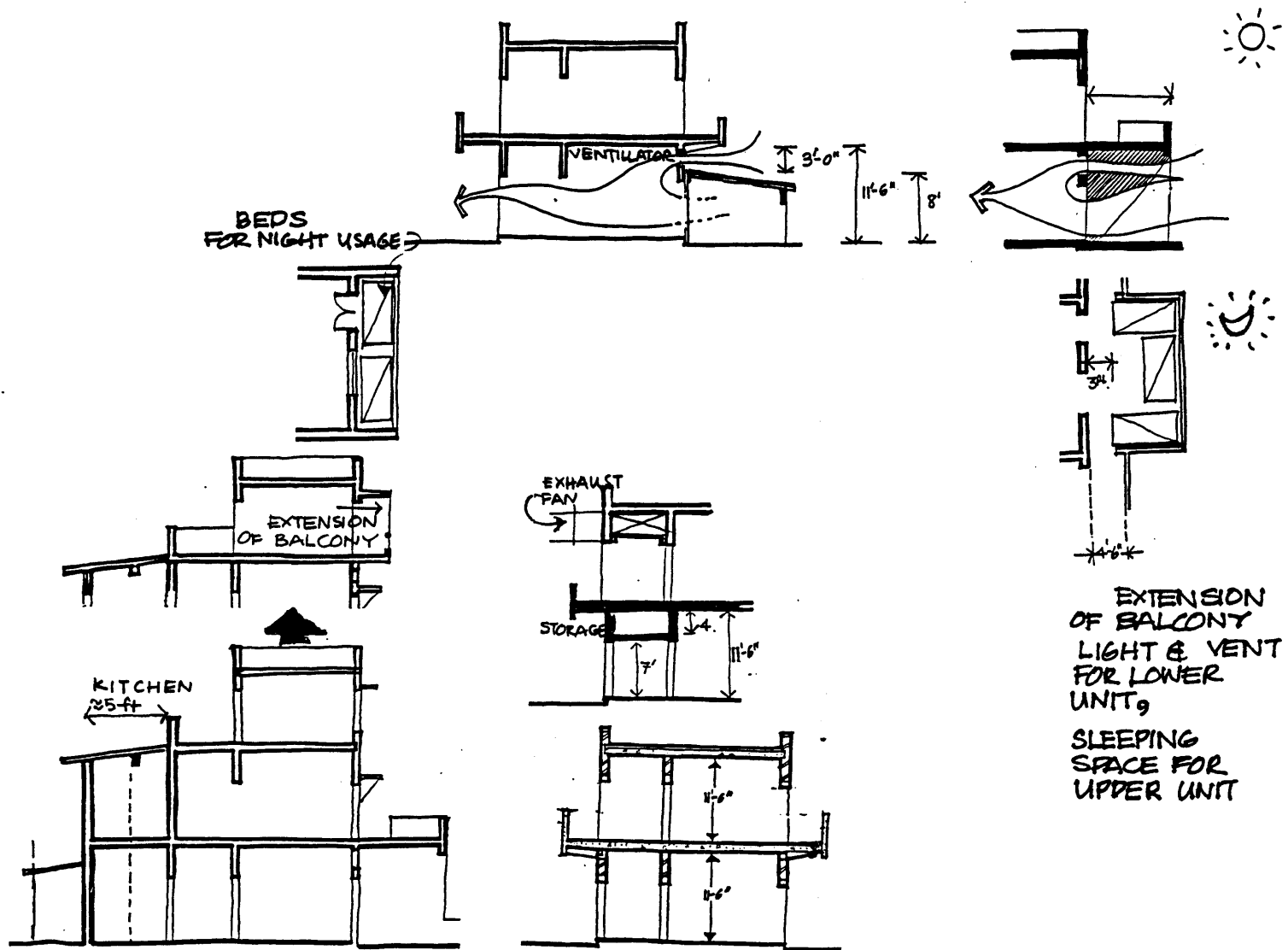


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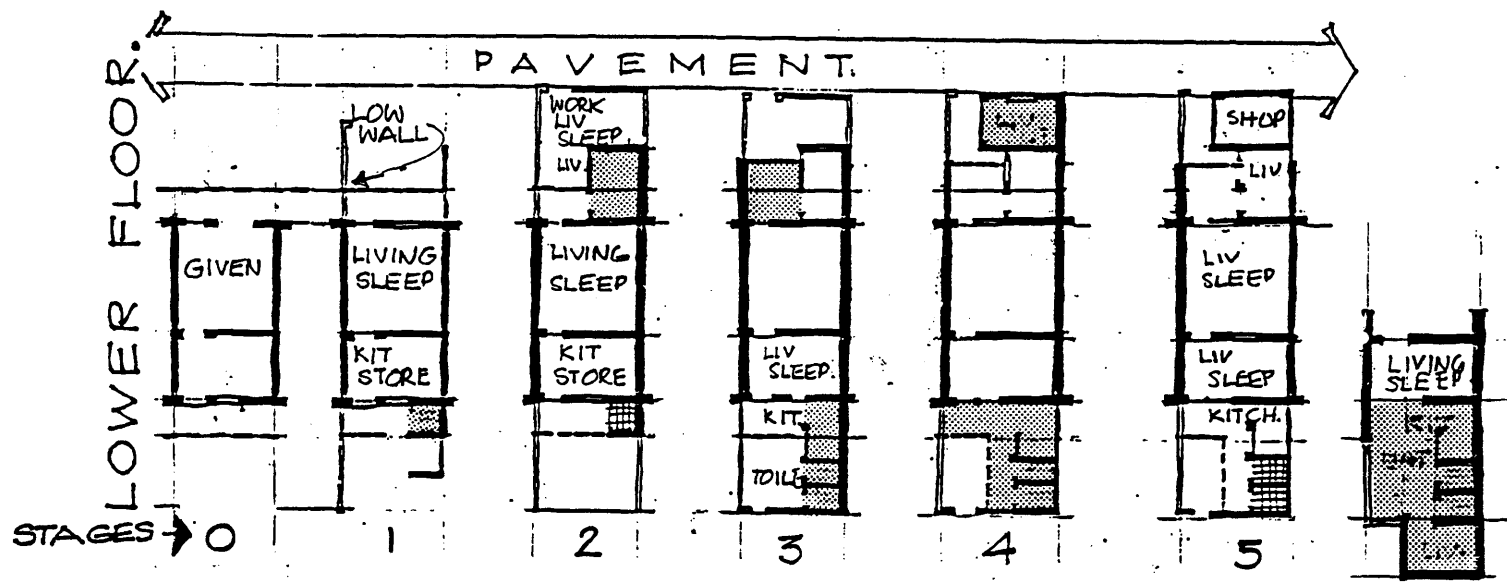
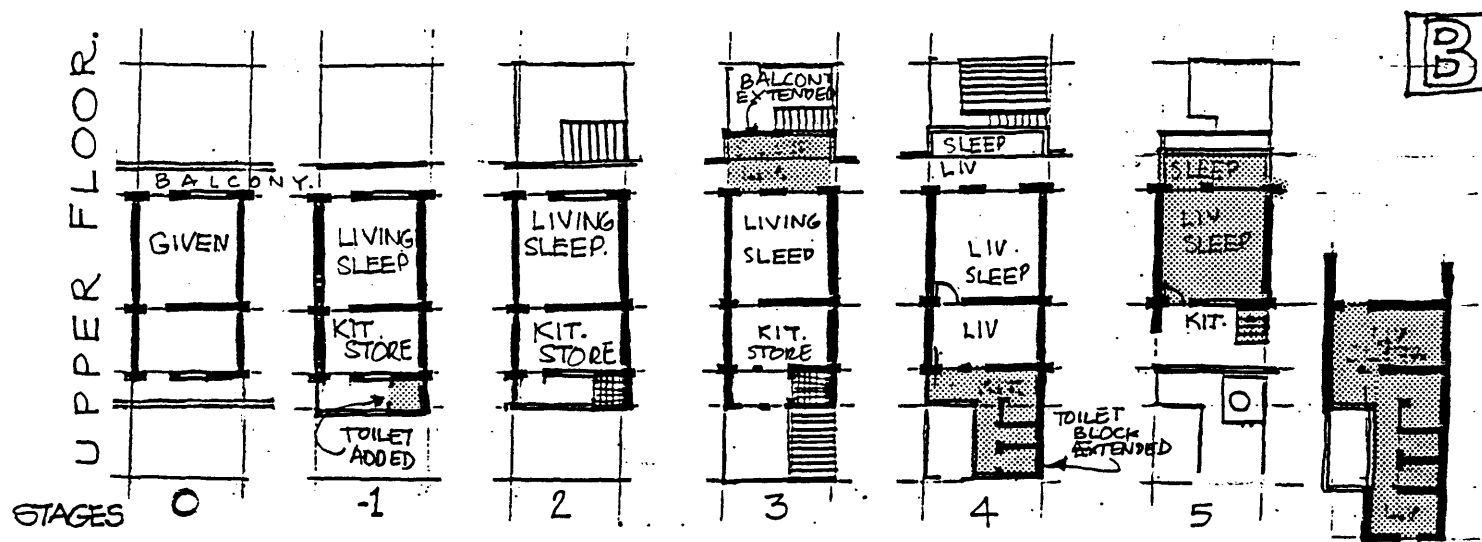
CRITERIA TO DETERMINE SIZES OF ROOMS.















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## STAGE 2.

- ADDITION OF EXTRA ROOM ON THE GROUND FLOOR.



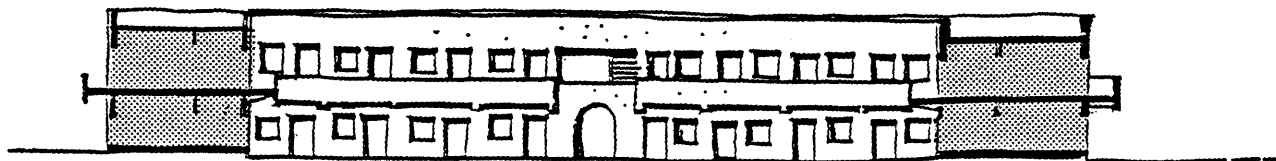
## STAGE 1.

- ADDITION OF TOILETS UPPER & LOWER FLOOR.



## STAGE 0.

- INITIAL PROVISION  
64-2RM UNITS, COMMON TOILETS SHARED BY 8 UNITS.





STAGE 5.  
• ADDITION OF EXTRA  
ROOM..



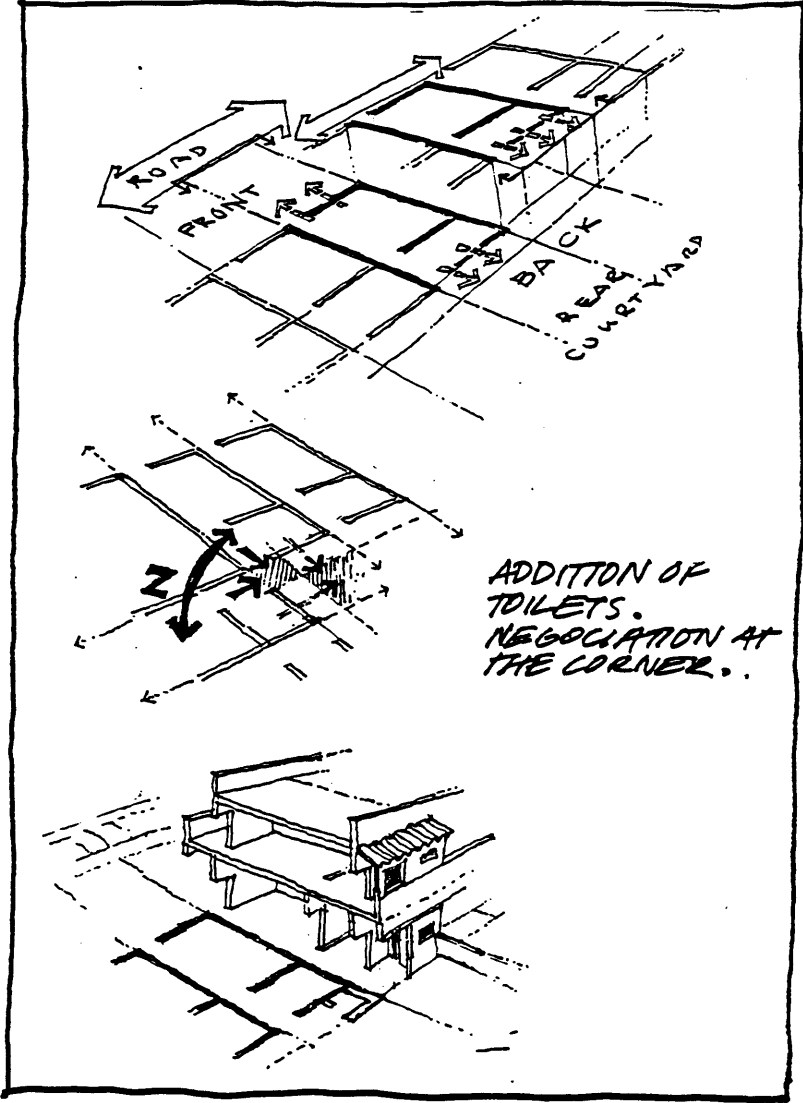
STAGE 4  
• EXTENSION OF TOILET BLOCK.  
UPPER & LOWER FLOOR.



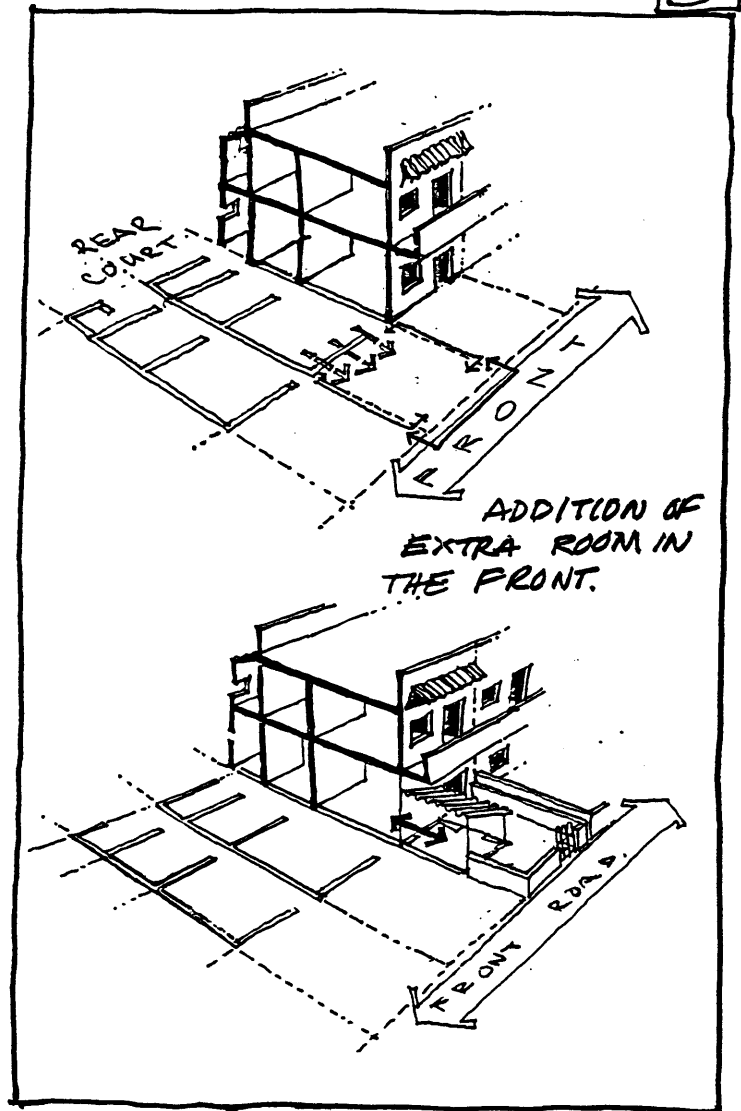
STAGE 3.  
• EXTENSION OF LOWER TOILET & SERVICE AREA.  
• EXTENSION OF UPPER BALCONY.





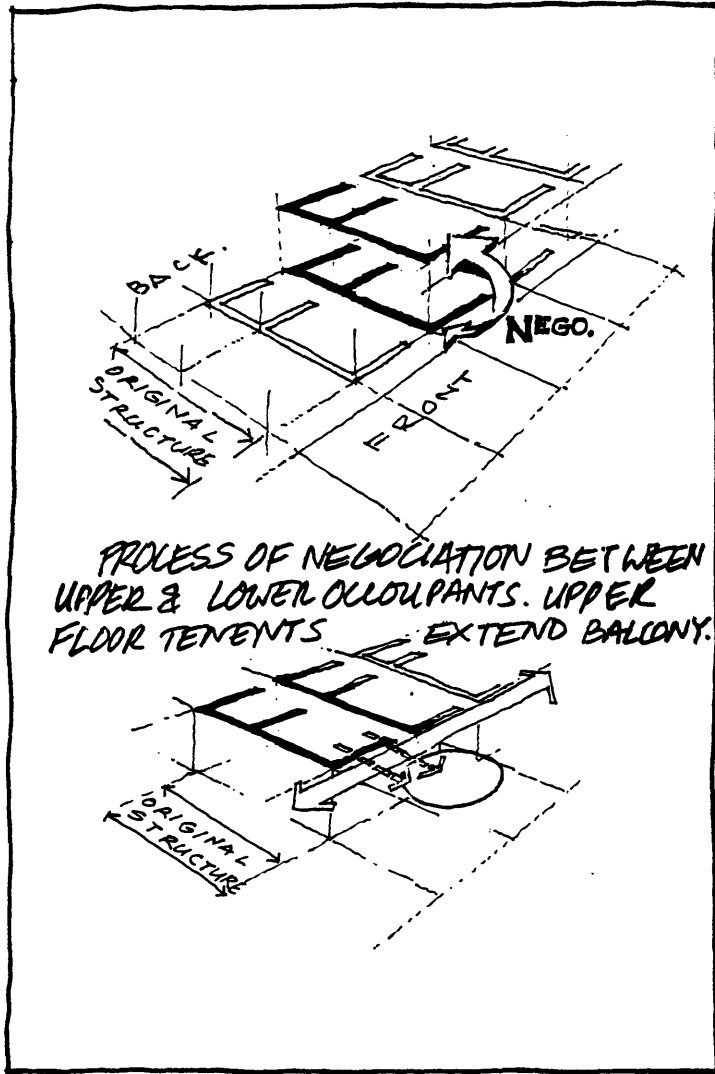


STAGE 1

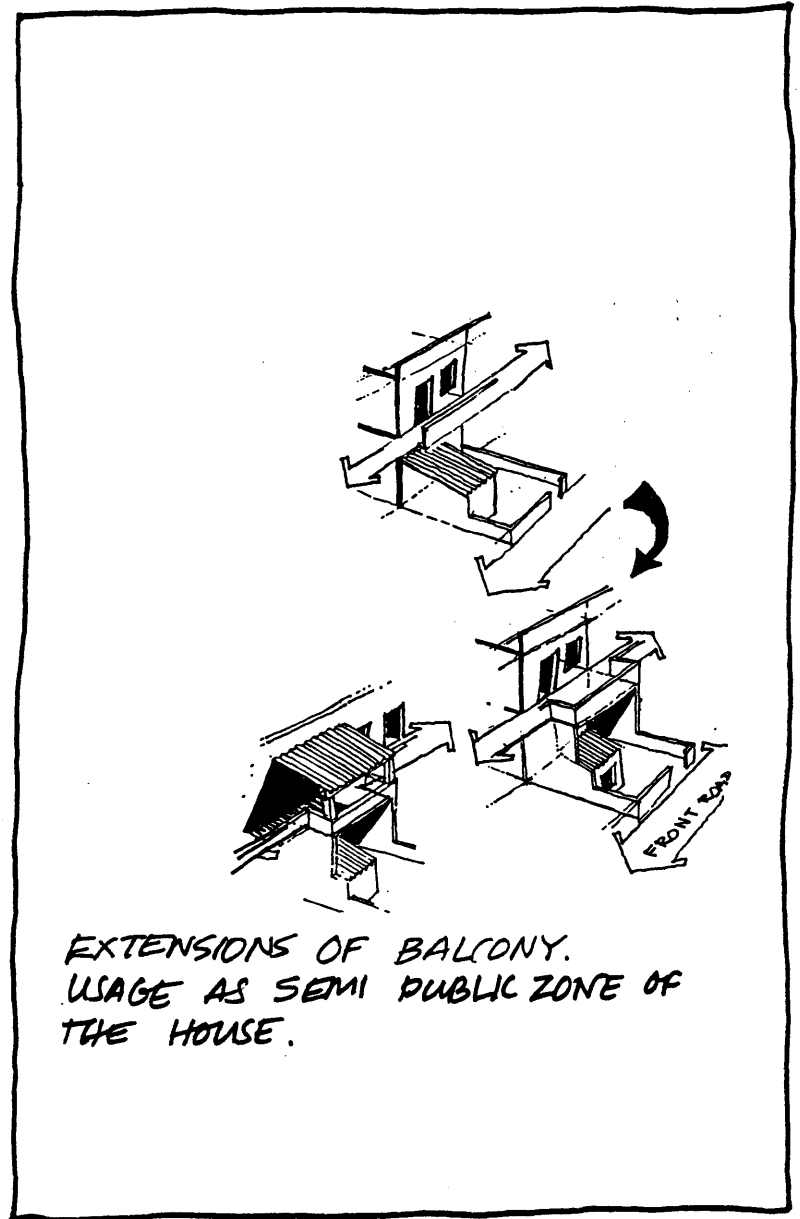


STAGE 2.



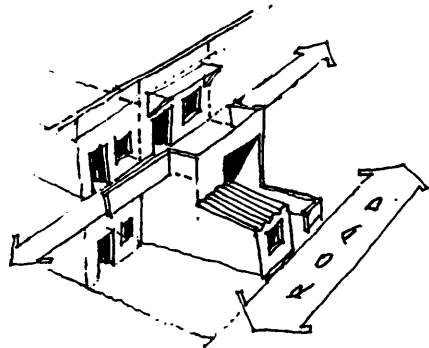
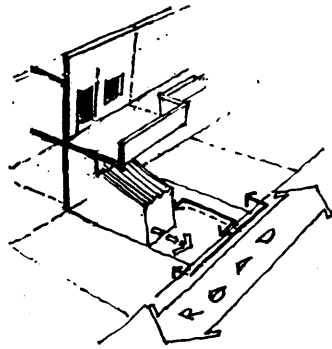


STAGE 3.



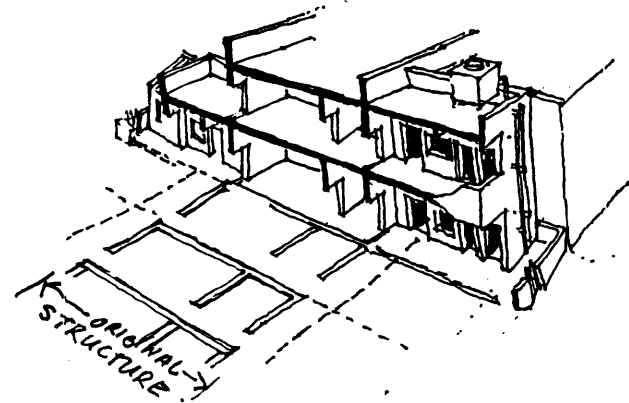
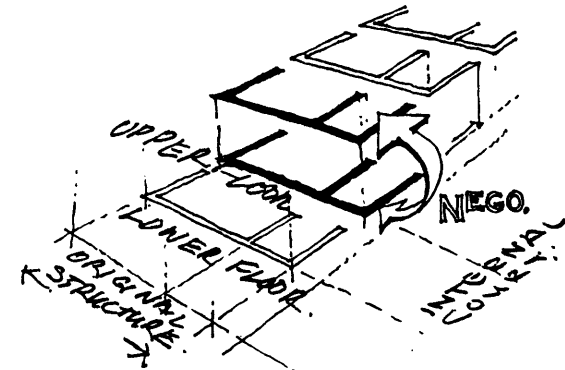






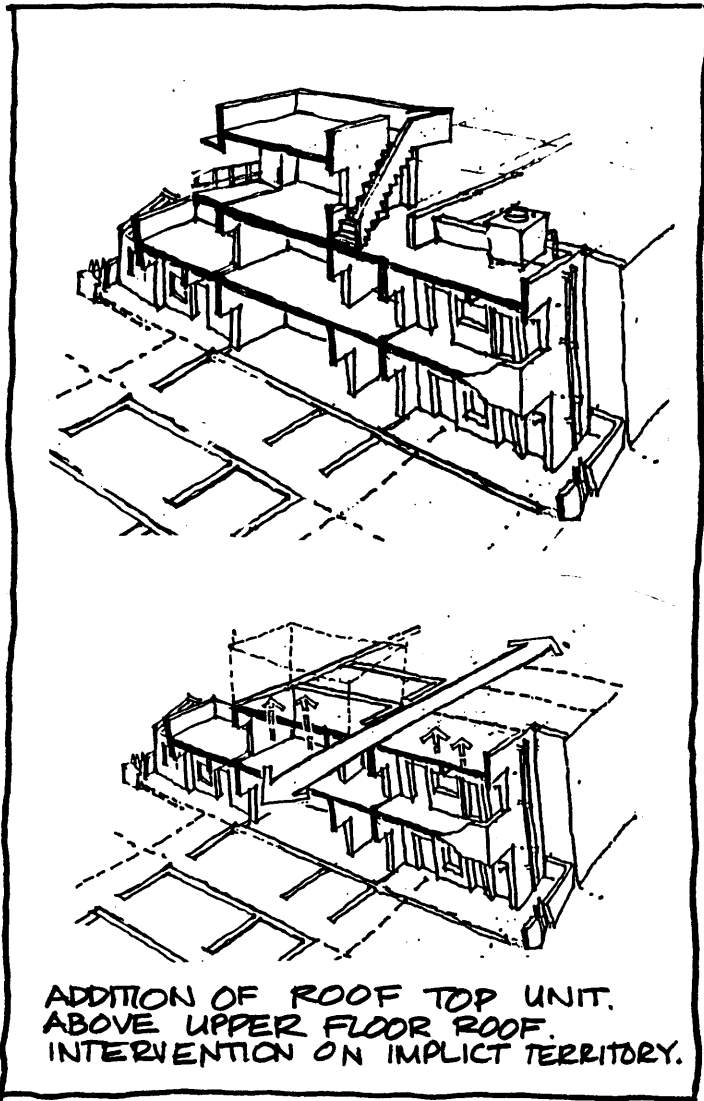
ADDITION OF AN EXTRA ROOM  
IN FRONT OF THE HOUSE ON  
THE LOWER FLOOR.

STAGE 4.

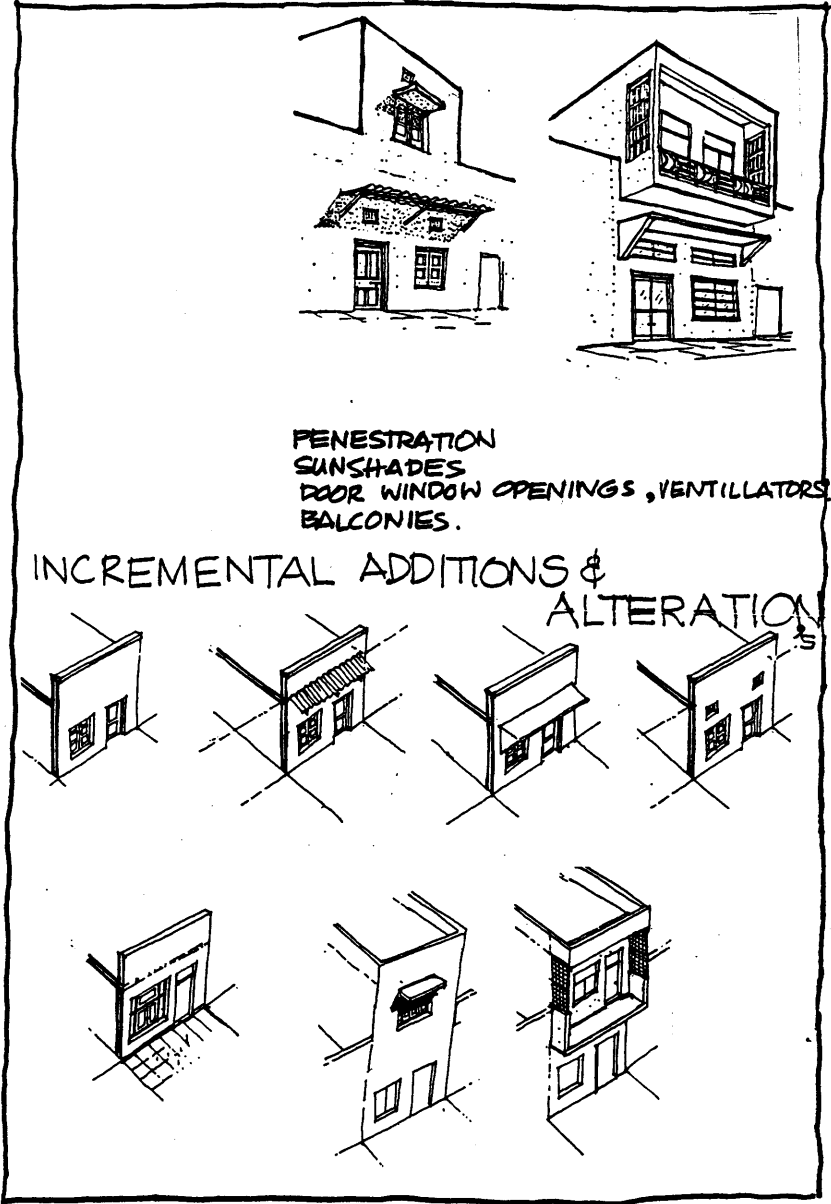


PROCESS OF NEGOCIATION  
BETWEEN UPPER & LOWER OCCUPAN-  
TS TO DINTLY UPGRADE TOILET  
BLOCKS.

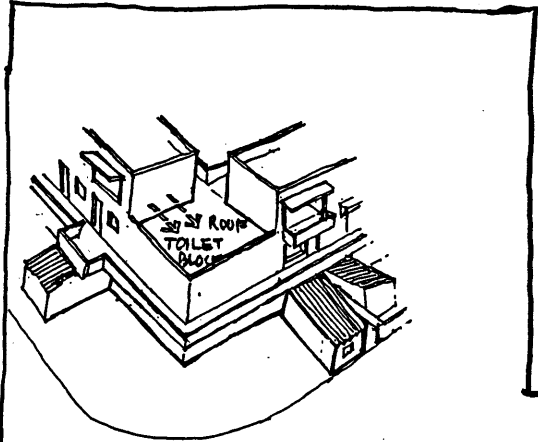




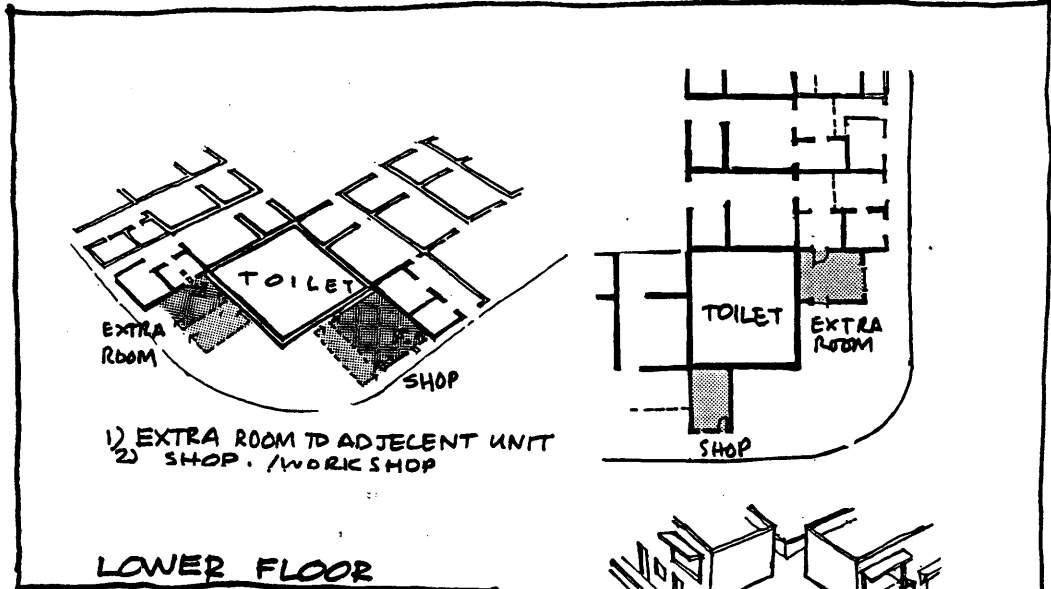
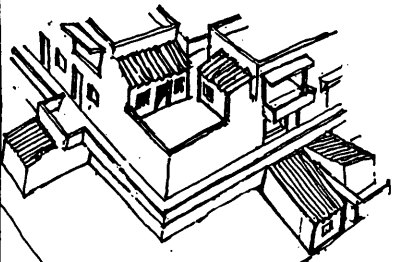
STAGE 5.





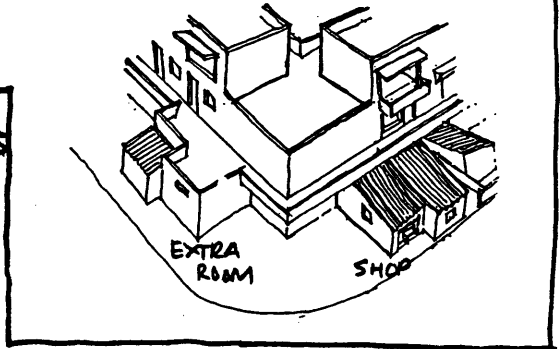
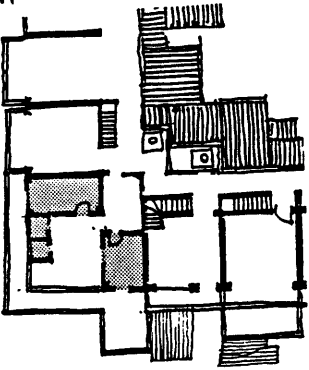


- 1) ADDITIONAL ROOMS FOR ADJECENT UNIT.
- 2) A NEW UNIT.



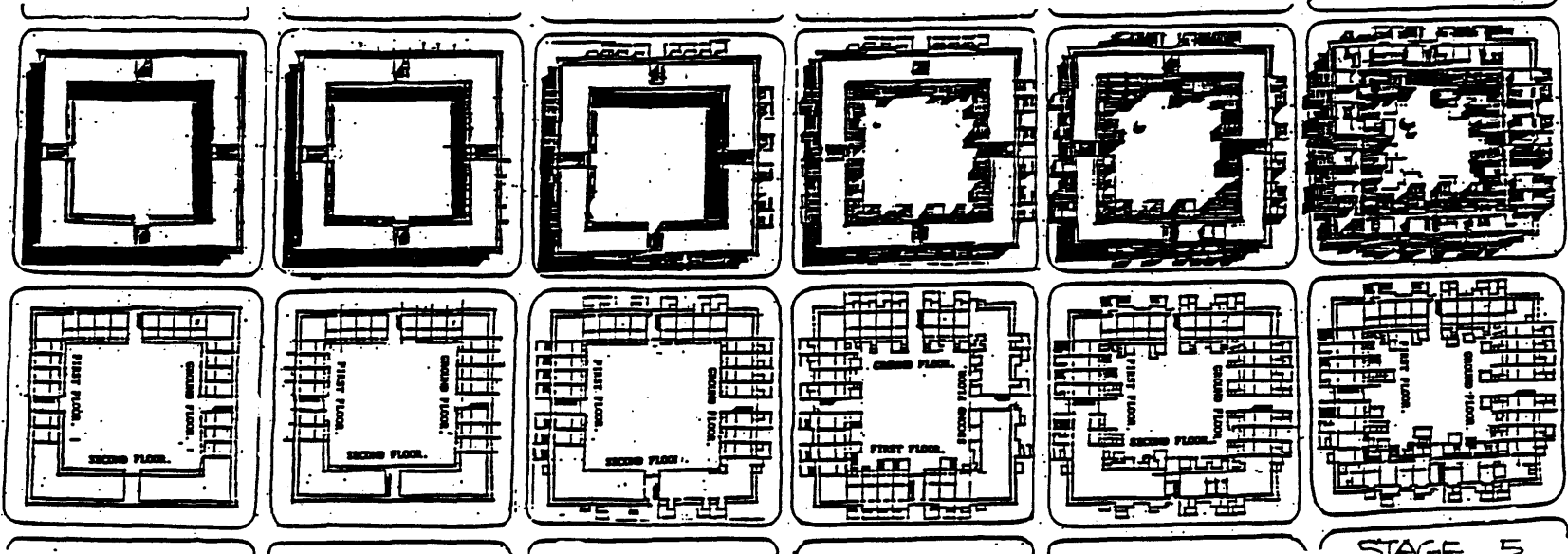
TOILET BLOCK APPROPRIATIONS

UPPER FLOOR





ROOF PLAN



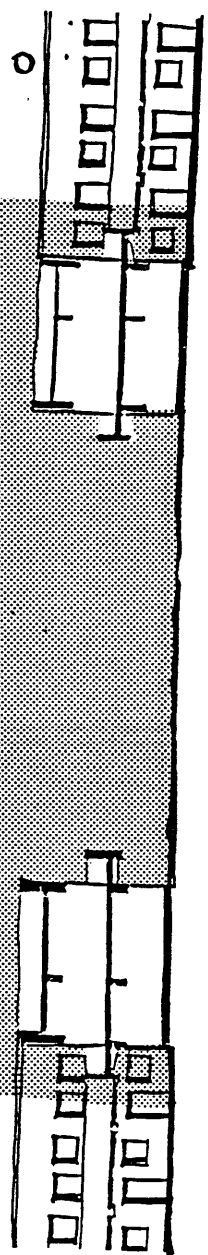
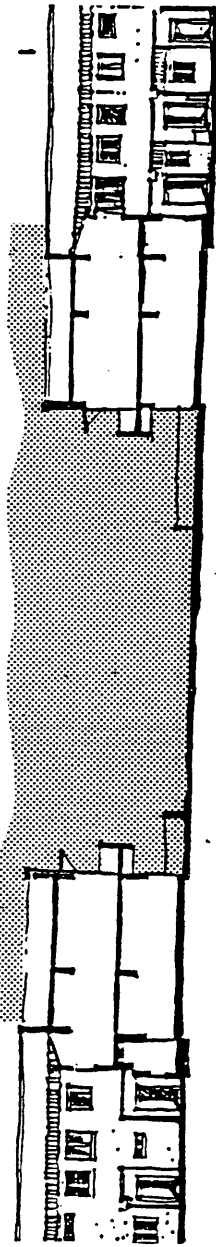
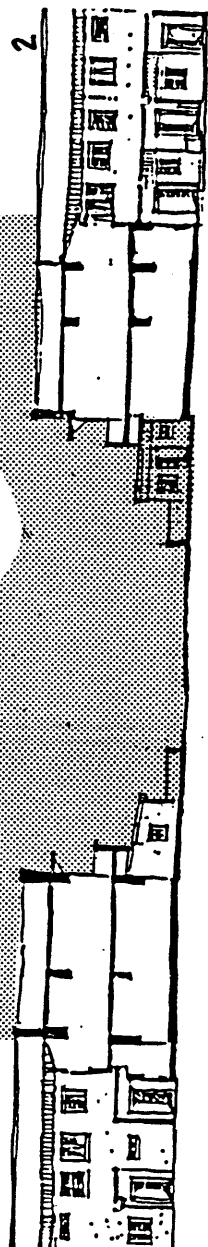
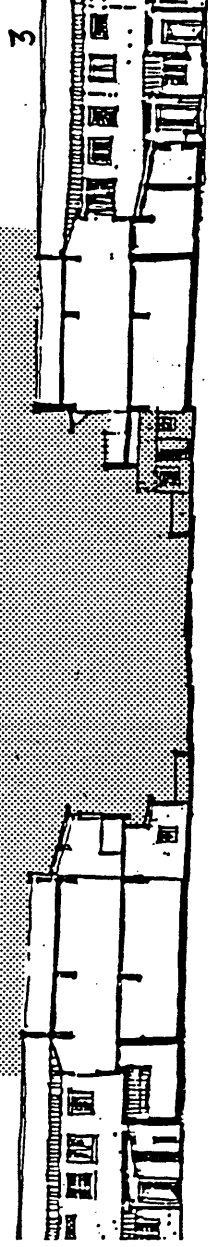
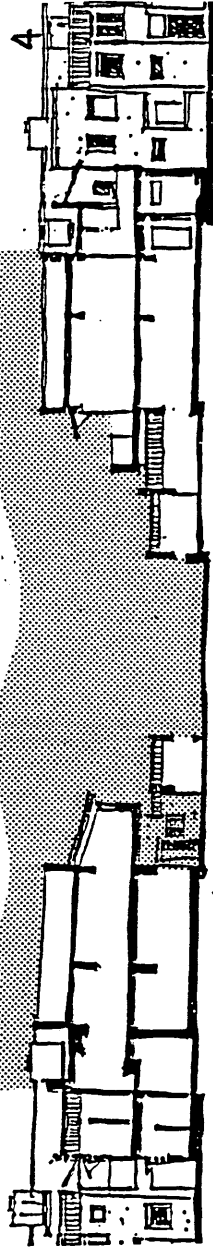
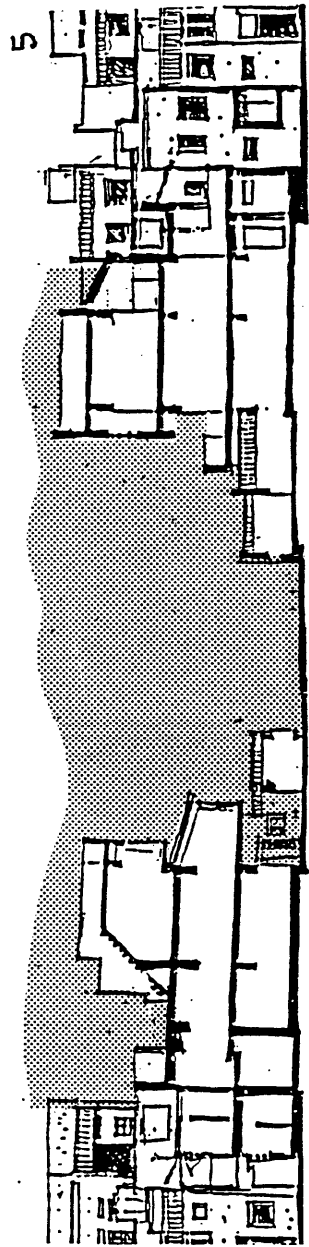
STAGE 0  
1952

FLOOR PLANS

STAGE 5  
1984

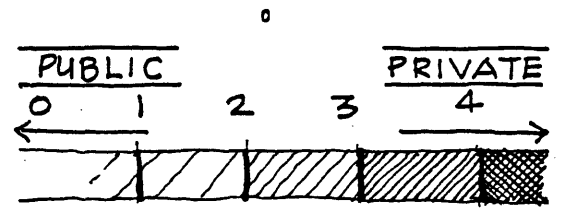
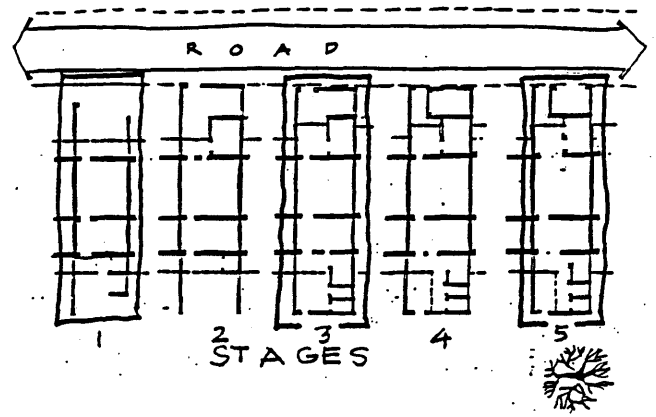
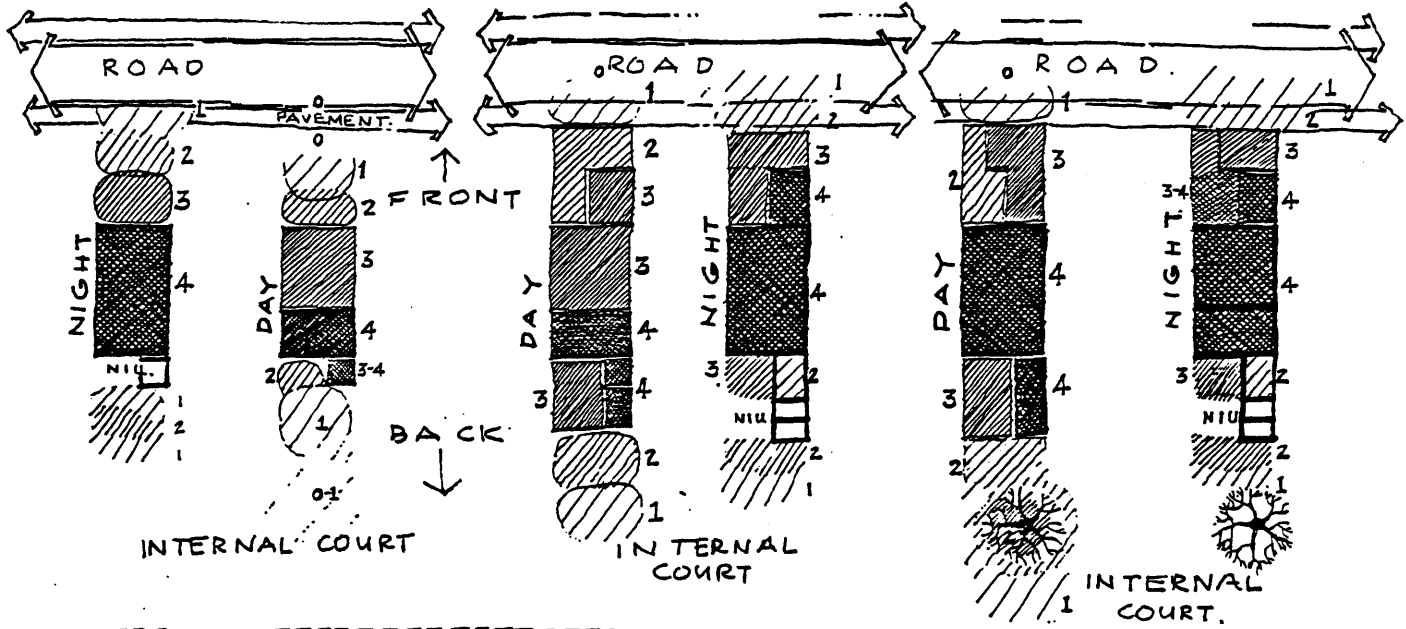






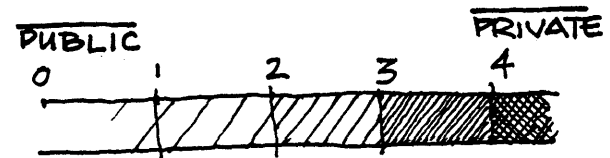
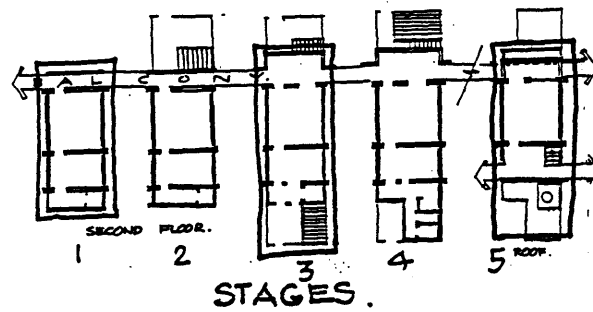
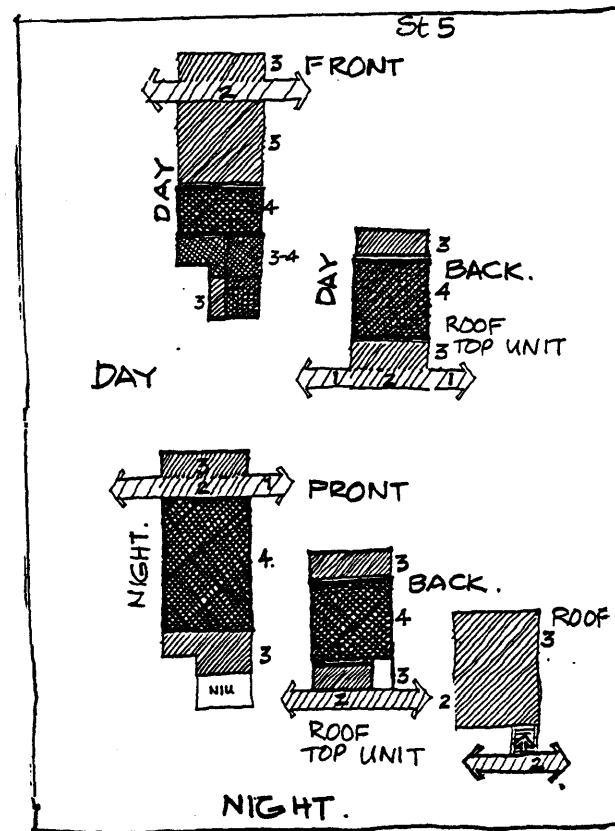
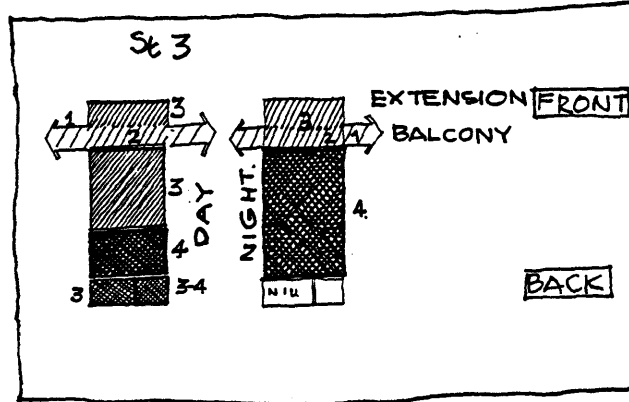
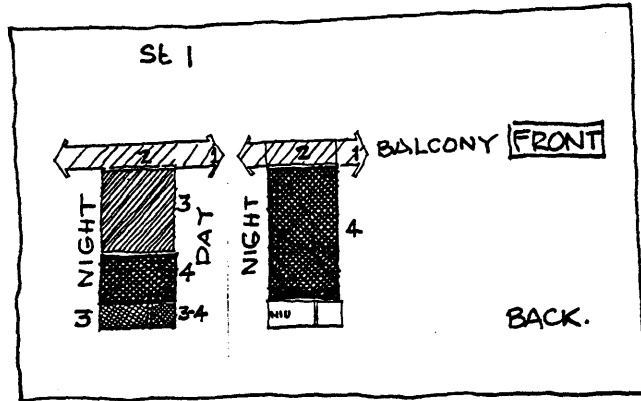


E



GROUND FLOOR TERRITORIES NIGHT & DAY.



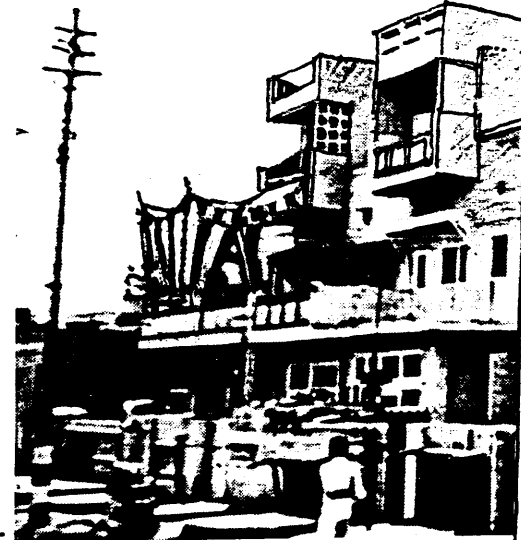
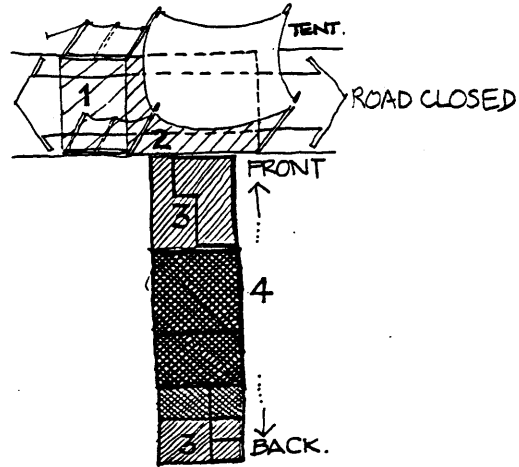


UPPER FLOOR PLAN  
NIGHT & DAY

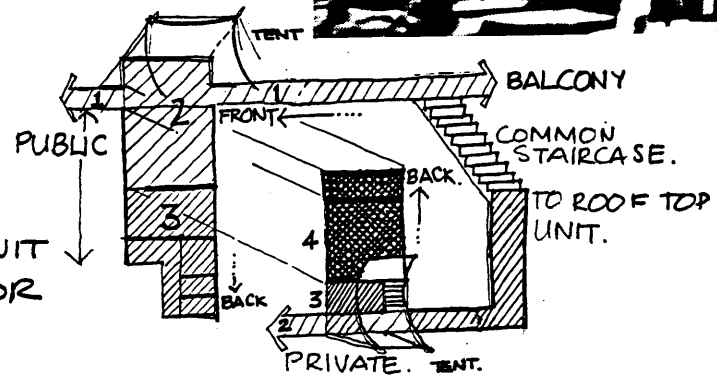


SPECIAL EVENTS MARRIAGE.

**GROUND FLOOR**  
ROAD (PUBLIC SPACE) BLOCKED (APPROPRIATED)  
FOR A EVENING.



**UPPER FLOOR**  
THE UPPER FLOOR  
BEING THE PUBLIC ZONE  
WHILE THE ROOF TOP UNIT  
BECOMES THE BACK OR  
PRIVATE ZONE.

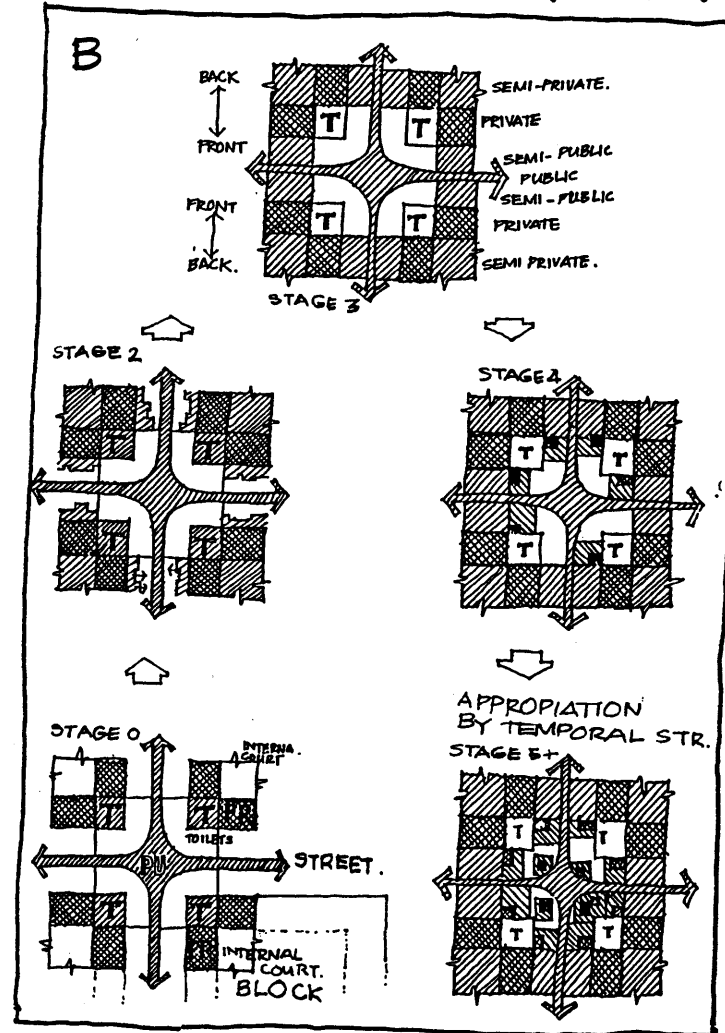
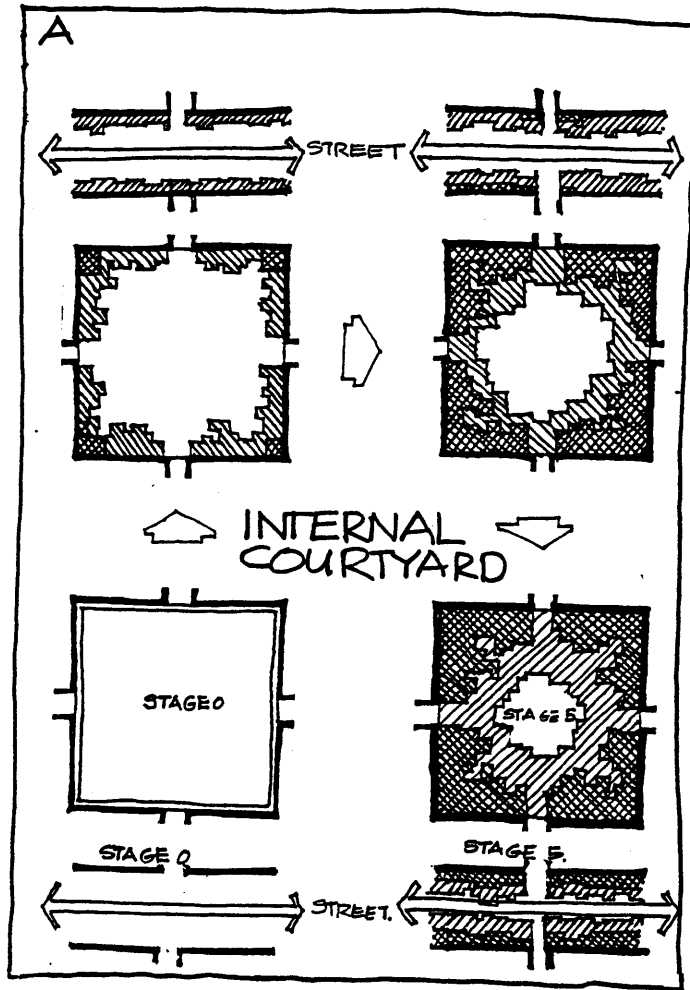






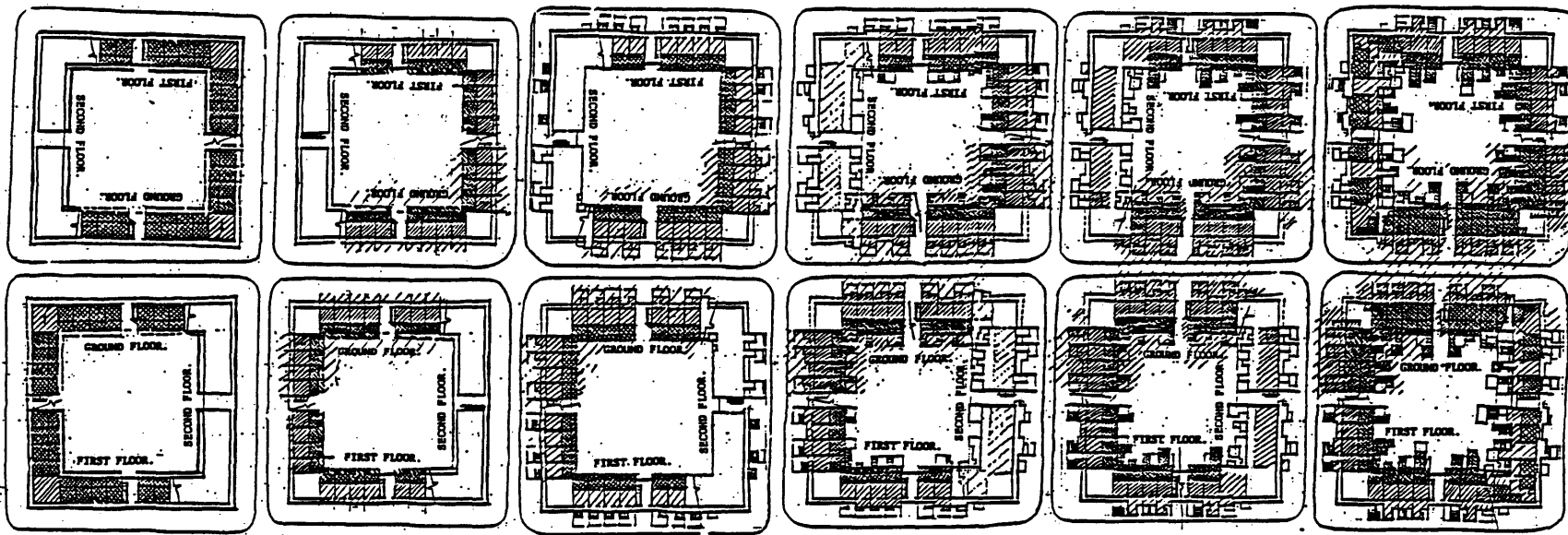
APPROPRIATION OF  
UNDEFINED TERRITORY  
A INTERNAL COURTYARD  
B JUNCTION OF 4 BLOCKS.

BLOCK





TERRITORIAL CHANGES.



STAGE 0  
1952

STAGE 5  
1984





A TENT PUT UP FOR A MARRIAGE.

SPECIAL EVENTS.







MAN SET UP WORKSHOP  
UNDER BED.



A STREET SIDE RESTAURANT

MARGINAL  
STRUCTURES. 



SHOE SHINING &  
REPAIR UNDER  
A UMBRELLA.





A MARKET DAY.



TENTS SET UP  
FOR MARRIAGES



IN A PUBLIC PARK





SYNOPSIS OF THE STORY.

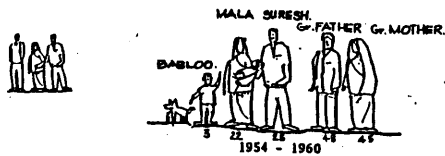
STAGE 0

INTRODUCTION:



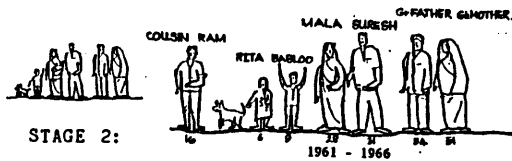
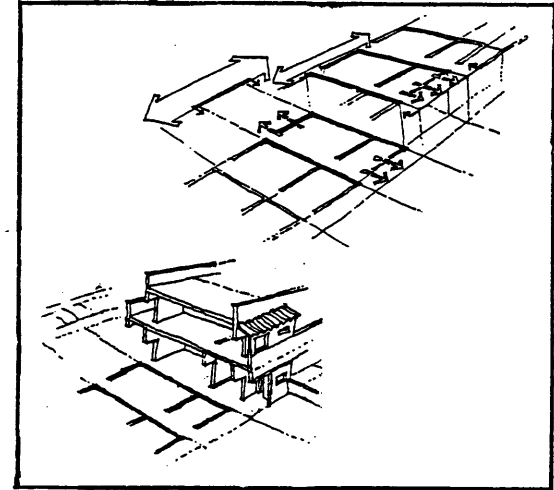
The block was one of the three types constructed in 1952 for the refugees coming to Delhi after the partition of

India and Pakistan. It consisted of sixty four units structured around a central courtyard, sharing common toilets at the four corners. The plan was symmetrical, the blocks being placed in a grid like fashion on the site.



This is the story of the family of Suresh. He and his parents were among the 250,000 refugees who came across the border during the partition between India and Pakistan in 1947. Suresh arrived as a

youth of 17 and was married 5 years later to Mala. They are in their mid-twenties with a child of three, and live with their parents who are in their late forties. The family is housed in one of the eight refugee blocks in Bhogal.

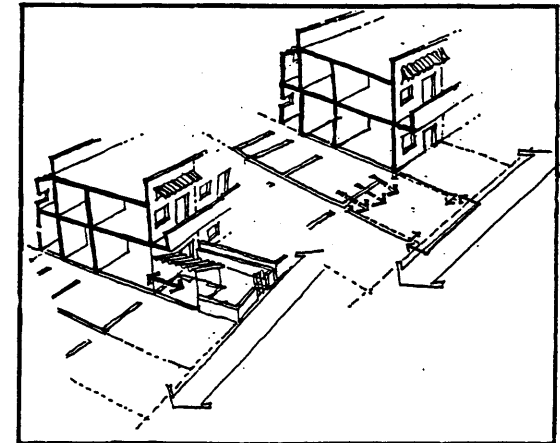


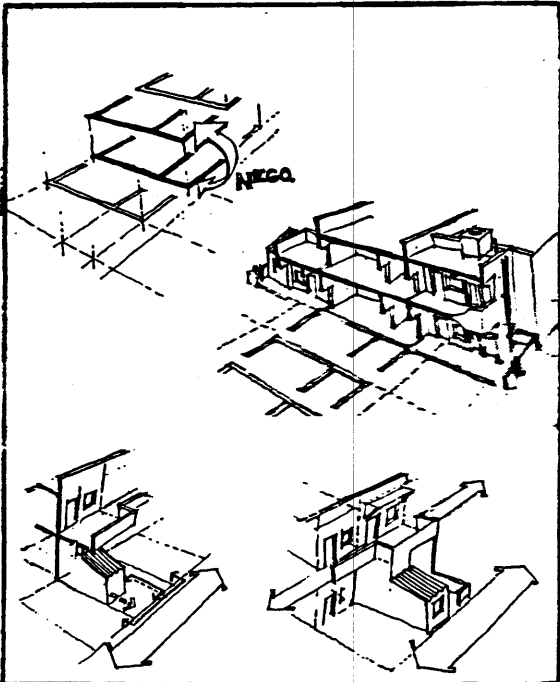
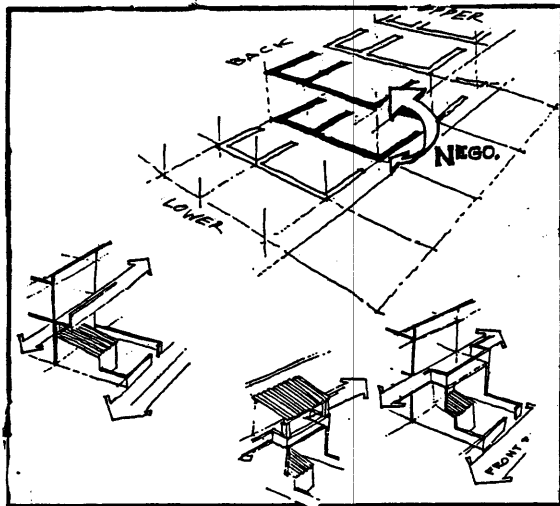
STAGE 2:

INTRODUCTION:

The family is joined by Suresh's cousin. Their children are also growing up, and they decide to make an important decision, that of adding a room. This is

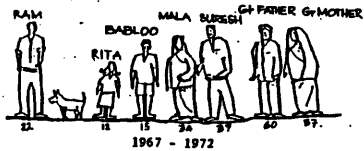
the start of a major learning process, providing them with valuable experience and insights into the way that the informal construction sector operates. As more and more families transform their built environments, the informal sector continues to expand, developing new skills and resources to meet their requirements.





STAGE THREE  
INTRODUCTION

By this time most families in the block know each other and have developed ties with families in other blocks. The block itself is in the process of undergoing major physical transformations. Most residents continue to upgrade their living environments, adding toilets and more rooms.

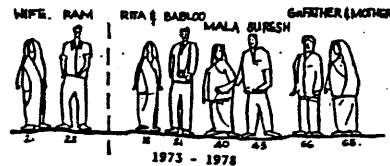


Suresh also decides to extend their existing toilet and kitchen areas. In addition they are to upgrade their front room through a process of collaboration with his neighbor above. The collaboration is typical of the way changes are effected in the block - yet it is unique as it allows for greater efficiency, economy and individual control over the process and the final product.



STAGE FOUR  
INTRODUCTION

The family experiences an important change in their life style. Suresh's cousin Ram has decided to get married. He has recently become a partner in a firm that repairs electronic equipment, and is now thinking of settling down. Due to the ensuing space shortage, Suresh decides to built an extra room. Apart from serving as a sleeping space at night it is also used as a small shop during the day, managed by Suresh's parents (now in their 60's). Granddad gave up his previous job fabricating wooden crates, when it became too stranious for him to continue.



Babloo, now 21 decides to open up his own photographer's studio. There are no major changes in Suresh's or Mala's lives. They are both in their middle ages now, and watching the children grow up into responsible individuals.

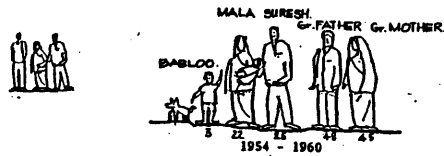
STAGE 0

INTRODUCTION:



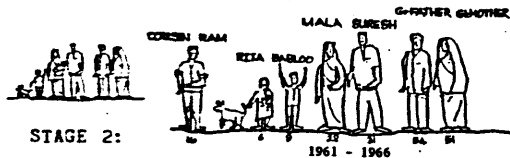
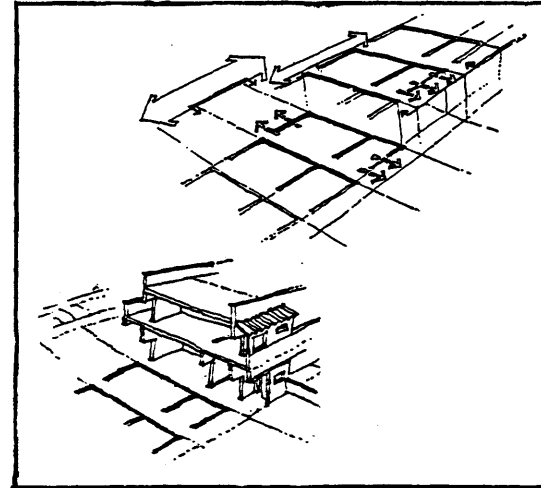
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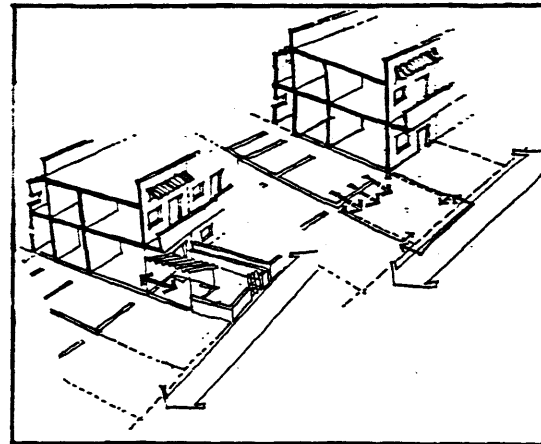


STAGE 2:

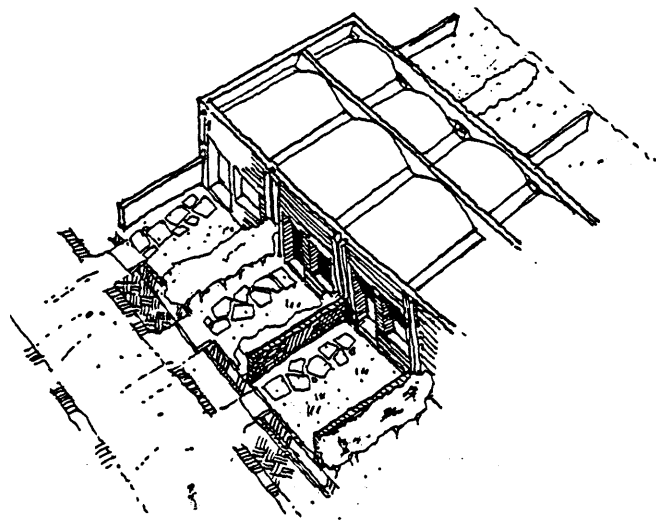
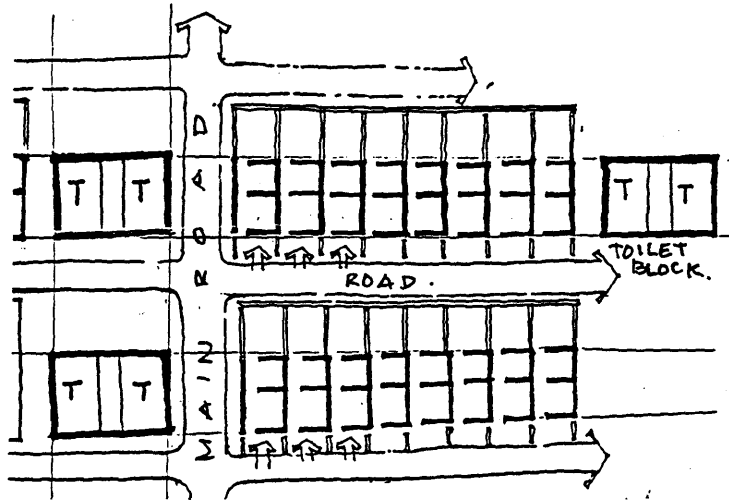
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the start of a major learning process, providing them with valuable experience and insights into the way that the informal construction sector operates. As more and more families transform their built environments, the informal sector continues to expand, developing new skills and resources to meet their requirements.



STAGE 0



**THEORY**

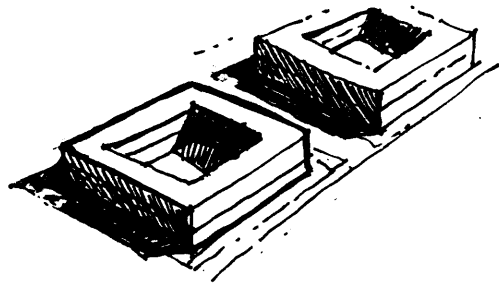
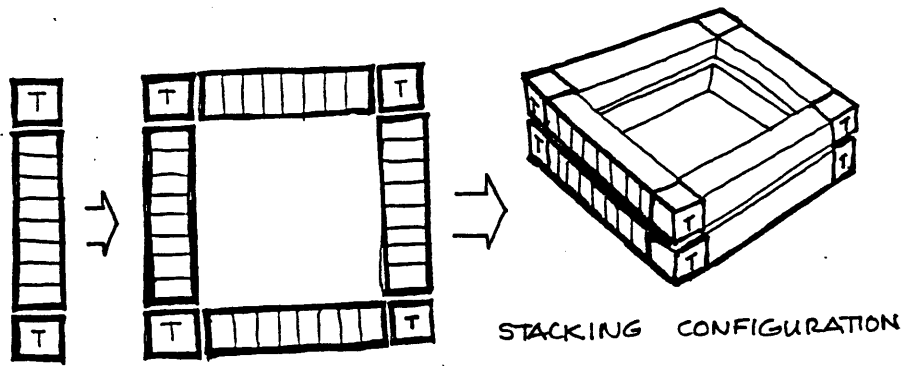
The origins of this form of structuring could be found in the mass housing programs constructed by the P.W.D in the pre-independence period. These were rows of two roomed apartments arranged in a linear fashion, with either common or individual toilets depending upon the class of the civil servants served. The linear structuring attempted to reduce circulation space, share common walls, and to counter the lateral forces produced by the brick vaulted roof. It was also a type that was easy for a beaucratic works department to keep account of. The independence did not affect the government structure, and the Public works department continued to play a important role in providing mass housing to cope with the thousands of incomming refugees. Thus in the "refugee colony" of Bhogal and Jangpura Ext, We



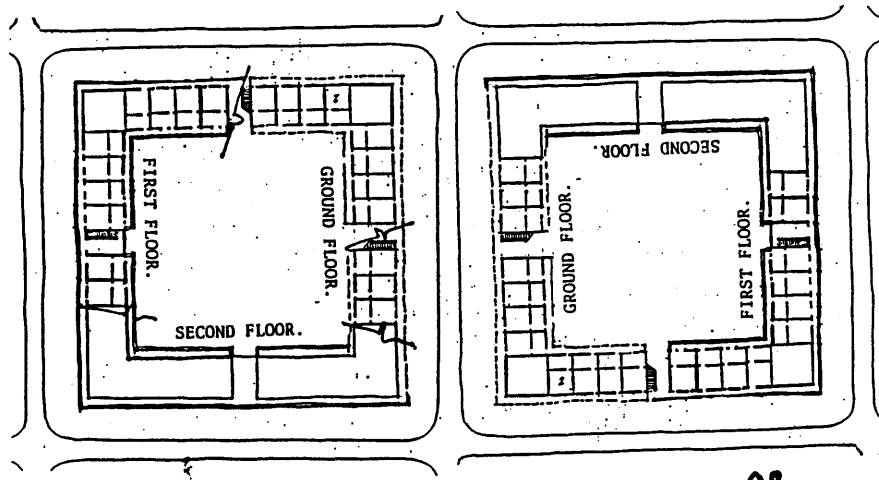


## STAGE - O. Introduction

After the partition of India and Pakistan in 1947, Delhi saw the unprecedented arrival of some 250,000 refugees. The government, as part of its emergency measures to deal with the massive influx of refugees, embarked on a major rehabilitation program. The bureaucracy of the Public Works Department, undertook the construction of mass-housing programs, in and around Central Delhi. The housing colonies of Jangpura and Bhogal were developed in 1953 as part of this attempt to catch up with the numbers. There were three types of housing provided. The first type, aimed at the higher income group, was in the form

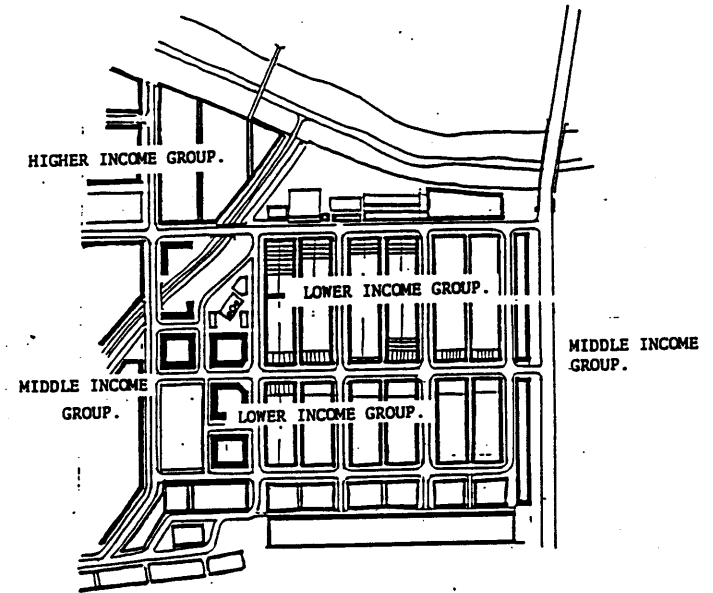


find the two basic types- a) the row house, b) the bungalow type. It would not be farfetched to speculate that the Double story Block results from a design move of stacking four linere units together, and than doubling it to increase the density. A large distance was kept between one block and another. This was probably for two reasons, a) to keep a wide pavement for future expansion of the public right of way, and b) an image of the colonial front garden. As a result the blocks were seperated by about fifty feet un-defined space.



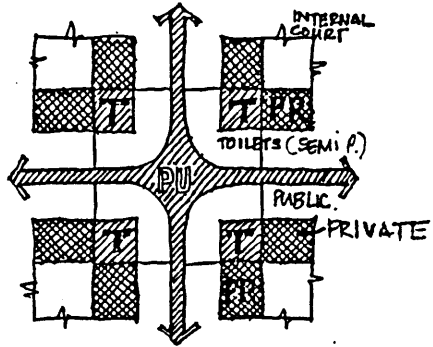
of plotted development. These were two roomed "Bungalows", on an individual plot of land. The second type consisted of a single story row house development. These were aimed at the refugees of the mid-income group range.

The third type aimed at the poorer refugees. They were housed in a square block of 64 two-roomed units. Common toilets were provided at the four corners and the residents shared a common rear courtyard. The units were sold to the refugees for around Rs 2000 to 5000, and in some cases they were given free as compensation for property lost during the partition.

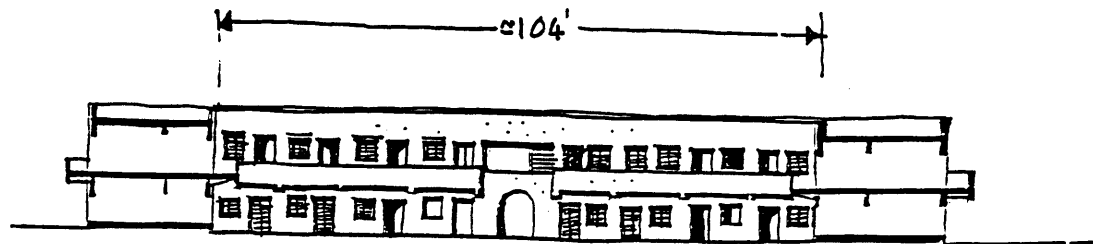
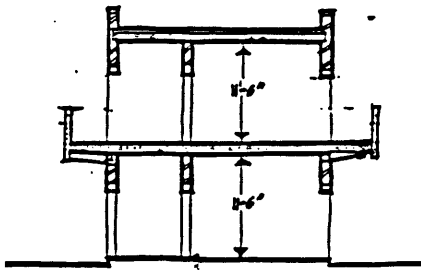
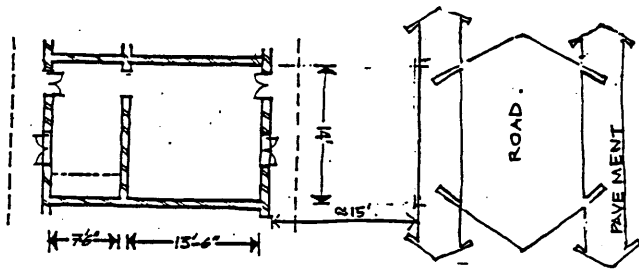
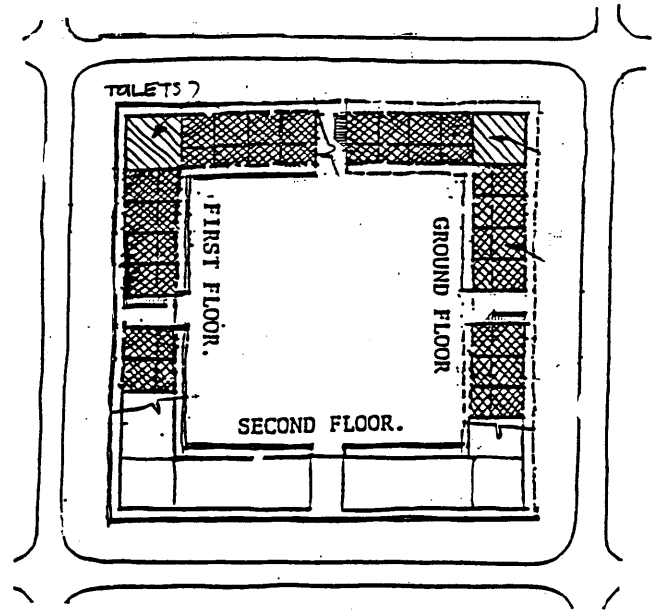


THE  
ROW  
HOUSE  
TYPE  
TODAY →





TERRITORIAL  
DEFINITION.  
JUNCTION OF FOUR BLOCKS.

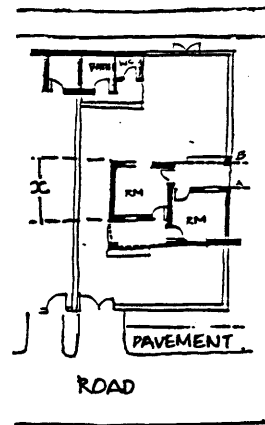


100

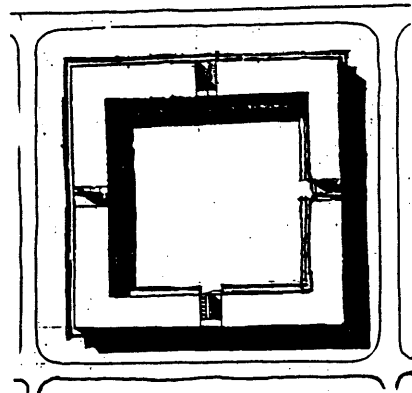
3

Today after nearly 33 years both these blocks are barely recognizable from their original form, additional floors being added. The bungalow type have developed into four story buildings, with three of four apartments being given out on rent on the upper floors.

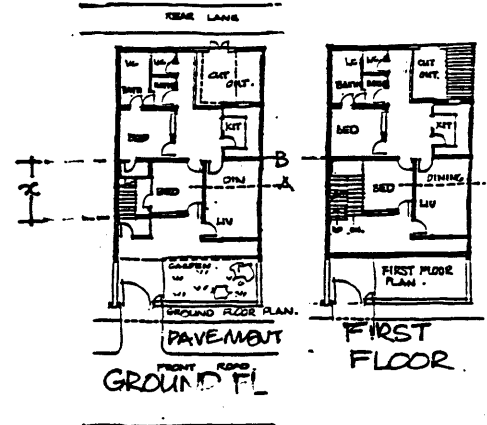
The transformations of the blocks have been more interesting. Apart from adding extra rooms to the original unit, commercial, small scale manufacturing, clinics, and nursery schools have evolved within the blocks. Another interesting aspect is the methods of negotiation, and collaborations that have developed between residents resulting in a more efficient usage of the minimal space that they were originally allotted.



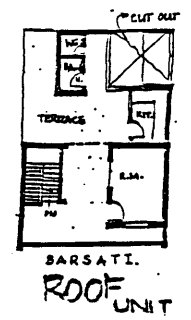
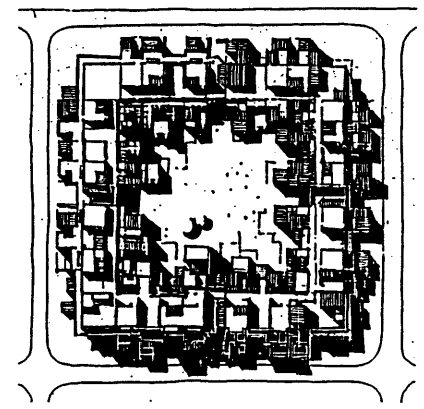
1953



1984



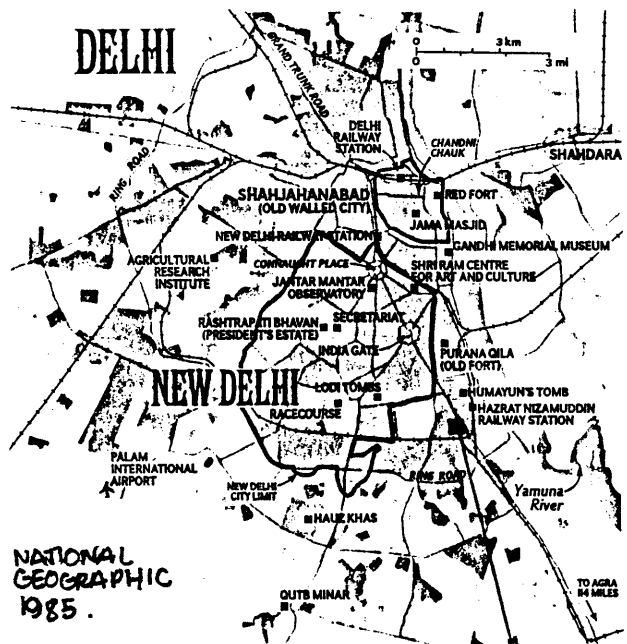
1984





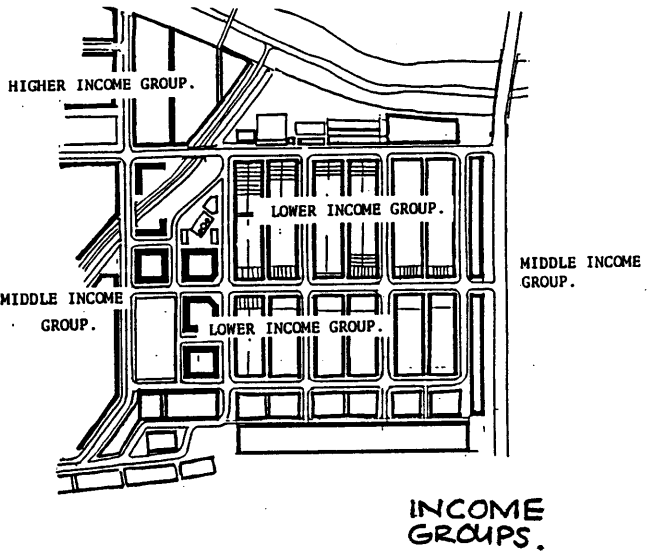
103

STAGE 1

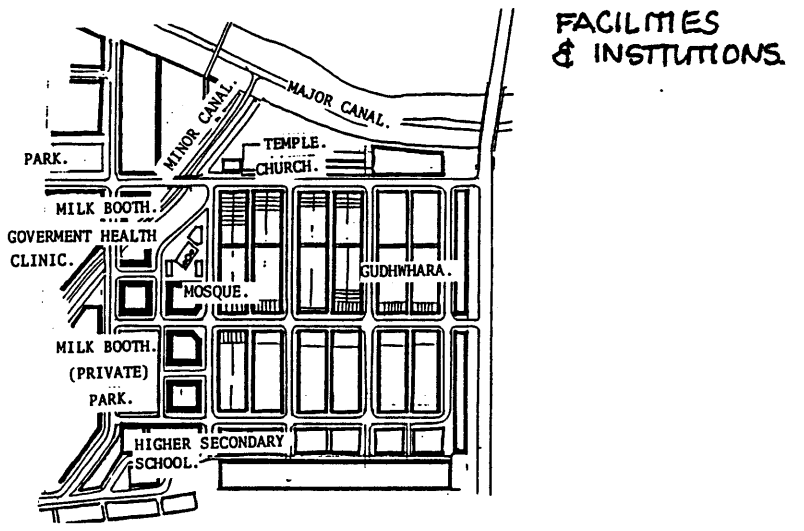
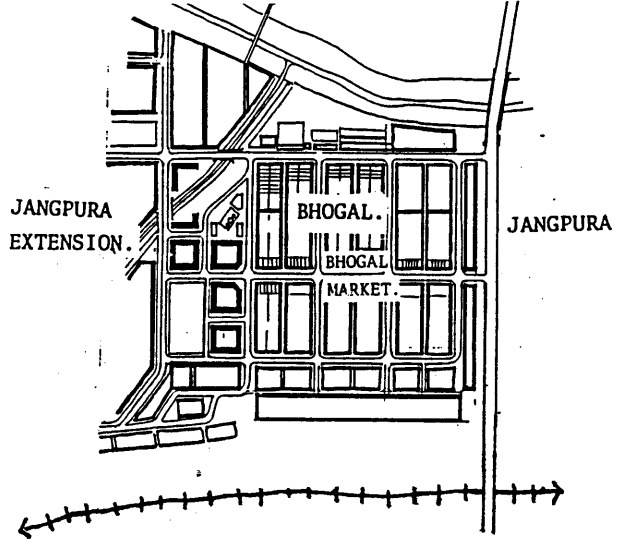


Mogul capital, Delhi became British India's capital in 1912, succeeding Calcutta. Three miles south of the old city, the subcontinent's rulers began to build New Delhi, laying out boulevards and parks for some 65,000 residents. Since independence in 1947, Greater Delhi has rocketed to seven million and may double by the year 2000. Hub of northern India, Delhi is the nation's third largest city, after Calcutta and Bombay.

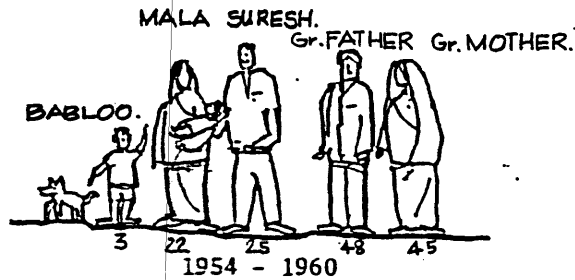
NATIONAL GEOGRAPHIC 1985.



JANGPURA EXT. BHOGAL.

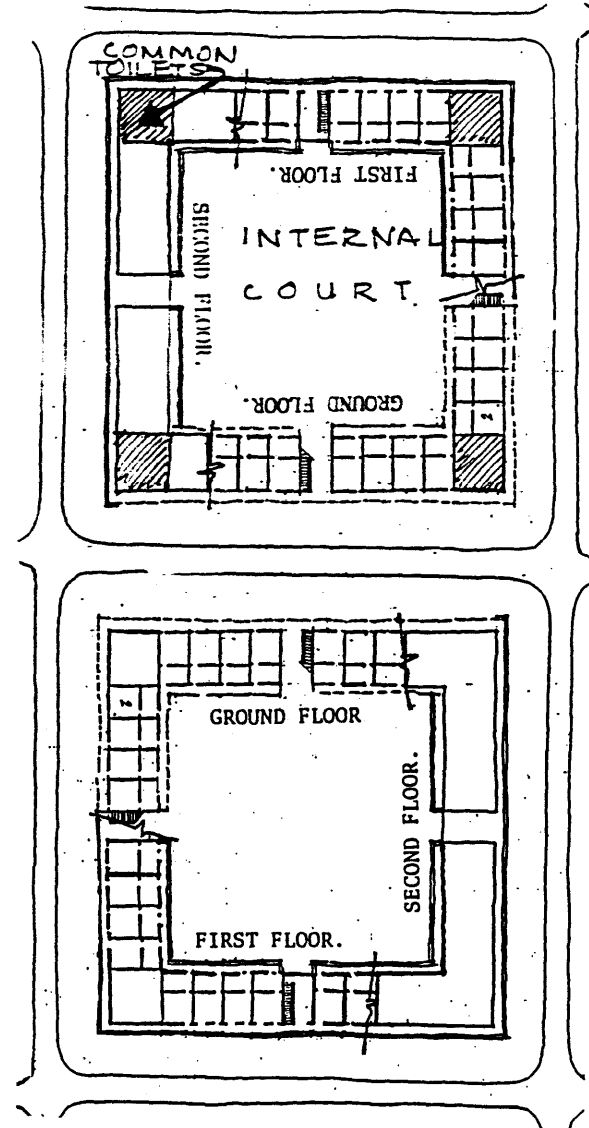


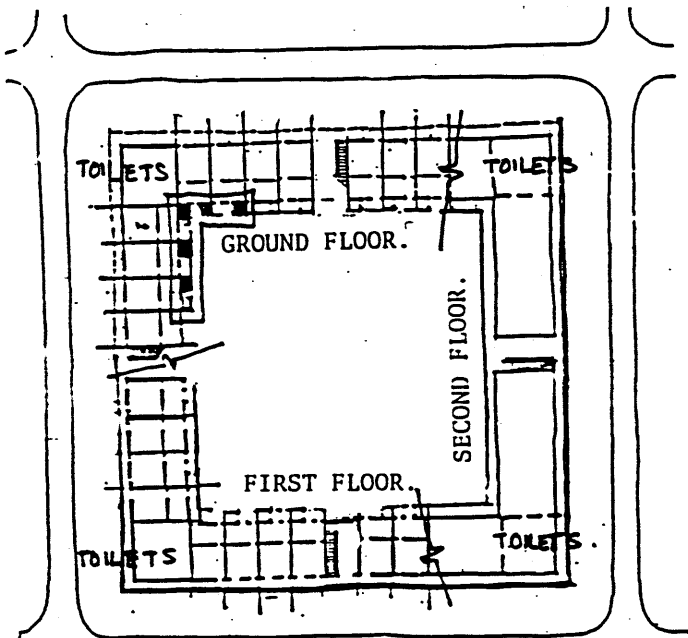




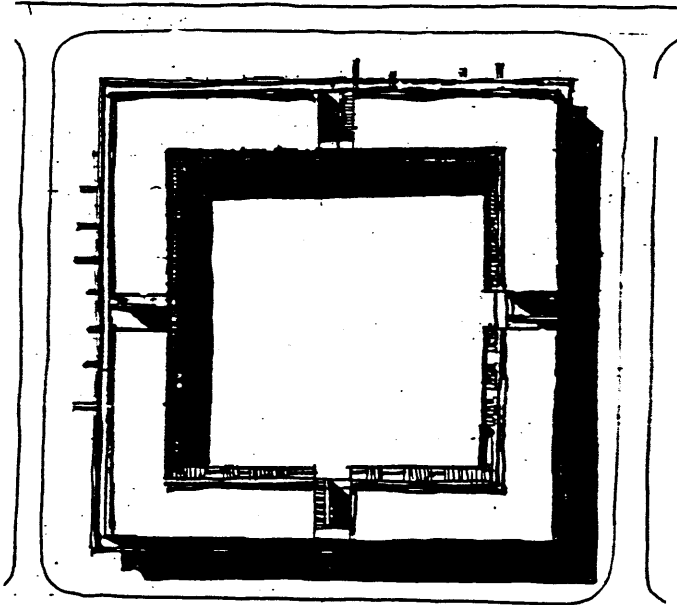
### STAGE 1 INTRODUCTION

This is the story of the family of Suresh. He and his parents were among the 250,000 refugees who came across the border during the partition between India and Pakistan in 1947. Suresh arrived as a youth of 17 and was married 5 years later to Mala. They are in their mid-twenties with a child of three, and live with their parents who are in their late forties. The family is housed in one of the eight refugee blocks in Bhogal.





FLOOR PLANS.



ROOF PLAN

ADDITION'S & ALTERATIONS.

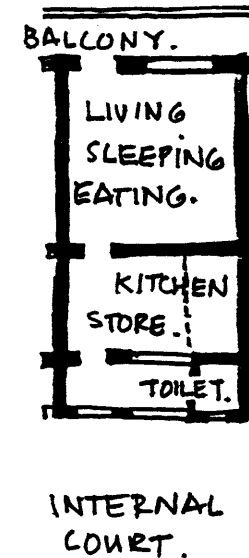
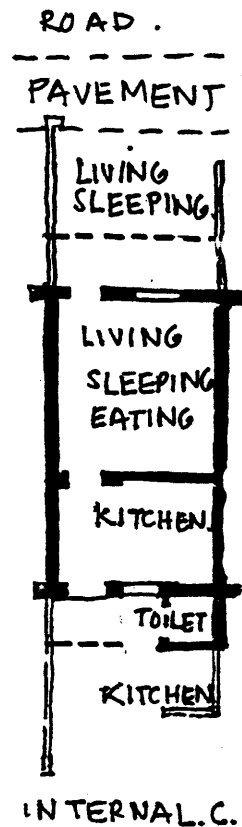
- 1. TOILETS BUILT OVER & UNDER.
- BALCONY

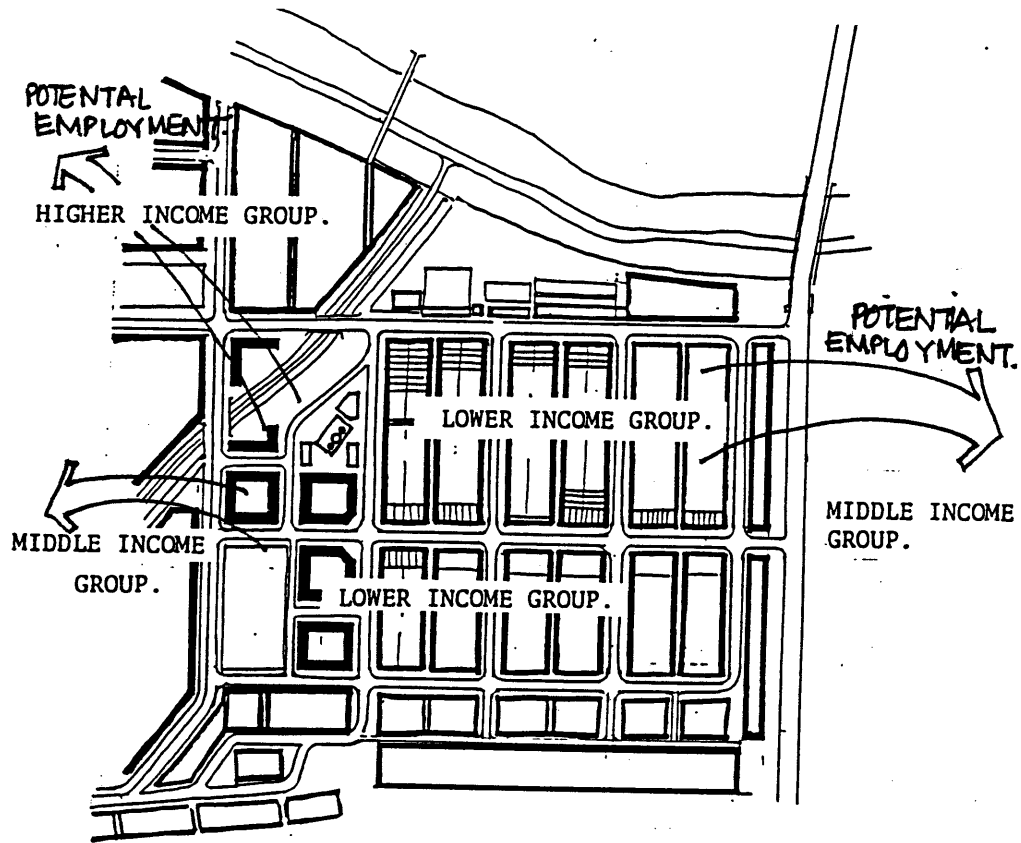


SURESH: Suresh, now 26, works as a clerk in the large government bureaucracy. Although the pay is not much, the advantages are many. The primary benefit is having access to cheap housing. In addition, his position has helped him to secure a ground floor flat. This allows his family to extend their living activities outside. Given the minimal area inside, this ability to spread out in the open is important.

SURESH'S FATHER works as a salesman for a private company. In addition, he also does some work part-time as an accountant with another firm in the neighbourhood. He had been contemplating a government job, but it was too late in life to start all over again. Fortunately he was lucky to secure a job for his son through a close friend. Beginning again

has been difficult. He was unable to get much across the border during the partition and they have very little. The family's main possessions are his wife's



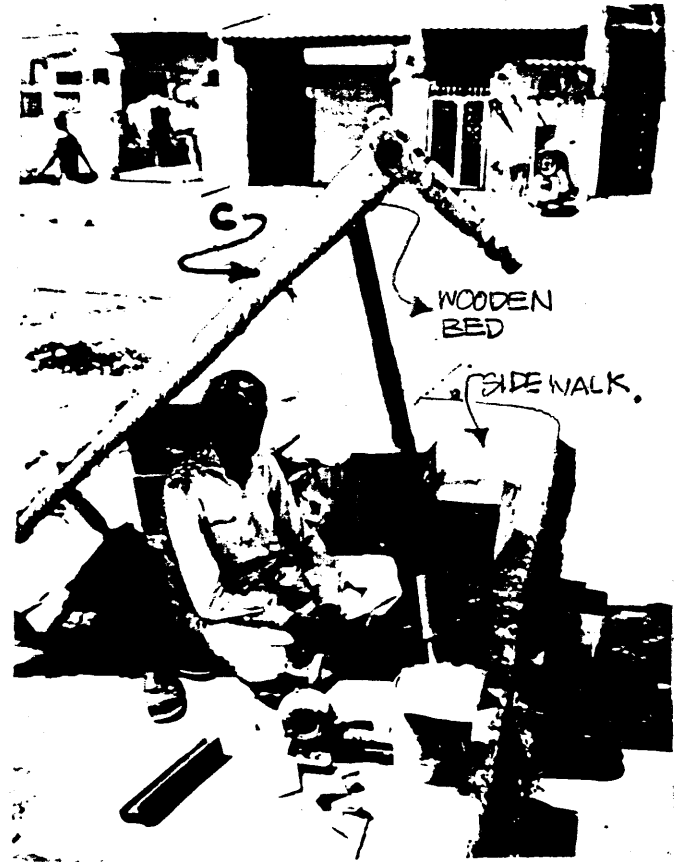


THE FRONT COURT. A SEMI-OUTDOOR LIVING AREA.

jewelery, and a bicycle donated by one of Suresh's uncles.

SURESH'S MOTHER is a very energetic women, and the main force in the family. Apart from running the house in an efficient way, she is also the one who makes most of the decisions. She also works part time as a servant in a nearby higher income neighbourhood, working 4 hours a day, cleaning utensils, washing clothes and cooking the evening meal. She prefers cooking the evening meal, because the mistress gives her the extra remaining food to take home.

SURESH'S WIFE MALA: Mala does most of the house work and takes care of their 3 year old son Babloo. Suresh's mother helps her, especially in taking care of the young child. Mala, in turn, sometimes substitutes for her mother-in-law at work, but with the child being so young, it becomes difficult to get away from the house.

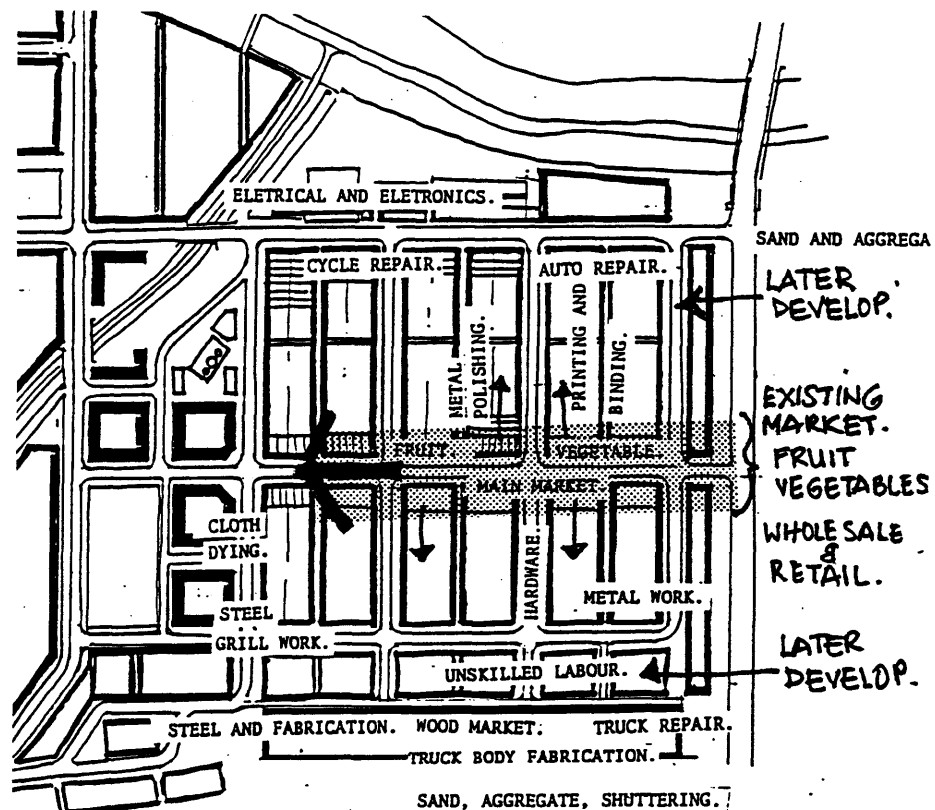


THE MARKET PLACE AS A COMBINATION OF VARIOUS FORMS OF STRUCTURES.  
 (A) REGULAR SHOPS, (B) EXTENSIONS ON TO PAVEMENT  
 TEMPORAL STRUCTURES.

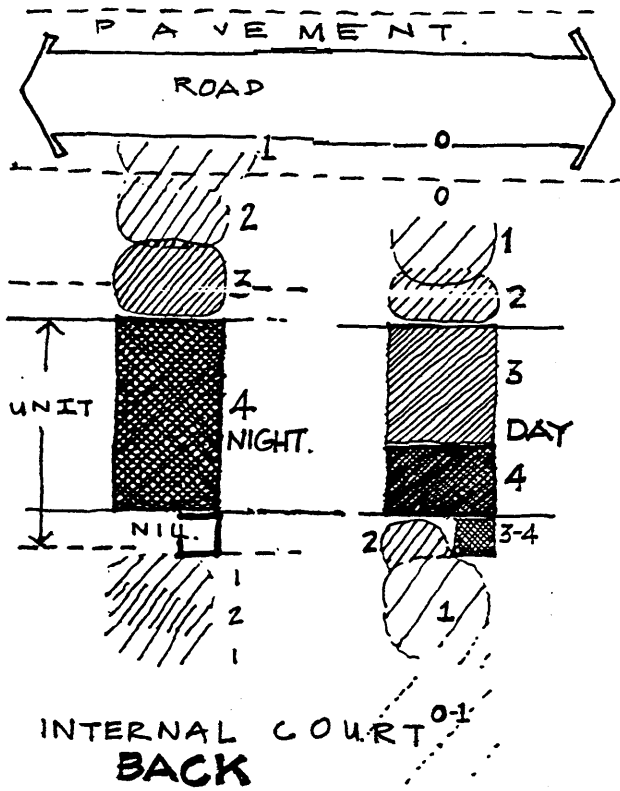


### Family Background and Circumstances:

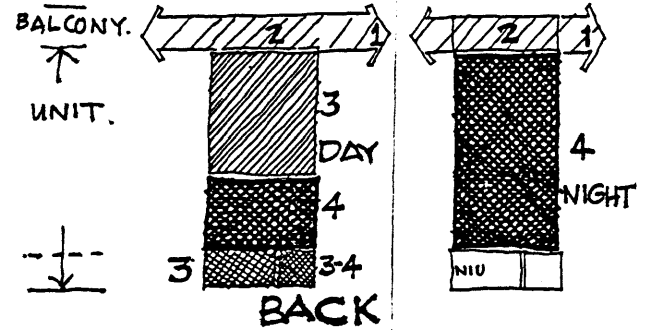
Suresh's family moved into the cluster 2 1/2 year ago . Like most other families in the block they are still in the process of settling in. The colony itself, part of a massive government rehabilitation program, has not yet "developed" in terms of public facilities and infrastructure, but the process is well underway. This particular colony is better off than most, because it is close to a market. The market, part of the village of Bhogal, existed before the rehabilitation program began. Suresh's "Home", part of 64 other homes in the block is minimal: 1 1/2 rooms with a common toilet shared by three other families; nevertheless it is their own, and they are optimistic about the future.



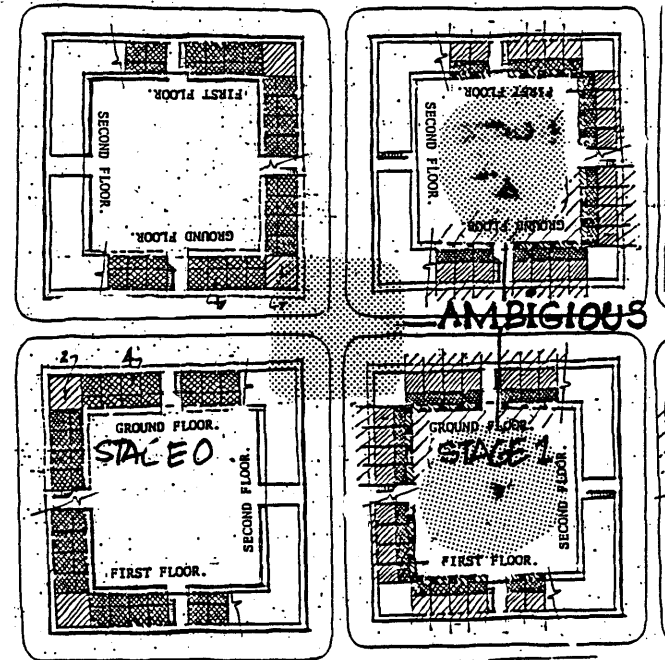
# FRONT



# UPPER FLOOR. FRONT



IN AN EFFORT TO MAXIMIZE SPACE UTILIZATION BEDS ARE PULLED OUT IN THE INTERNAL COURTYARD, TO DEFINE TERRITORIES.





Life style: The house has two basic rooms. The main room is used for living during the day and as a sleeping area at night. Most of the furniture - two beds, a couple of trunks, etc., are stacked against the wall to make more space. Sometimes the room is also used for dining, especially when there are visitors. The inner room is used as a kitchen and eating area. During pleasant weather, cooking activities (done over charcoal stoves) spill into the back courtyard. Lack of space is not an issue during the day time, as most of the members of the household are out. During the night time it becomes a potential problem, but as the nights are cool, some people prefer to sleep outside in front of their houses. Suresh, Babloo, and granddad sleep outside, while Mala and mother sleep in the house.

113



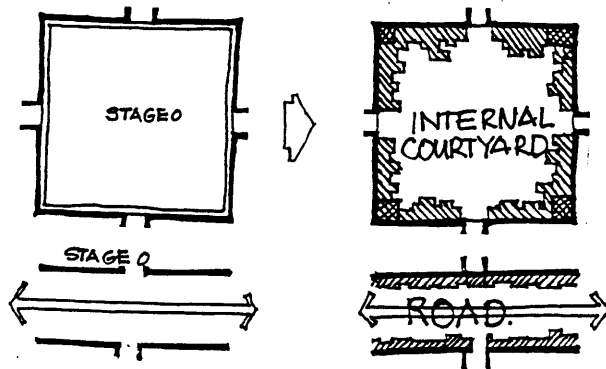
STREET SIDE SLEEPING AHMADABAD.





CONDITIONS:

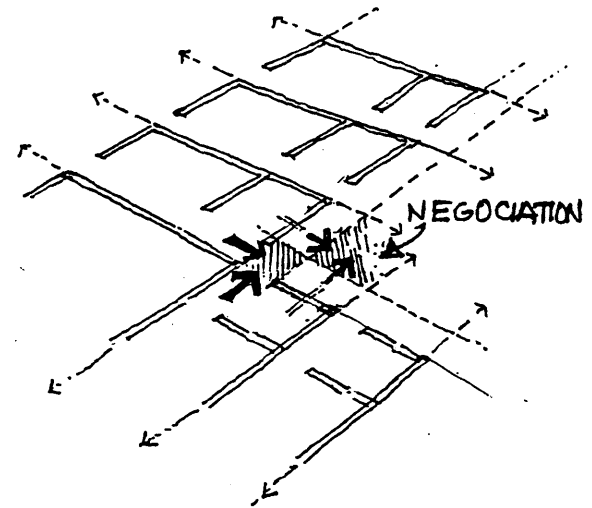
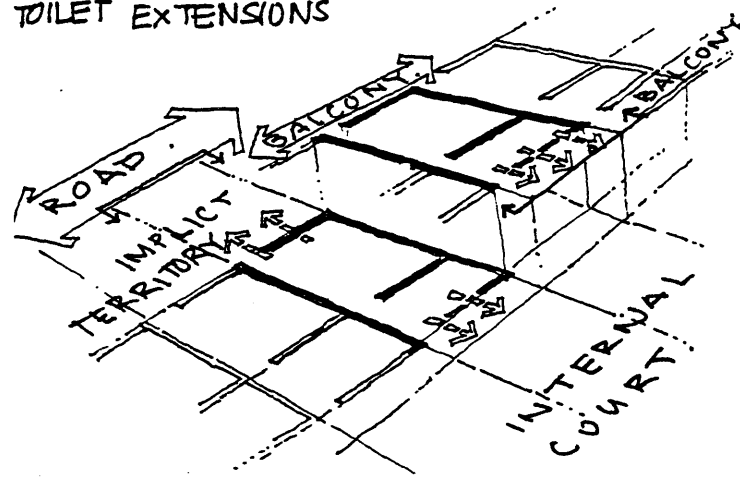
The disagreement about how to deal with the stagnant water is a classic example of the problem of excessive public spaces which are difficult to maintain and control. Although the residents are prepared to attempt to solve the problem themselves, due to the ambiguity of the ownership it is a difficult issue to resolve. Thus a process of appropriation of ambiguous territory, either long term or short term, results in a definition of responsibilities, control and therefore maintenance. It is not necessary that once under private control they cannot be used by the public, they can be multifunctional in nature, changing their functions at different times. It is important to distinguish that multifunctional does not mean that a space could be public and private at the same time.



THE CENTRAL PART OF THE COURTYARD BEING AMBIGUOUS, IS NOT LIABLE TO BE MAINTAINED. GRADUALLY THIS SPACE IS APPROPRIATED TO PRIVATE AND SEMIPRIVATE SPACE.

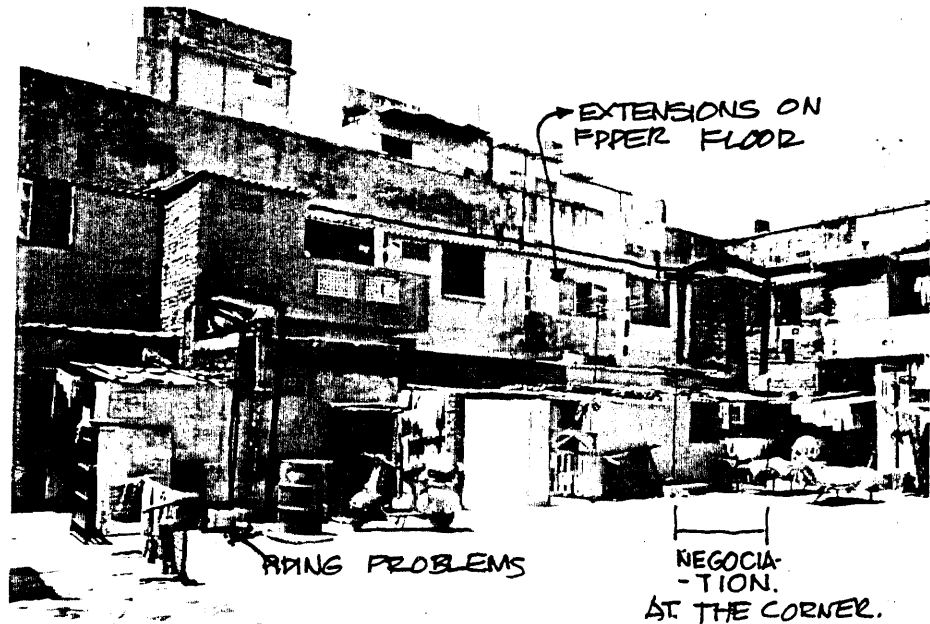
The neighbourhood facilities are minimal but the living conditions are tolerable. The shopping nearby provides the family with most of their daily needs. Occasionally, during the summer, water is in short supply. At that time, water tankers belonging to the municipality are sent around the colony. Other aspects of the development pose more serious problems. The residents are concerned with the potential spread of malaria. The municipality sets up an occasional clinic to distribute pills but that hasn't taken care of the of stagnant water which is a common source of the disease. There is talk among the block residents getting together to spray oil but there is disagreement about which areas should be sprayed and how the cost should be distributed.

# TOILET EXTENSIONS



## THEORY.

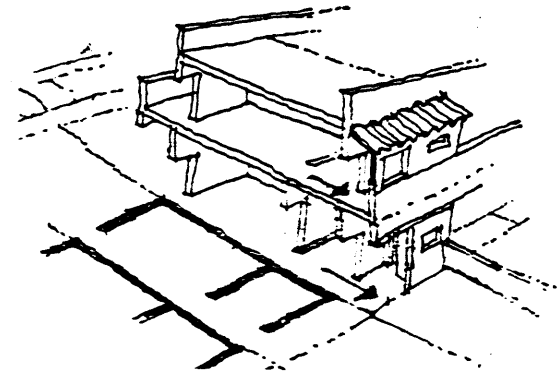
The issue of the common toilets having to be shared is similar in nature. Apart from being ambiguous in definition, it is socially not accepted to share one's toilet spaces. This is further amplified by the fact that the residents are more or less strangers to each other. The toilet blocks themselves are considered "unclean" and are the last spaces to be appropriated in spite of being at prime locations at the corner of the blocks.



The other major complaint the people have is that they have to share a common toilet. This is one issue of great concern, especially among the women of the block. Families do not know each other, except through casual acquaintance, and the sharing of common toilets has become a serious issue.

Physical additions and alterations:  
To cope with the immediate need for a toilet, the family decides to build one of their own at the back of the unit. They have not been able to save a lot of money, but a uncle agrees to give them a small loan to cover the costs of services.

Some of their neighbours have already made the alterations, and the family can see and learn from them. More important they can get referances to good masons, plumbers, and suppliers of materials.





#### RECYCLING OF MATERIALS WITHIN THE INFORMAL CONSTRUCTION MARKETS.

Due to the informal construction markets in the early stage of development, it was probably more difficult to obtain most materials from the informal markets. This part also illustrates another interesting point, that of the poor collecting construction materials in anticipation of a use sometime in the future.

Among the poor, this is particularly relevant given that it may not be available at a future time. In Delhi this form of salvage and exchange has evolved into a major informal industry similar to other parts of the world.

The materials are bought from informal outlets in the market. Some items like the sanitary fixtures (imported from England) would have to be bought from the formal market, and are very expensive. It is rare to find second hand ones so they have to be purchased new. Fortunately, Suresh's mother had anticipated this problem, and had acquired a WC pan some time ago. It took them some time to collect some money. (They persuaded an uncle.) The bricks are again salvaged from a local construction site, and some are bought second hand.

CONDITIONS:

PRODUCT VS. PROCEDURE.

The solution is a simple one, in fact obvious; is to build a structure of 1/2 brick walls bonded by lime-cement mortar, under the existing balcony to avoid the major expenditure of a roof. The issue is not so much the product but the implications of the procedure followed in arriving at that product. The construction process can be viewed as both a technical process and the political process.

The technical part is mostly given by the existing resources and skills available - the choice of materials, and construction procedures to be adopted. The political process is a different level of questioning:

Where to put in extra money?

Where to accept lower standards?

What are the non-physical implications of an option?

By looking at existing examples, and by talking to the people involved, they are able to make this important choice, not as much as the final product but also the process of getting it constructed-

Who would they have to deal with?

What can be obtained easily?

What are the monetary and nonmonetary tradeoffs to be made, and therefore the hidden monetary and non-monetary costs involved?

The construction costs cannot be measured solely by monetary terms. For the people use it in its totality, and the gains and costs are more comprehensive. It is by understanding the process of what and how things fit together-the technical fit and the political fit, rather than measurement of a final product, that a choice of a option can be made.



Suresh employs a mason, a plumber and a laborer on a daily basis. The unskilled laborer is hired from a group that sat under a tree opposite the shop that sells hardware. They stay on the pavement in makeshift tents, close to potential employment sources.

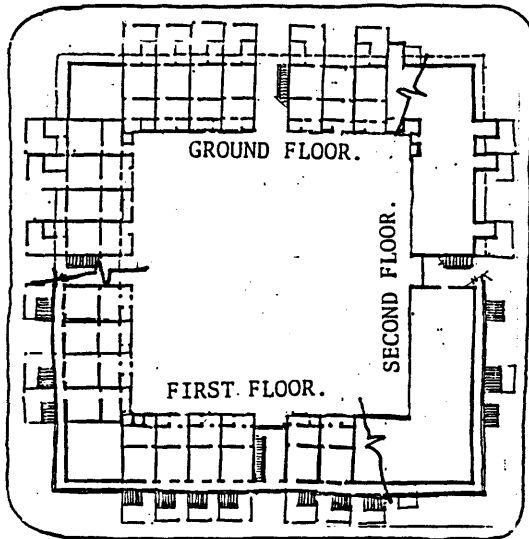
Normally, Suresh would have had to hire two laborers in order to mix the mortar and carry the bricks, but he feels that he can do most of the work himself.

His father can't do heavy work, but he helps with the cleaning, watering of the brickwork, and also general supervising.

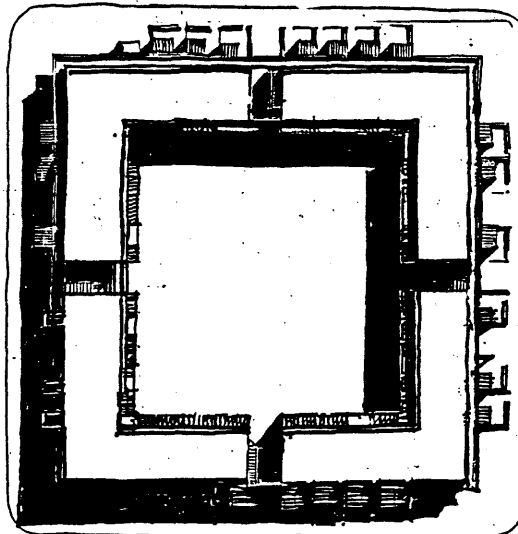
The service connections are more difficult because it is necessary to hook into the manholes which are already in constant use, and it is important not to disturb the existing layout of pipes. This is complicated further by the fact that the manholes have been constructed by another neighbor with whom he must negotiate some sort of usage fee.



STAGE 2.



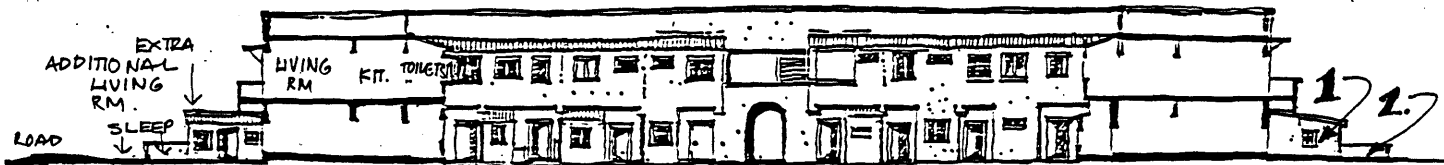
FLOOR PLANS.



ROOF PLAN

ADDITIONS  
ALTERATIONS.

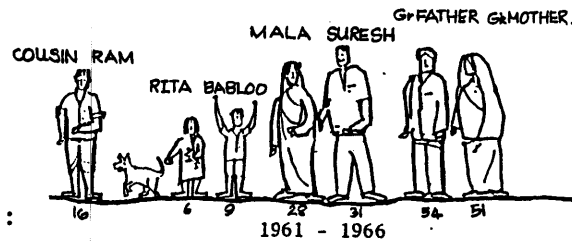
- 1) EXTRA ROOM ADDED TO EXISTING STRUCTURE.
- 2) DEFINATION OF SEMI PUBLIC ZONE.





STAGE 2:

INTRODUCTION:



The family is joined by Suresh's cousin. Their children are also growing up, and they decide to make an important decision, that of adding a room. This is the start of a major learning process, providing them with valuable experience and insights into the way that the informal construction sector operates. As more and more families transform their built environments, the informal sector continues to expand, developing new skills and resources to meet their requirements.



#### THEORY:

This is a common phenomenon when a family in the city is joined by a relative arriving from a smaller town in search of work. The family is used as a base to operate from. While the stay is usually temporary, it nevertheless implies changes in space usage. It is rarely the case that the relative is accommodated purely on grounds of family ties and social obligations. He or she contributes to the functioning of the household either through monetary or non-monetary terms. Usually this puts an additional burden on living space and services (kitchen or toilet). But the issues are usually resolved to a large degree by the life style which revolves around multi-functional semi-open spaces; it is thus relatively simple to incorporate an additional member or two.

#### IMPLICATIONS OF FAMILY SIZE ON HOUSEHOLD ECONOMY AND DEVELOPMENT OF LINKAGES.

To a certain limit, usually dictated by space requirements, it is profitable for the family to incorporate an additional member, especially if he or she is in a "working age group". The wide range of the working class group (ages 15-60) is due to the various levels and degrees of sophistication in employment in the informal sector.

Another advantage of having an "extended" family is the proportional increase in linkages to the outside world. The story provides an interesting insight into this aspect. Ram working as an electrician helps by contributing to the household income. But equally as important, with his knowledge of the local construction and manufacturing market, he is a useful "contact" for Suresh's family and even other families on the block. As in formal organizations, information is communicated through informal contacts rather than formal dissemination methods.

Thus in a process of families upgrading their environment, Ram's advice may be sought after. This linkage is on a reciprocal basis and therefore it is a beginning of the formation of networks - "information paths".

SURESH'S COUSIN RAM:

The family is joined by Suresh's cousin Ram, who has migrated from a small town in search of work. He is a youth of sixteen. At present he works as a waiter at a local restaurant, and as a helper in a local electrical shop. The shop is located in the main market, a 5 minute walk away. They repair electric motors, radios, and electrical hardware. Suresh is not paid much but it provides him with valuable experience.

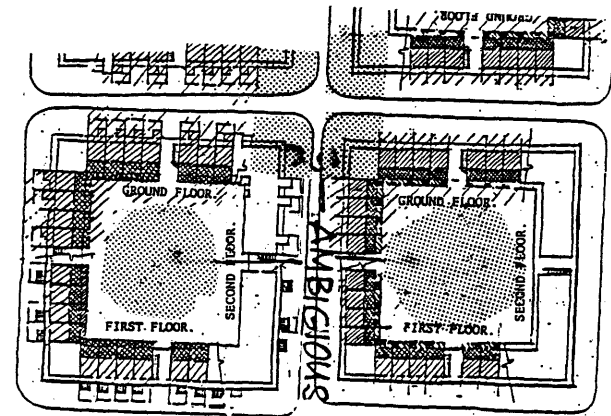
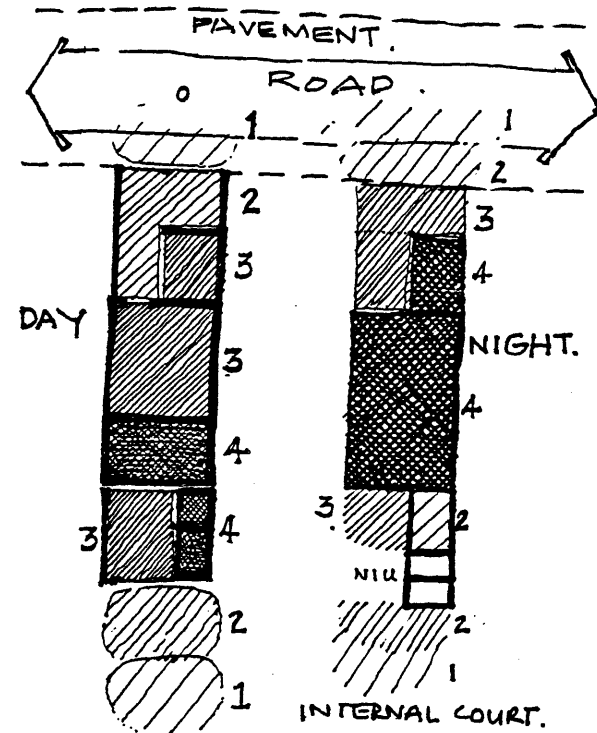
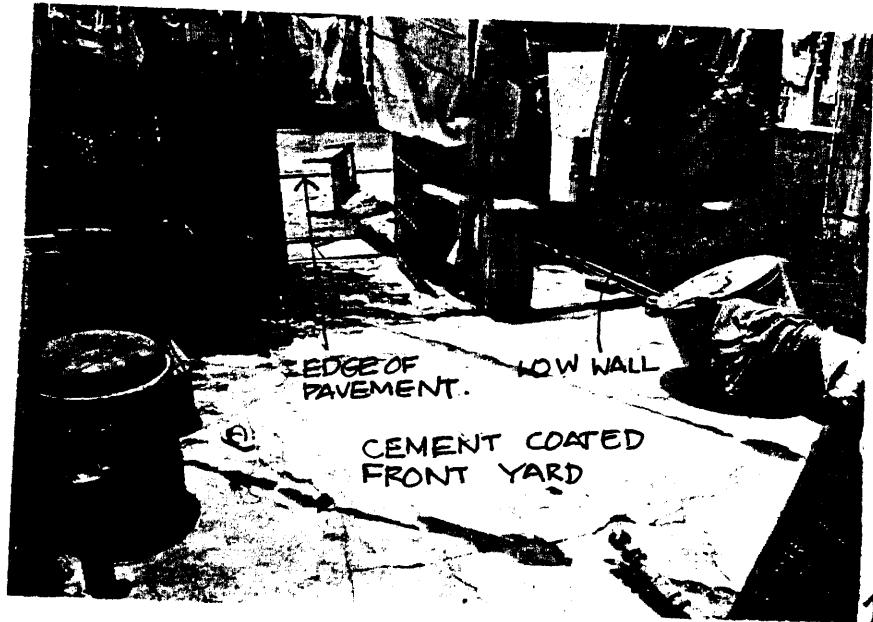
SURESH & MALA:

Suresh and Mala have a growing family. Mala had just had a baby girl, and their son Babloo is now nine years old. Mala has replaced Suresh's mother at her place of work.



SURESH'S PARENTS:

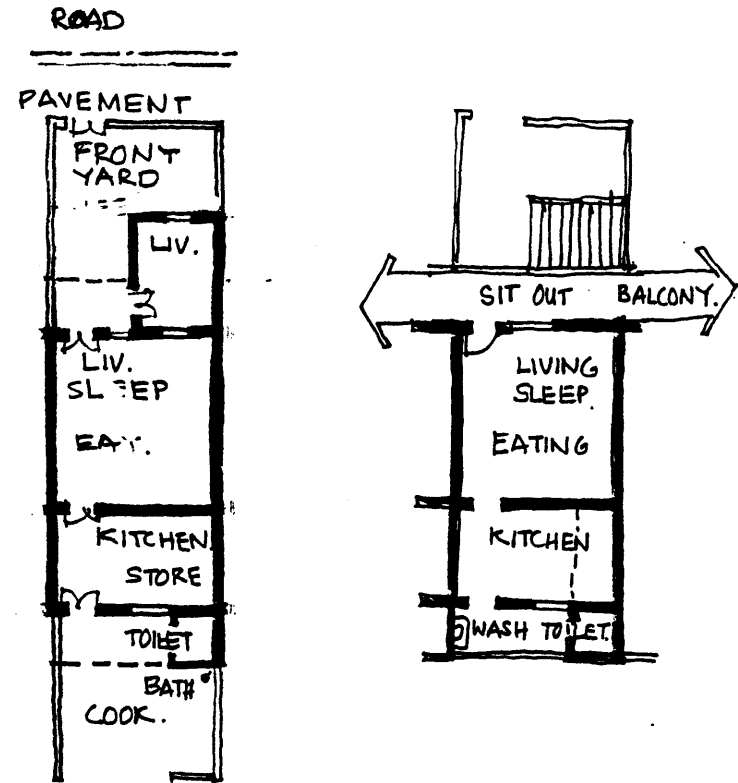
Mother has left her job as it has become too strenuous for her. She stays at home and babysits the daughter and Babloo. Sometimes, especially on weekends, she returns to her old job so Mala can be at home with the kids. Suresh's father continues his job part-time as a salesman and an accountant.





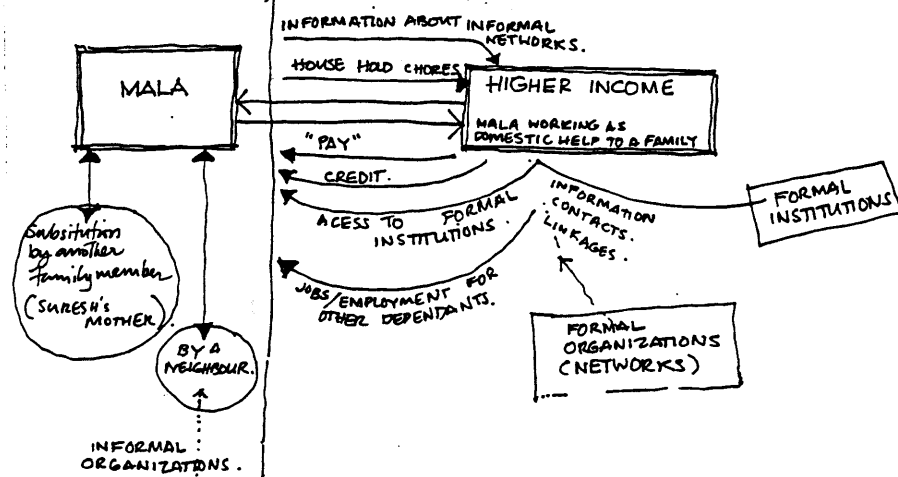
LIFE STYLE:

Most of their neighbours have demarcated their "Personal Space" by building low walls in front of their houses. These boundaries are not official but it seems logical to extend one's territory almost to the road - space that one cleans every day. Some residents have also added rooms to the existing structure, within their boundaries demarcated. Suresh's family has also decided to build an extra room to cope with the space shortage that they now face. Finances are however a problem. They have been able to collect some money among the three of them, but it is not adequate. Normally Suresh would have been entitled to a government loan, but he is not eligible because the addition is an illegal encroachment on the road. He however manages to obtain a loan on the pretext that his sister (non-existing!) is



INTER-DEPENDANCE AT THE FAMILY OR COMMUNITY LEVEL.

INTER-DEPENDENCE AT THE NEIGHBOURHOOD SCALE -- BETWEEN INCOME GROUPS.

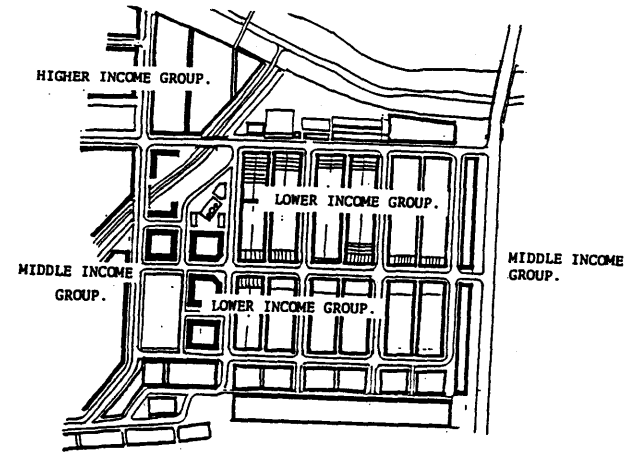


THEORY: The instance of Mala provides a useful insight into the way linkages develop between lower income groups and the higher income groups. Apart from economic gain through employment, it provides the poor with access to credit, where terms of exchange and security under negotiation are not necessarily monetary. The linkages can also serve as contacts with formal institutions. This is well illustrated by Mala's attempt in seeking a loan via her mistress' husband, who works in a bank. Through informal linkages the affected parties gain access to inside information as to what to manipulate, who to contact and how to get around things. This is vital information needed in order to deal with bureaucracies.

These linkages are not only restricted to informal networks but include formal networks and institutions. Informal linkages provide the basis for grass roots community organization and access to formal institutions. Thus the linkages are the basis for interdependence at two important levels: at the family level where members can help by substituting for each other and at the

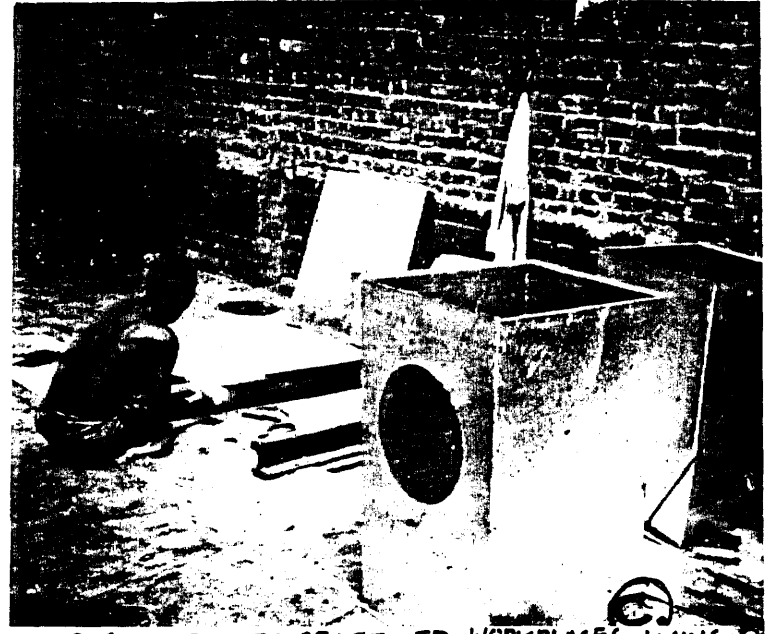
community level where links are developed to deal with common problems and issues. It could be argued that eventually they are a basis for inter-dependance at a neighbourhood and urban level. It is interesting to note that the linkages are developed from site specific issues and evolve to form networks at a neighbourhood scale.

getting married. The money is loaned out, supposedly to pay for the dowry. This is one of the informal procedures to obtain government loans, the forms being filled to fulfill bureaucratic requirements of the accounting department. Mala is able to obtain some money from the place where she works. The mistress' husband works in a bank, and initially tries to obtain a loan for them. This is not possible because Suresh cannot provide enough collateral. Mala's employer decides to loan them the money themselves. There is no interest charged, it but every month about 10% of Mala's pay is deducted to return the loan.





(A)



AMBIGUOUS SPACES REDEFINED - WORKPLACES, LIVING AND SLEEPING.



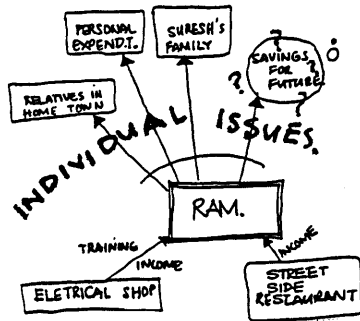
A MEETING PLACE TO DEVELOP CONTACTS.

(B)

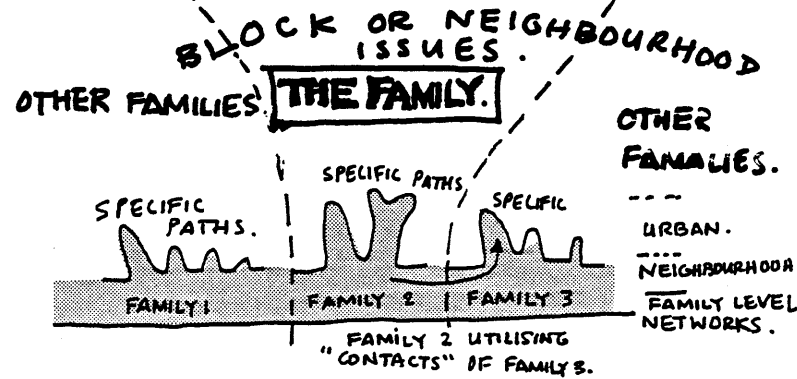
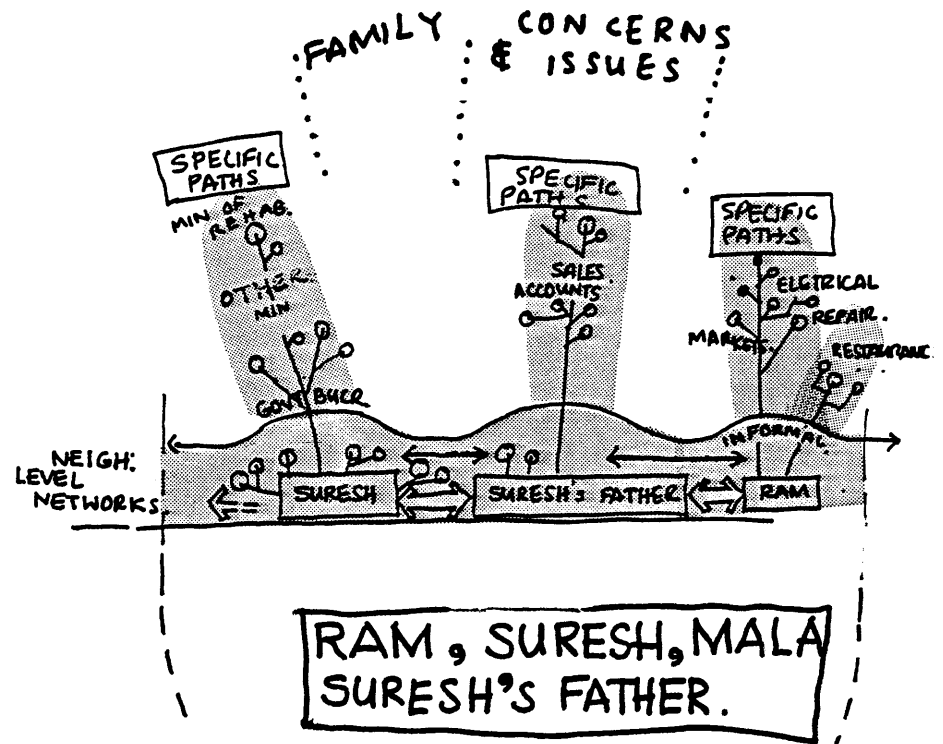
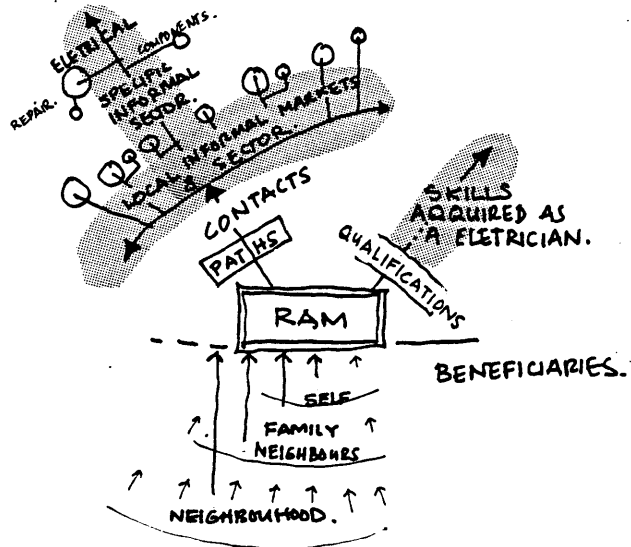
THESE THREE CASES A, B, C ARE CONSIDERED TO BE ILLEGAL DEVELOPMENTS AND LIABLE TO BE "CLEANED UP." THEY EACH HOWEVER HAVE THEIR OWN STORY TO TELL AND PLAY AN IMPORTANT ROLE IN THE OVERALL DEVELOPMENT OF THE NEIGHBOURHOOD.

- (A) THE ADDITIONAL ROOM IS USED AS A SHED FOR A BUFFALO. THE FAMILY, WITHOUT A FATHER AND TWO YOUNG CHILDREN, THE INCOME FROM THE SALE OF THE BUFFALO MILK PLAYS A IMPORTANT PART.
- (B) THE STREET SIDE RESTAURANT - FOOD, WATER AND SHELTER AND EMPLOYMENT FOR THE POOR.
- (C) PAVEMENT FABRICATION SHOP: PERHAPS THE LOWEST RUNG IN THE INFORMAL SECTOR, YET A MEANS OF SURVIVAL FOR THE WORKER.

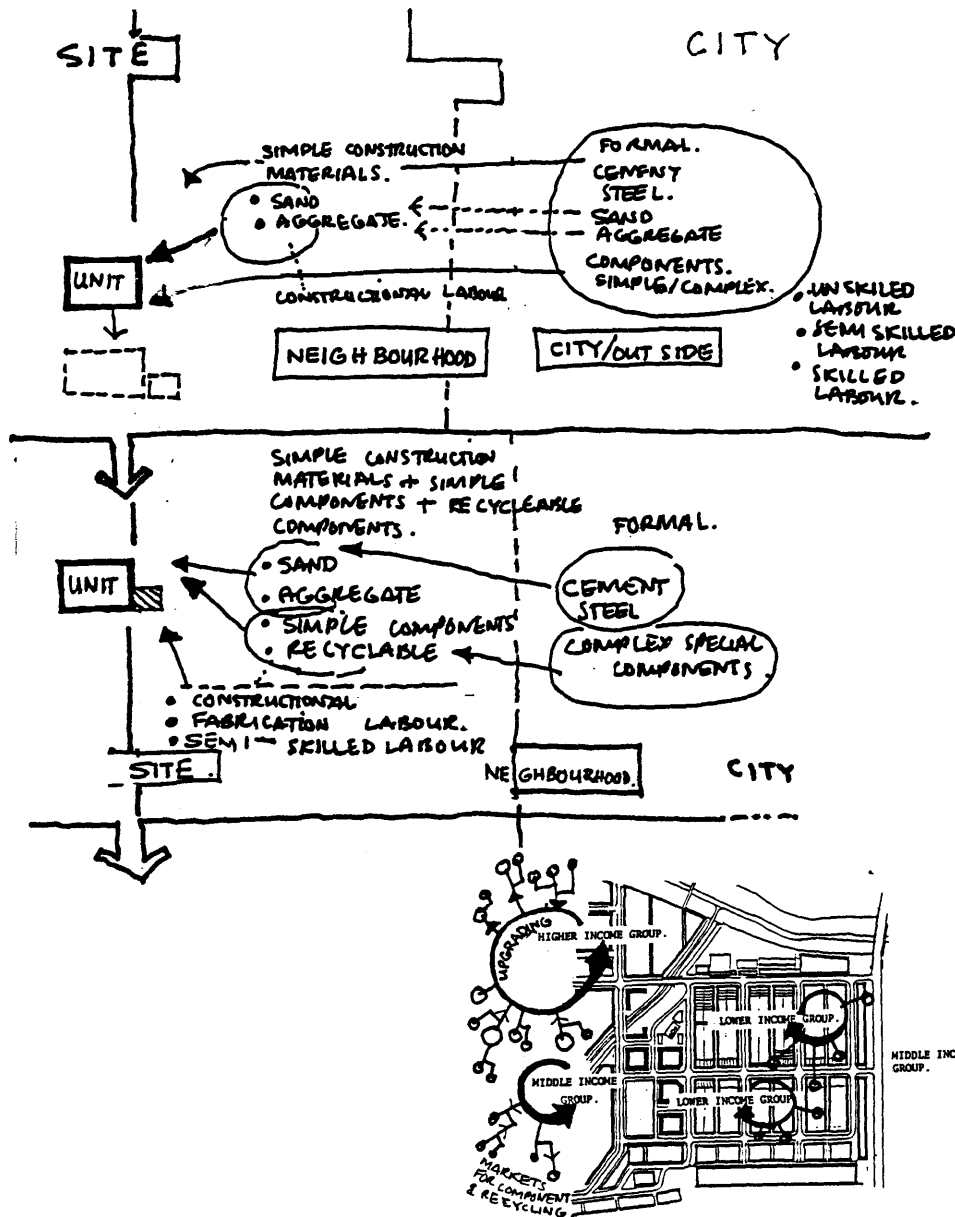
The residents have been trying to convince the municipality to legalize the construction. The negotiations are carried out informally. Suresh, working in the Ministry of Rehabilitation and Welfare is one of the key persons involved. He is regarded as a leader not so much for his leadership qualities but because he is accessible to the bureaucrats in the Ministry. The municipality has never removed or torn down any additions, but they have attempted to remove hawkers on the grounds of illegal squatting.



**RAM**







THE GROWTH OF THE INFORMAL CONSTRUCTION MARKETS:

As larger numbers of families build additions and alter existing structures, the informal is able to expand its operations. Apart from doing more business, they are able to provide a wider range of services. Thus the informal retailer in the story is now able to stock an entire range of construction material. He in addition is joined by other such entrepreneurs who deal in second hand windows and doors -- taking advantage of the tremendous possibilities of recycling materials.

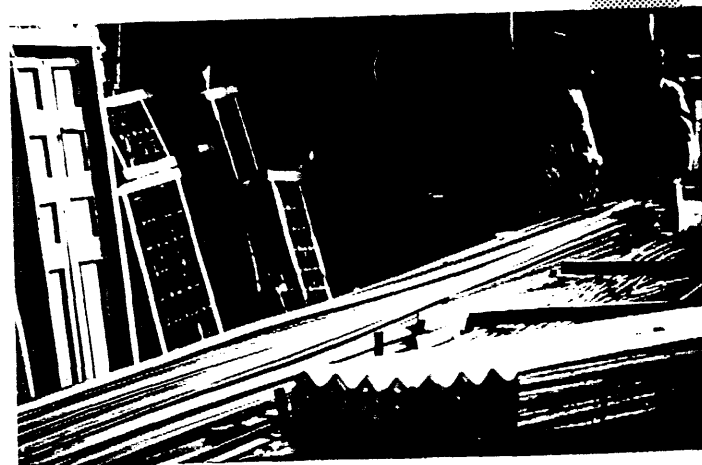
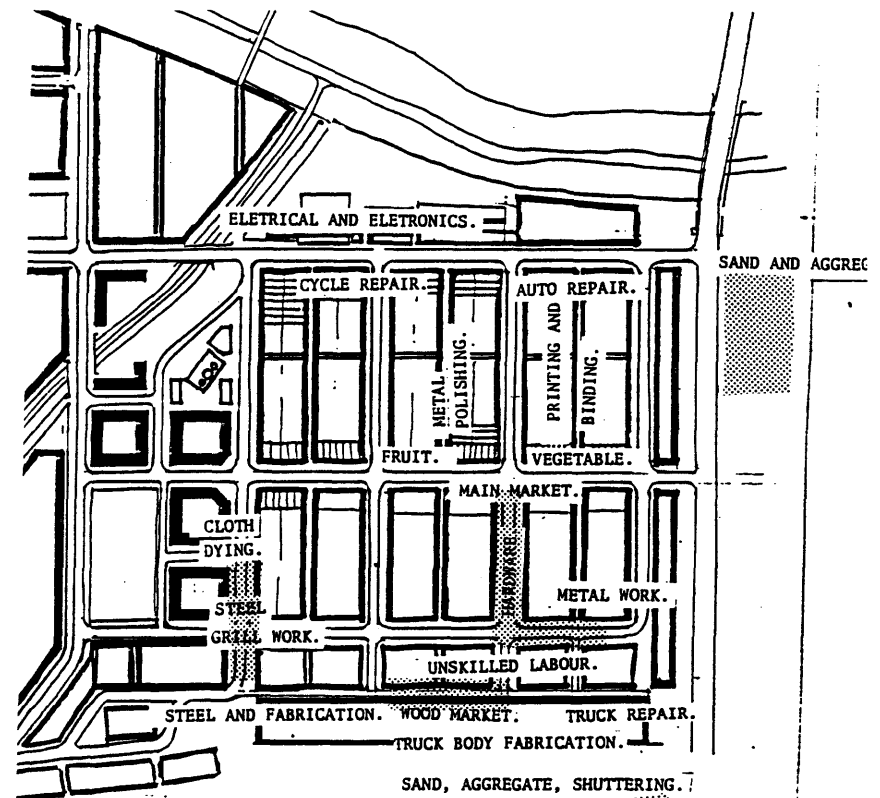
Thus the evolution of these additional outlets are the beginning of a network which provides resources and skills at a localized level and at standards that are affordable by the majority.

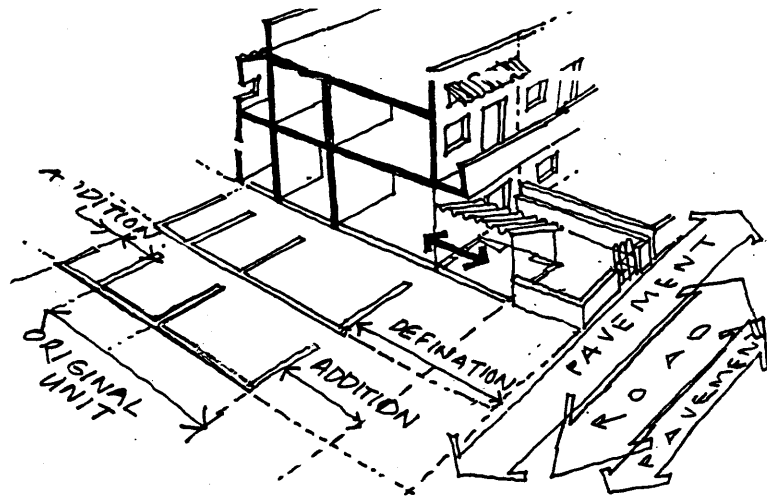
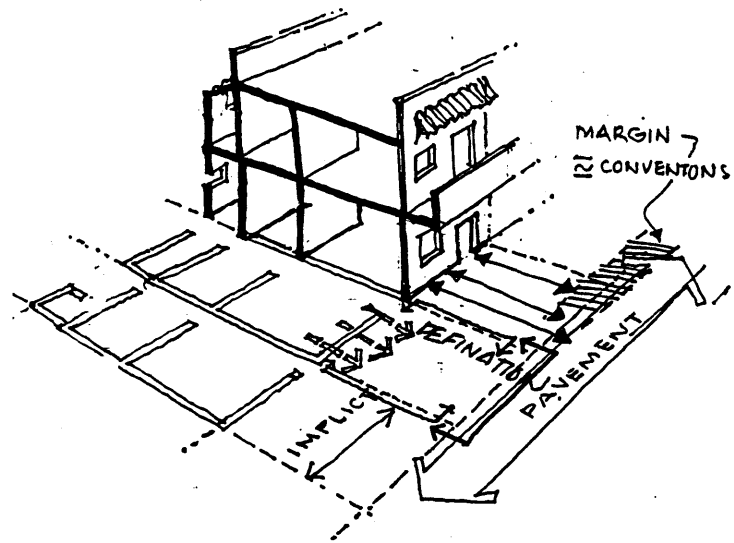


The construction of the room:

Most of the materials - bricks, sand, lime and aggregate are bought from an informal retail outlet. The outlet is located in the market nearby, and it is fairly easy to transport materials by handcarts. By this time the retailer has become to know Suresh very well and he supplies them with good quality materials. The outlet has also grown and the retailer is able to store a wider range of materials, in addition other shops dealing in construction materials have also evolved adjacent to his. They trade in second hand windows and A-C sheet roofing.

The evolution of the shops has been very important for the overall business as they complement each other's sales. Suresh is able to save money by differentiating between old and new materials. Thus old bricks are used in the foundation, while





the super-structure is constructed out of a better lot. Special attention is paid to the corners and the junction of the doors and windows.

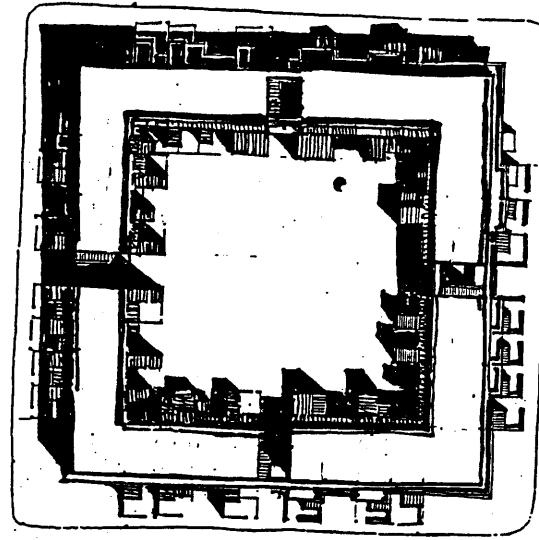
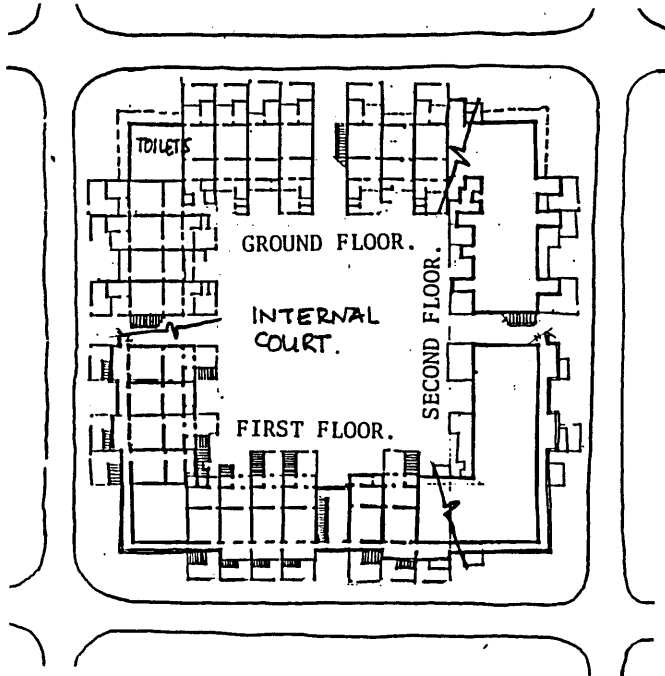
The construction of the room is a bigger job than the two previous additions undertaken. Suresh employs one mason and two unskilled workers. His father and he supervise the work. The mason has done jobs like these before, therefore requiring minimal supervision. The interior of the room is plastered to facilitate cleaning, while the exterior is not plastered, except for the front wall facing the street. Ram also helps by fixing the electrical wiring and connections to the existing system. Apart from the construction of the room, the floor of the

front courtyard and part of the back courtyard is upgraded. They are paved with bricks and then coated with cement. It helps keep it clean, and it reduces the dust entering the house.



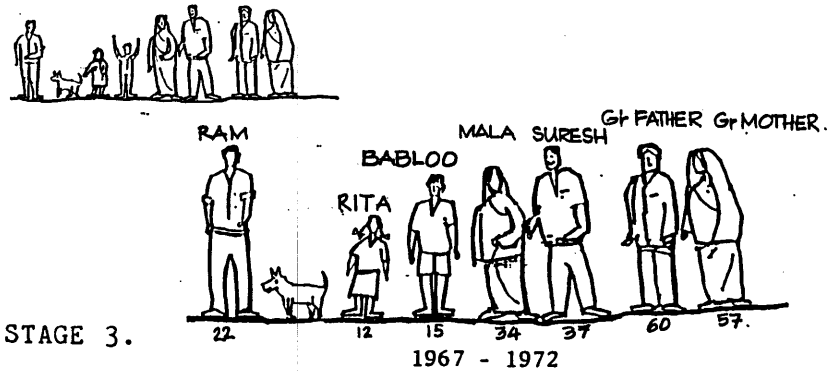
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STAGE 3



142

1



STAGE 3.

INTRODUCTION:

By this time most families on the block know each other and have developed links with families in other blocks. The block itself is in the process of undergoing major physical transformations. Most residents continue to upgrade their environments by adding toilets and/or additional rooms.

The transformations are technically illegal as they encroach on public land, but this has not been a major issue because of the sheer mass of people effecting these changes beyond the control of a municipality. The transformations are also a result of the linkages that

have developed between the informal and formal institutions and networks.

Suresh also decides to extend their existing toilet and kitchen areas. In addition they are to upgrade their front room through a process of collaboration with their upstairs neighbour. The collaboration is typical of the way changes are affecting the blocks - yet it is unique as it allows for great efficiency, economy, and self-control in the process and product of the transformation.



LOCATION OF MANHOLES WITHIN  
THE COURTYARD.

- PIPES FROM UPPER FLOOR TOILETS TAKEN  
ACROSS A-C SHEET ROOFS OR THROUGH  
LOWER COURTYARD.

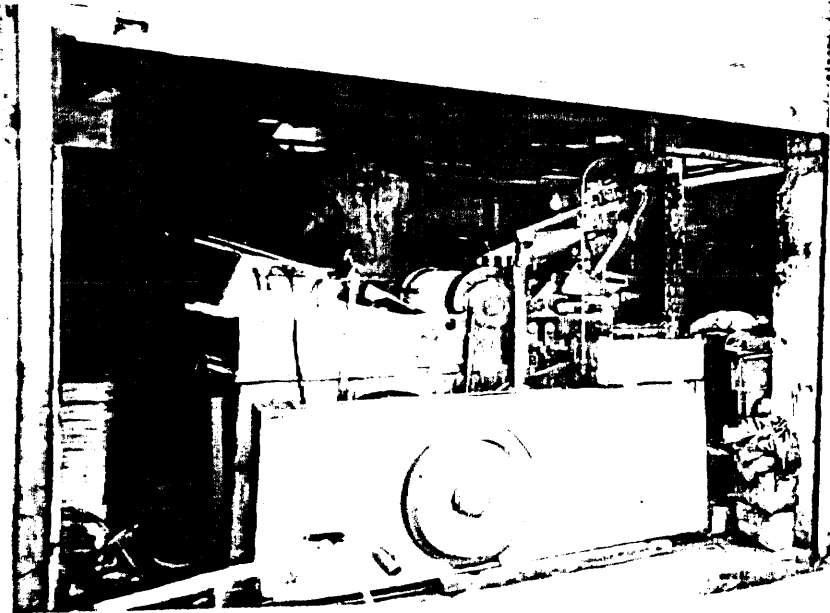
↓  
COURTYARD  
PAVED WITH BRICKS.



SURESH: Suresh has begun to play an increasingly important role in community affairs. He is one of the key persons representing the block into petitioning the municipality to pave the inner courtyard, to make it easier to drain the stagnant water (to avoid the risk of malaria). The municipality also agrees to maintain the manholes on the periphery of the block. By now, almost all the residents have added a room or two in spite of the fact that the government has not formally legalized the additions or alterations.



COMMUNITY ACTION.  
HELPING THE MUNICIPALITY TO CLEAR  
A CLOGGED MANHOLE.



B.



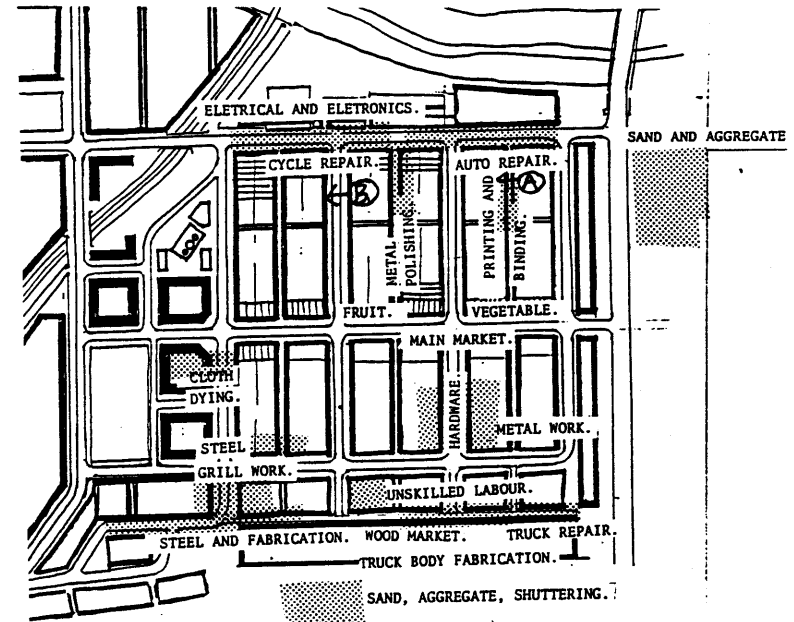
A.

**THEORY:**

The decision of Suresh and Mala to give Babloo technical training instead of a formal schooling is representative of a growing trend. There is an increasing move towards training in business and mid-range technical skills. With the growth of Delhi region towards becoming a large scale retail and manufacturing center, it is likely that this trend will continue. In recent times and even more so in the future, the growth of informal manufacturing and retail will have important impacts on employment characteristics requiring such forms and levels of training.

Another important aspect is that such training and education happens at an incremental yet comprehensive scale. Thus technicians are trained to work, informal business schools are set up, training people to become accountants, legal advisors, typists and stenographers. These educational centers do not evolve in "Institution Zones" as demarcated in Masterplans, but are within residential neighbourhoods or market places, at a scale that is easily accessible.

BABLOO: Suresh and Mala decided to discontinue Babloo's education at the government school as they think it will not be beneficial in the future. Most high school graduates remain unemployed, given the high unemployment rate of high school graduates. Suresh feel its more useful for him to get a technical job, where oportunites will always grow. Ram is able to introduce Babloo to a local photographer friend of his, and Babloo joins as an apprentice. The work is varied. Apart from the normal printing and developing, Babloo also helps in outdoor assignments, and sometimes acts as a delivery boy taking orders to major companies. Suresh is happy that Babloo is involved in various aspects of the job - getting trained in the business as well as the technical part. This will be valuable for Babloo's future.



- A DIAGRAMATIC LOCATION MAP OF THE RANGE OF SMALL SCALE MANUFACTURING, INFORMAL & FORMAL RETAIL OUTLETS. THE CONSTRUCTION RELATED OUTLETS ARE INTERDEPENDANT WITH OTHER USES, SHARING SERVICES MARKET AND LABOUR.
- ①. A TIRE RETREADING UNIT. THESE ARE LOCATED IN PROXIMITY TO THE AUTO REPAIR ZONES
  - ②. A PRINTING PRESS, IN A RESIDENTIAL UNIT. THE LABOUR OR MECHANICS ARE MOSTLY EMPLOYED FROM THE SURROUNDING NEIGHBOURHOOD, WHILE THE WORK ORDERS ARE PARTS OF NETWORKS ON A URBAN SCALE.



1.

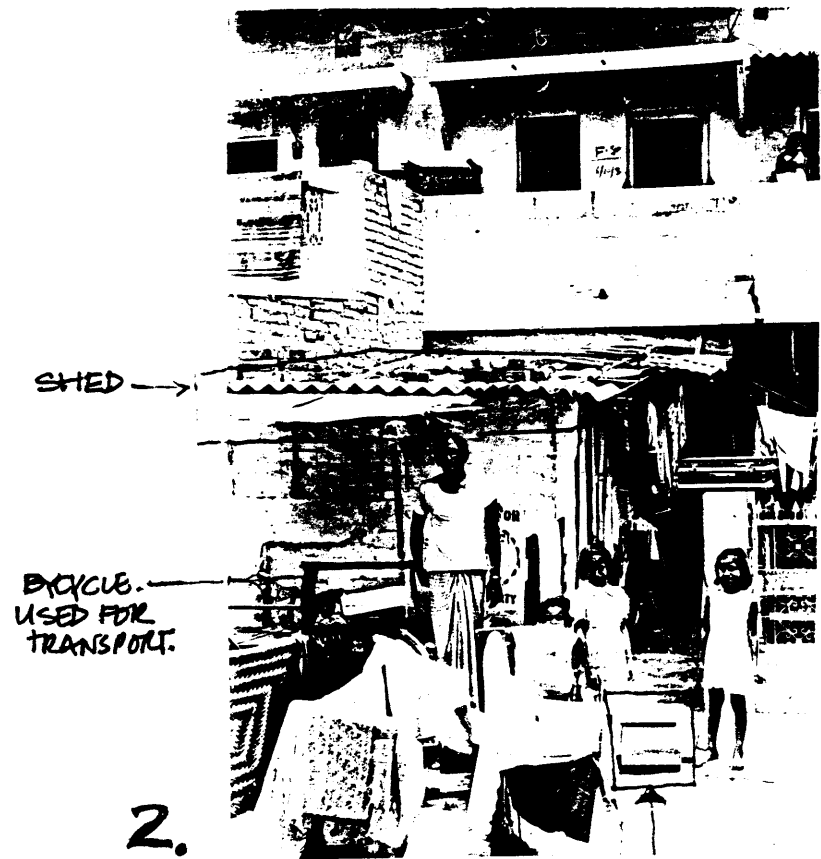


①,② HERE WE SEE A FAMILY SETTING UP A STALL ON THE LOCAL MARKET DAY. THE GRANDFATHER SELLS TOYS AND KITCHEN WARE. ON ANOTHER DAYS HE FABRICATES WOODEN CRATES UNDER A TEMPORARY STRUCTURE PUT UP. (2). THE CRATES ARE USED FOR PACKING FRUITS. THE G. FATHER RECIEVES A COMMISION ON EACH. CRATE FABRICATED.

SURESH'S FATHER AND MOTHER:

Suresh's father, now sixty, has left his previous job as a salesman. He stays at home and works part time- as an accountant. In addition, he also fabricates wooden crates for a local packing firm. They supply him with pre-cut panels and he nails them into boxes. This is done in a shed erected in front of their house. Previously, he used to work in the inner courtyard, but the banging of nails caused a lot of disturbance, so he decided to move in front of the house.

In addition he and his wife set up a stall during the weekly bazaar on Tuesday evening. They sell plastic and wooden toys. The plastic ones are bought from a wholesale market in Old Delhi, while the wooden toys are fabricated in the neighbourhood of Bhogal itself.



FABRICATION OF WOODEN CRATES.  
(THE GRANDFATHER WITH HIS TWO GRAND DAUGHTERS AND THEIR FRIEND. THE BICYCLE USED TO TRANSPORT THEM TO THE LOCAL MARKET.)

THEORY:

THE WEEKLY BAZAAR:

The main spine of Bhogal is also the site of a weekly market. Every Tuesday, a group of traveling salesmen set up stalls to sell items of daily use. This form of exchange is a common Indian tradition alive to this day, and in the case of Bhogal it forms an integral part of the

residential lifestyle. The changes in utilisation of public and semipublic space are interesting to note. The road is a street by day, a crowded market place by evening, and as described later, a sleeping place by night. During the market time the pavements and the sides of the road are occupied by stalls set up on tables or on the ground. The width of the

road is thus reduced to half. The community, apart from benefiting from the shopping and social facilities, also have the possibility of opening up a stall themselves ( as is done by Suresh's parents).

In most formally designed housing projects, such multi-functional uses of spaces are not recognized. Thus either through strict regulation or design, such spaces are normally eliminated. They are replaced instead by "designed" shopping centers. The shopping center shops are rented or sold at high prices, the result being that they either remain unoccupied, or aid gentrification by catering to higher income groups. To make matters worse, sometimes informal shopping activities evolving adjacent to the formal shops are evicted as part of clean up programs. It is important to recognize that such amulti-functional use of space, apart from performing an important social function, allows for an efficient and economic use of space. Such functions also benefit the community directly, not only through the operation of stalls by the residents themselves, but also by providing facilities at a scale that is compatible to their lifestyle.

Ⓐ STANDS ARE SET UP ON THE PAVEMENTS.  
THE ROAD BEING REDUCED TO A PASSAGE  
OF 6ft.  
THE STANDS Ⓑ, ARE HIRED AND BROUGHT IN  
VANS. THEY ARE SET UP IN THE AFTERNOON  
& DISMANTELED AT NIGHT.



ON A  
← "NORMAL"  
DAY.

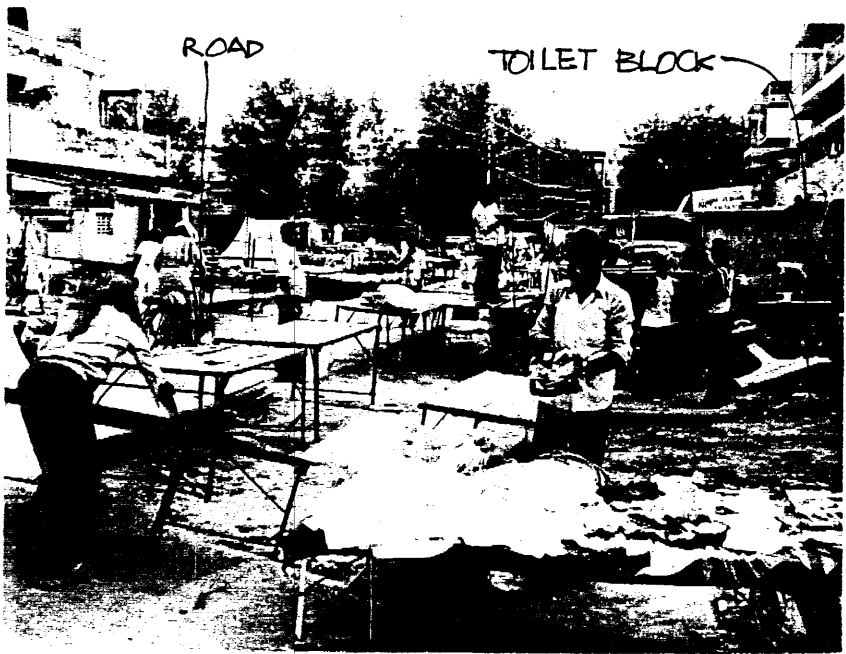


A

B

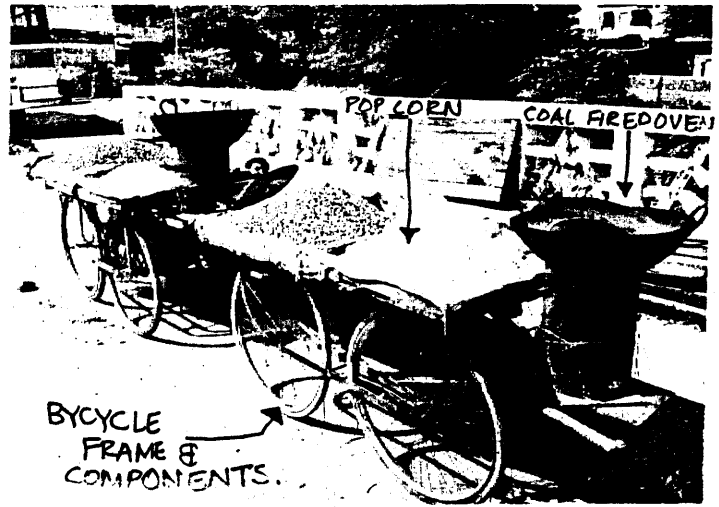


"ON A MARKET DAY!"



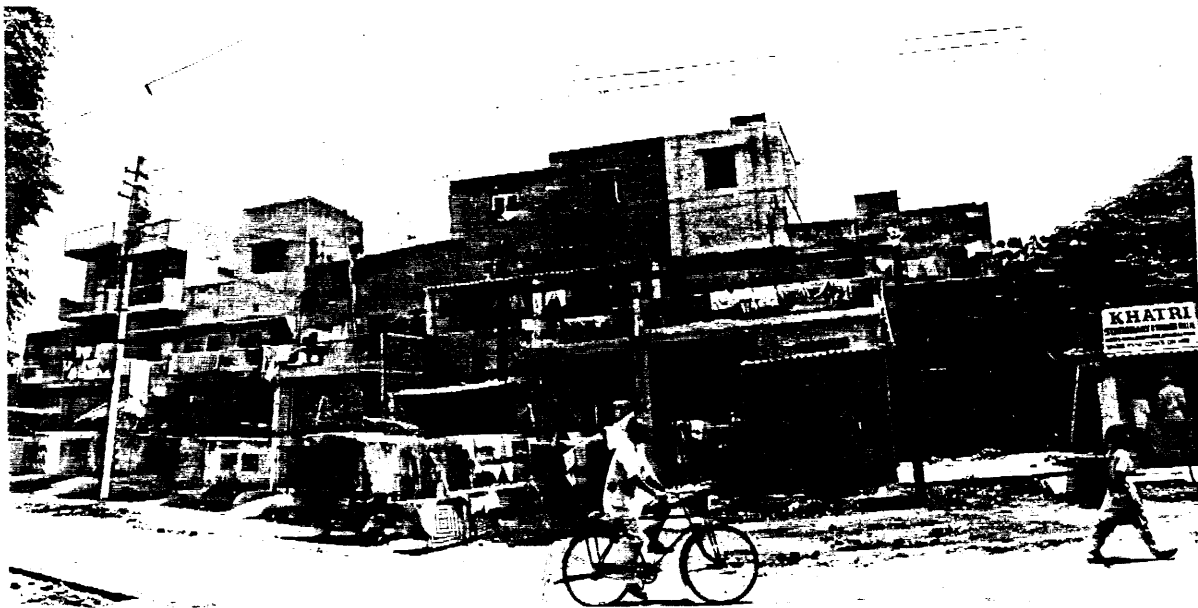
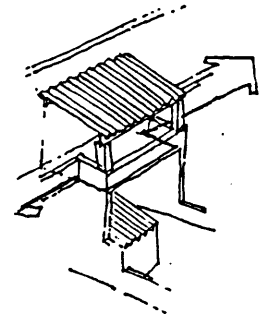
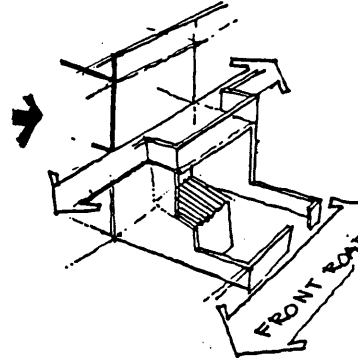
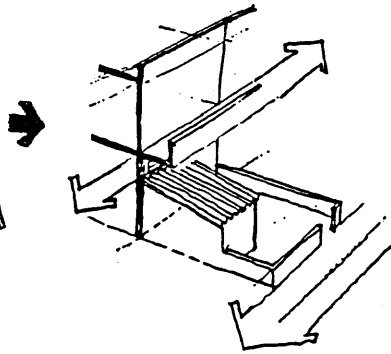
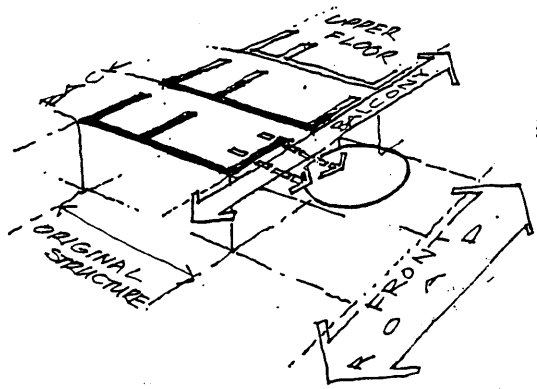
C

D



BYCYCLE FRAME & COMPONENTS.

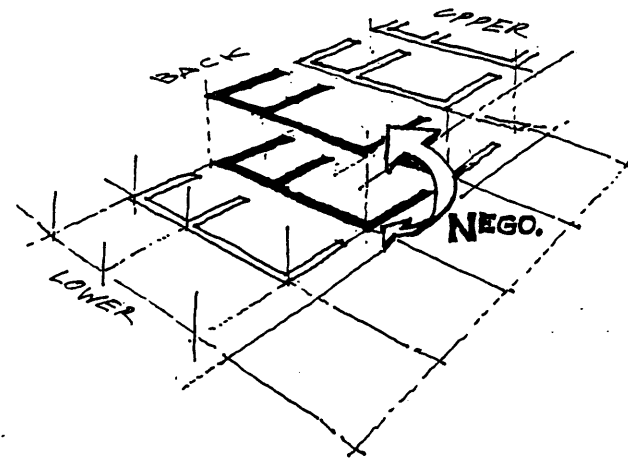
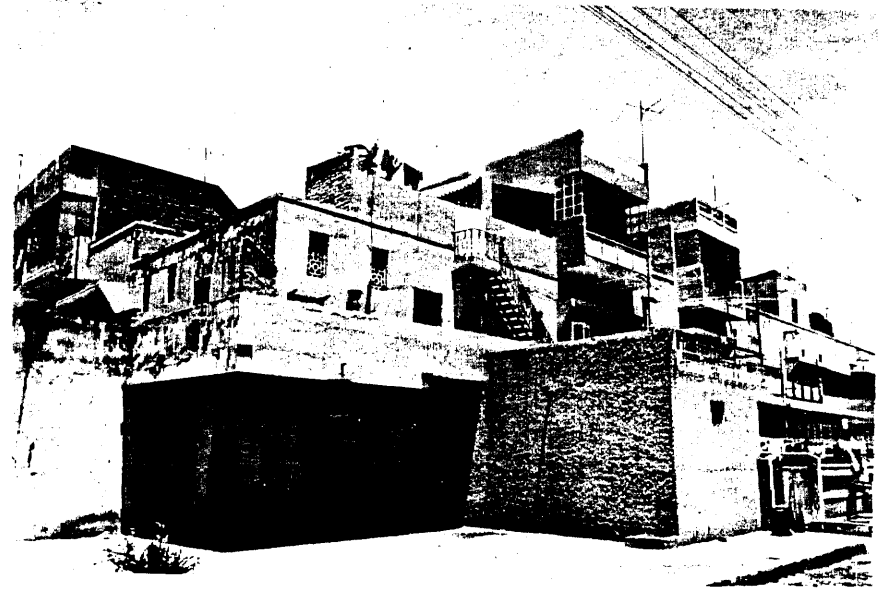
A MOBILE POPCORN MACHINE FABRICATED IN THE LOCAL MARKET.

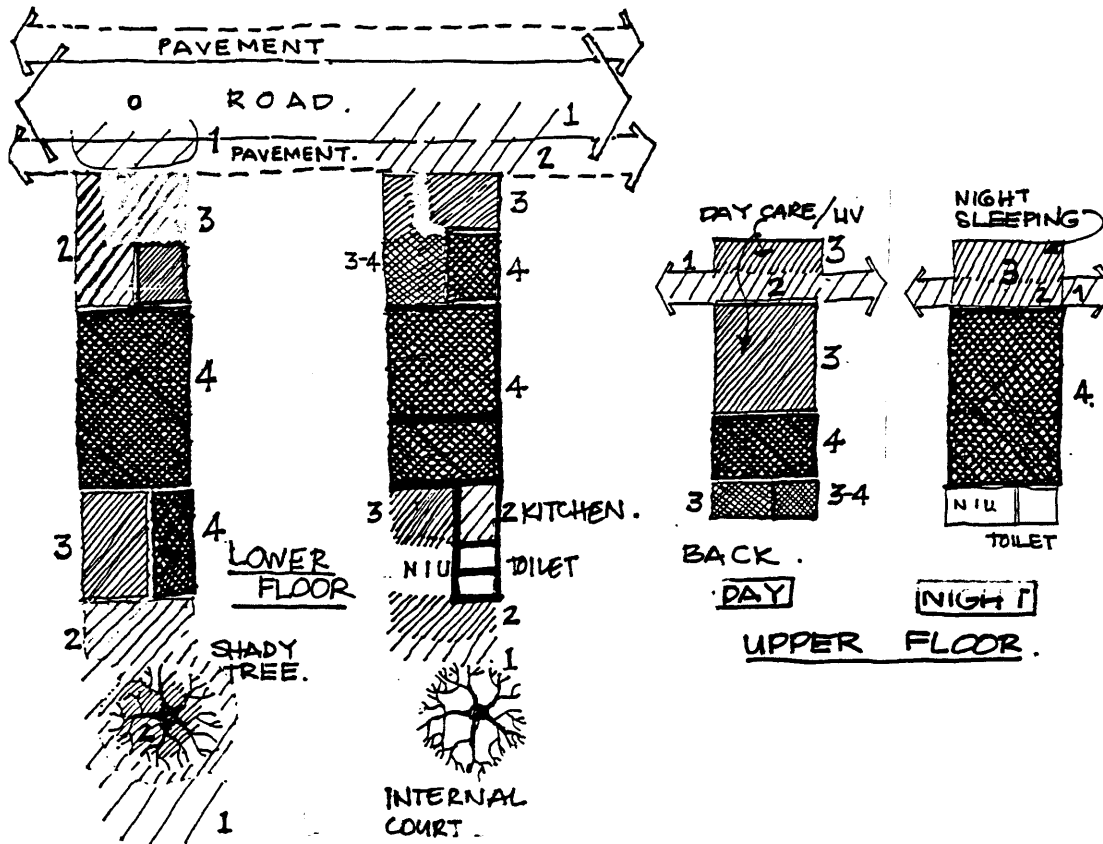




### THE NEIGHBOURS STORY:

The neighbours on the upper floor have a large family, and are faced with a similar problem of not having enough "spillover space". The narrow balconies do not permit usage as living spaces during the evenings and nights. The family decides to do what other first floor tenants have begun to do. They negotiate with Suresh, their ground floor neighbour, to build an extension. Suresh is also keen on under-taking this joint venture. The process is straight forward, Suresh would allow the neighbours to build a r.c.c roof over his existing addition. Thus they would have a much larger balcony and Suresh would have a concrete roof over his extra room. This would reduce overheating problems in the summer and a leaking roof during the monsoon. The responsibilities





**THEORY:**

It is not much an issue of scarcity of space but the natural processes of cyclic heating and cooling. During the day the structure would amass heat and radiate it during the night at the end of a thermal cycle. Thus the interiors would be very uncomfortable. Any adjacent open space is an obvious choice, as long as it is able to be defined as a semi-private space. Thus a whole group of residents move out their beds, and use the appropriate territory used for sleeping at night. The road is rarely used after 10:30 pm, and at that time it is reduced to 7 feet of pathway with rows of beds on both sides. In keeping to the tradition of a semi-rural lifestyle, everyone usually gets up at five in the morning for a bath and morning prayers. The beds are pulled back, sometimes to be now used as living room furniture. The road is returned to its normal width and functions.

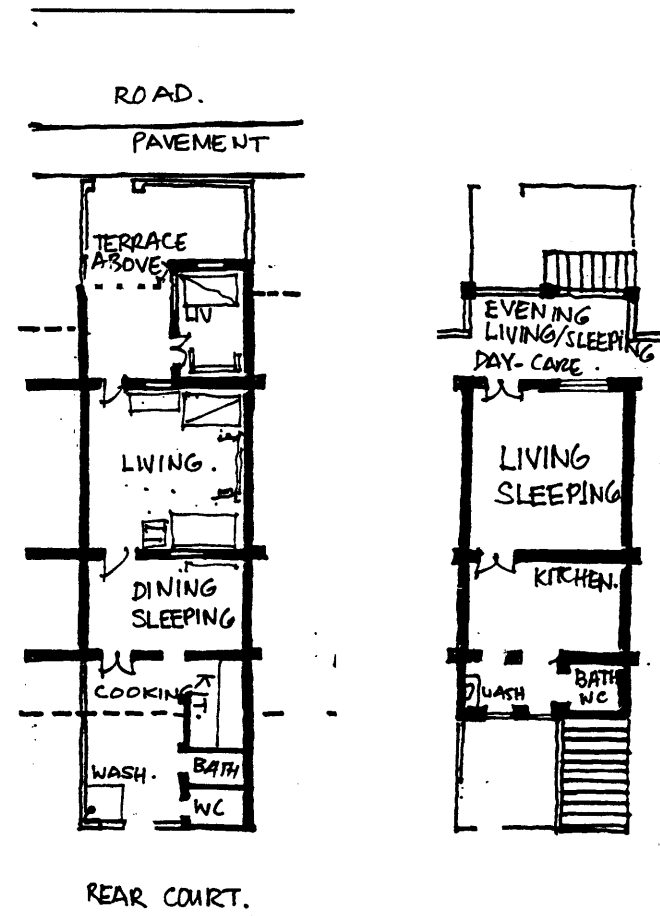


BEDS STACKED AGAINST WALL  
PULLED OUT AT NIGHT.

LIFE STYLE:

At this time, the children have grown up and the family faces a severe shortage of space. This is especially true of the service zones. They are now seven members and there is need for extra kitchen space and a separate bath and WC.

Another issue is that of space for sleeping at night, but that is resolved to a degree by utilizing the road as a sleeping area. Over a period of time, the external road fronting the cluster became increasingly used as an outdoor sleeping area, usually by the male members of the families. Thus every evening after dinner, Suresh, his father, Babloo and Ram would pull out their beds in front of their house on the road. Mala and the daughter would sleep in the courtyard while their mother would prefer to sleep inside under the fan.



## THE CASE OF THE BUS RE-ROUTING.

### A Centralized Intervention.

The Delhi Transport corporation, as part of its efforts to increase efficiency, decided to re-route three of its bus services along the road facing the blocks. The results as expected were disastrous- the busses running until late night, through what was now everyone's bedroom. It obviously did not last very long. The residents organized themselves to counter what was perceived to be a common problem and resolved it by formal and informal social and political pressure.

This incident highlights several interesting issues:

1) "Public" space being appropriated for private use at certain times and then returned back to its original function. Thus the form of control being temporal- effecting efficient use of space, on one hand, and disruption of a "public-service" on the other.

2) An outdoor street being perceived as an outdoor sleeping area- i.e. - values ascribed to a space which are different to

the ideas of conventional bedrooms, but deeply ingrained in the society. The value in conflict with the norm with which the street was designed or used by the formal sector.

3) The street being an extension of the public-private hierarchies of the house itself, conflicting with public services. It also demonstrates an important point of community participation or rather enforcement. That is the importance of a commonly perceived problem to effect community participation. It also provides an important insight into the issue of standards, regulations and bylaws- i.e. - they must seem as reasonable or beneficial to the community and be a formalization of existing norms. If not, they are overlooked or side stepped, at the best or at the worst they are rectified through community pressure, resulting in a waste of money and administrative resources.

It is quite possible that in ten years time, most families may not use their road as a sleeping area- due to middle class aspirations of having a modern home and not being "backward", or



simply because most can afford electric fans or evaporative coolers. It might then be possible for the government to restore bus services along that main road.

In a similar way standards of construction or space utilization are decided by what the community priorities are, and what they can afford within the skills of the informal sector. The issue whether a form of construction is a health hazard or not, is a difficult but real one. At the same time whether it is an issue for a intervention by a centralized agency is a different level of questioning. It might imply that these detail checks, one leaves to the community itself as part of its "interdependent check system"- one person's leaking sewage pipe is a threat to the health of the person living below and therefore there is enough pressure for it to be fixed (assuming an equitable power structure). It implies that territories are clearly defined as to who is responsible for what. This would imply a shift from the traditional blanket approach of enforcement of standards at a uniform degree to one that is selective not only

of different degrees of enforcement but also of secondary territories in which these might be applicable. It implies that a centralized agency apart from focusing on the main public areas, would encourage a "community awareness program", making sure that user groups are aware of the implications of health hazards, fire hazards and some basic notions of structural stability. It may mean that its direct intervention is limited to making sure that there is access to safe drinking water, encouraging informally run clinics, or sending a mobile dispensary to give vaccinating shots.

It might also imply a shift from detail regulations on standards of construction to ensuring the informal sectors access to basic items like cement through appropriate pricing mechanisms, or even a policy to ensure access to credit or land. These efforts to foster the growth of the informal sector to improve the standards of construction and encourage self-upgrading of the built environment.

A relation between a centralized



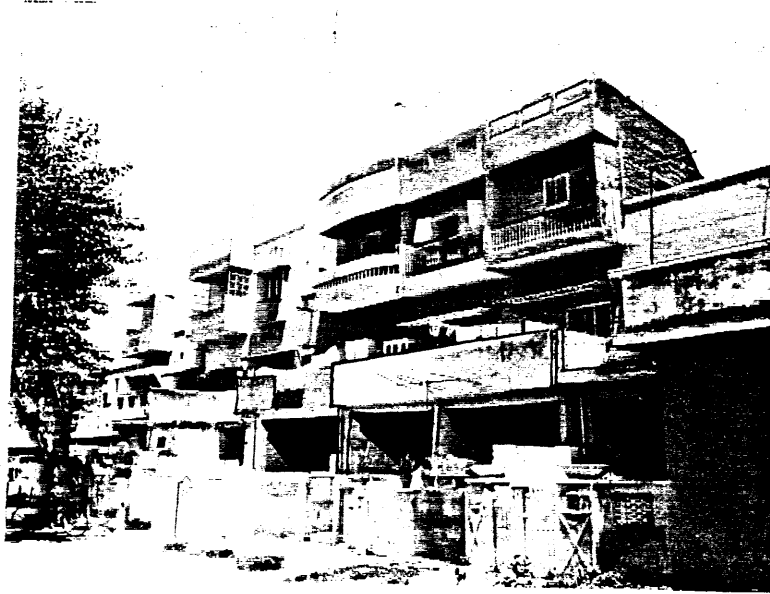
agency and a local community as outlined above, has interesting implications on land use . In most informal housing developments workspaces, manufacturing outlets, and retail are often intermeshed with residential structures. For example let us consider a manufacturing unit causing "smoke-pollution". The decision whether the unit is belching out smoke, or encroaching upon a public footpath, or a source of noise pollution, is an issue that is often decided by those who are directly affected i.e surrounding houses are able to put pressure to force the unit to another location. The situation is however not that simple. There might be a strong monopolistic power group in place that curbs any form of community action. Or it might simply be that because the workshops are on the main road instead of within a residential cluster and therefore are safe even though it might be violating a social norm. It could also be that although it may seem to be causing smoke pollution, it may not be a issue with the surrounding households because there is a implicit agreement that at certain times of the day it is shut off.

What is the role of a public agency in such a complex situation? On one hand it may mean as suggested before, a definition of territories where the public agency acts and where it leaves for community pressure to resolve accepting power struggles. Or it might seem to be a good idea to keep open a channel of communication between what is decided by law and the realities of site and the user's priorities.

Both also suggest a shift from a highly centralized decision towards one that is localized, thus being able to deal with site specific realities, and temporal shifts in socio-economic priorities. It also suggests a shift towards defining responsibilities incorporating what can be locally undertaken, without centralized intervention.







are clear and the goal is well defined. It is also relatively simple to work out "who will pay for what". The aspect that needs negotiation is the time and phasing of construction.

The construction of the new roof is a relatively simple affair technically. Most of the construction is carried out on the basis of the existing structure. Suresh is able to reuse the asbestos sheet roofing in the extension of the kitchen and toilet undertaken at the back of his house. The rest of the material he sells to the dealer of second hand materials.. The neighbours, having three daughters and a grandmother, are faced with the problem of having no one to supervise the construction. They therefore have to hire a local contractor to lay the roof.



### SIGN BOARDS.

→ ELECTRICAL ENGINEER.  
RADIO, TAPE RECORDER.  
TWO IN ONE V.C.R.  
EXPERT IN INDIAN AND  
FOREIGN T.V.'S.  
+ ALSO AGENT FOR  
LIC POLICY. (LIFE INSURANCE  
CORPORATION OF INDIA.

→ SOUTH END  
SCHOOL  
NURSARY SCHOOL  
KINDERGART.  
ENGLISH MEDIUM  
C-2/.... JANGPURA &

### THEORY:

The emergence of these kinds of day care centers and nursery schools, have important implications on the social role of women living in the lower and middle income groups. They provide an opportunity for them to employ themselves and being able to leave their child for half a day. With the growing trend towards nuclear families and when both husband and wife work, this is an important service. As with other facilities, it is important to realize that the scale and the institutionalized nature of the operation providing a personalized service - an important criteria for any mother.

A'1984

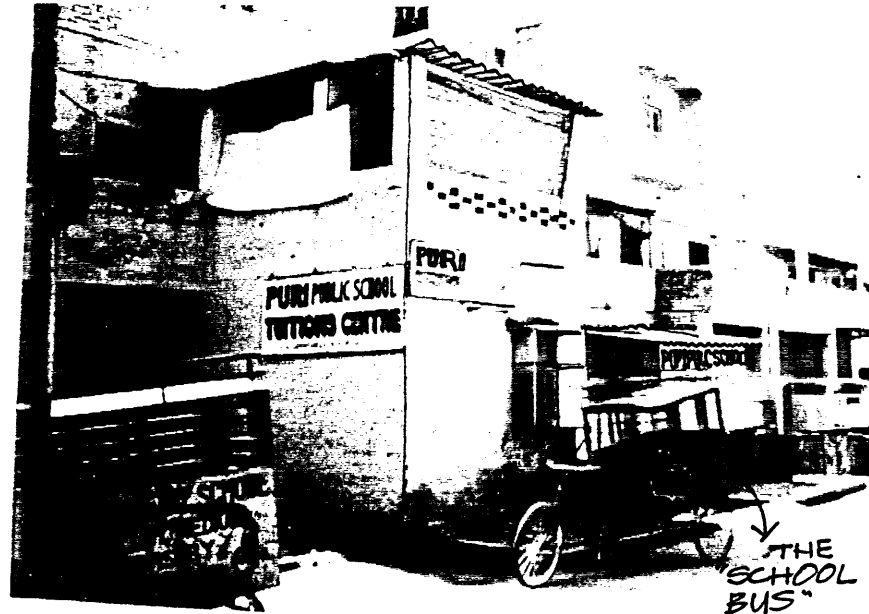
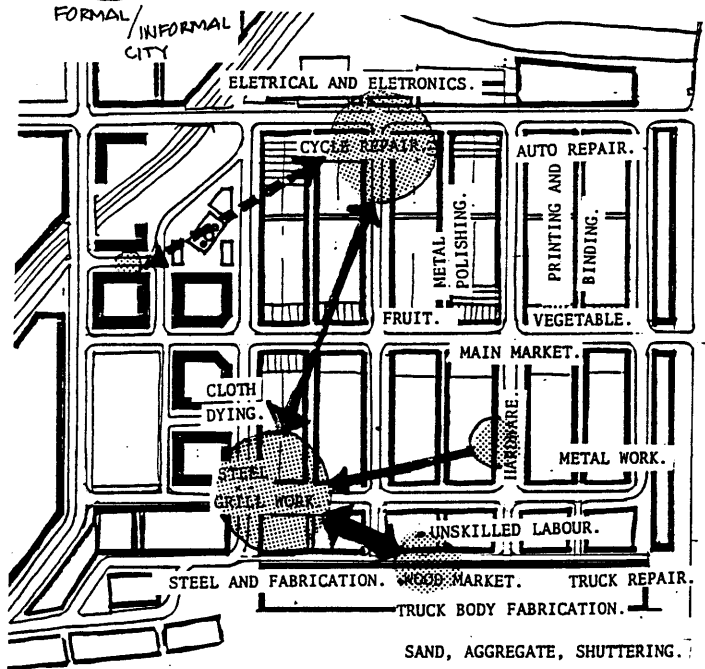
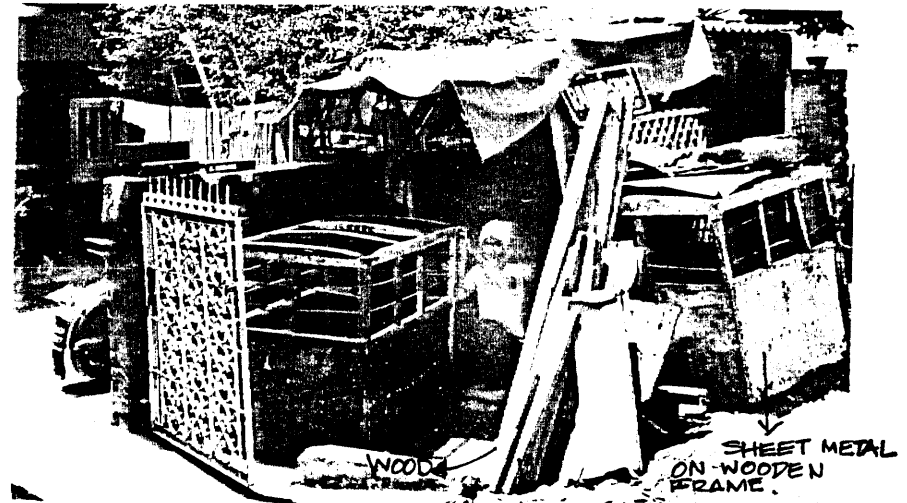
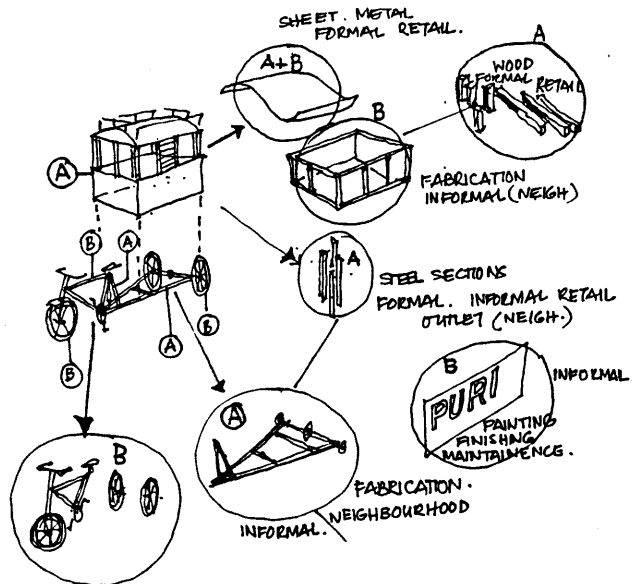
The neighbours decide to open up a day-care center in this space. It is a convenient job for the ladies of the house. There are an increasing amount of working mothers in the neighbourhood and such a venture would run well. Being on the upper floor, they do not have the option of opening up a shop, so this is a viable function for them. In addition the space is easily converted to a living space for the evening and nights. The equipment needed is very simple- a few tables and chairs bought second hand and painted, a cotton "duhhri" to be spread on the floor, and some playthings. The family also contracts a local "school bus company" to transport children back and forth from the neighbourhood. The school bus/modified cycle rickshaws are manufactured in the locality itself. The



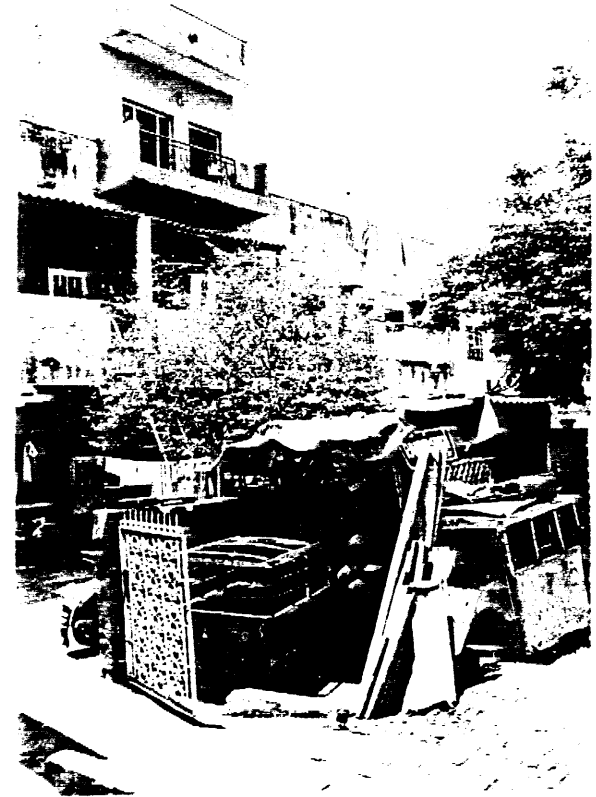
1983



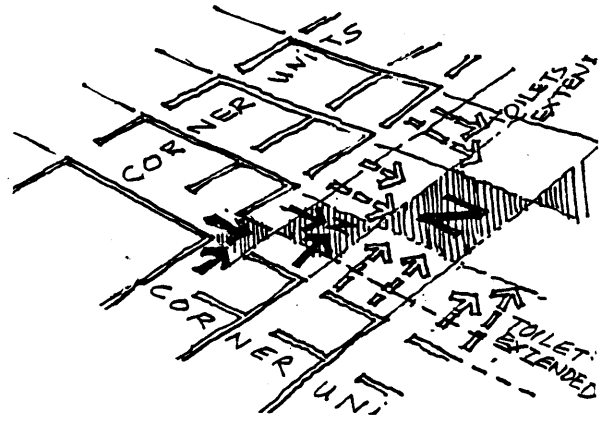
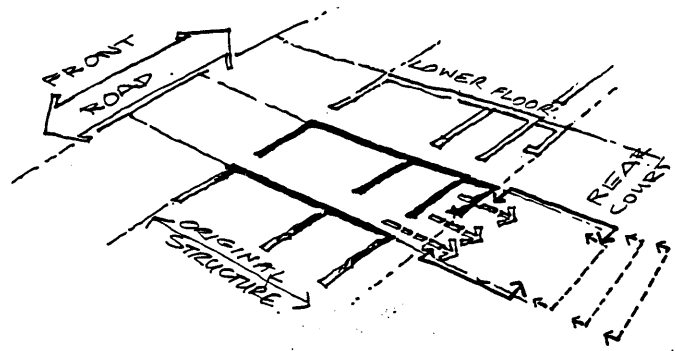
1984.



running of the school is closely limited to the functioning of their home. There is a fair amount of flexibility as the ladies of the house can easily substitute for each other in times of need. The conversion of the balcony to a 'school structure' is relatively simple, it is in the form of a shed enclosed with half brick walls. A part of the interior wall is plastered and painted to form a blackboard.



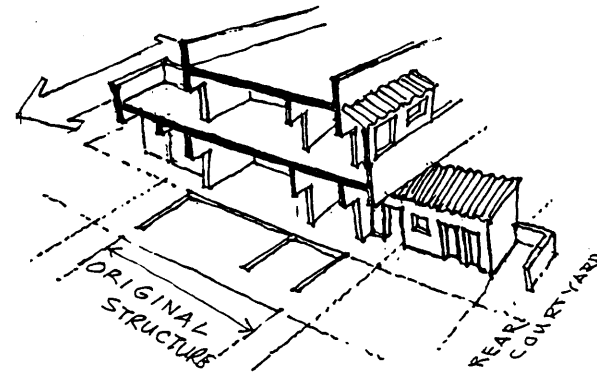
THE BODY OF THE CYCLY VAN  
BEING FABRICATED OUTSIDE ONE  
OF THE BLOCKS. WORKSHOP  
SET UP ON PAVEMENT.





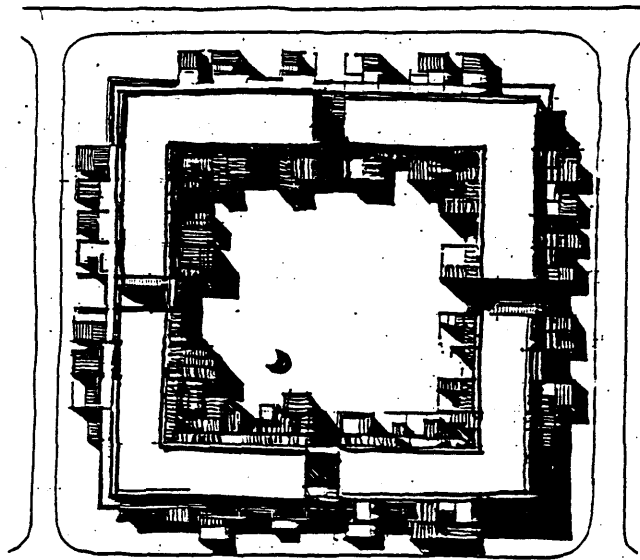
PHYSICAL ADDITIONS AND ALTERATIONS:

The family decide to enlarge the toilet and kitchen areas. There are two basic changes made in the layout: a) the existing kitchen is constructed adjacent to the original structure, and b) the bath is shifted out toward the courtyard. The bath and WC are separated to facilitate usage at the same time. The major cost of the alteration is the cost of the additional piping required. Other than that, most of the existing material is reused in some form or another; the old bricks are broken down for ballast for the foundations, and some of it is used to build the nonload-bearing walls. Asbestos sheets of roofing is retrieved from the changes made in the front room to be used to cover the toilets.

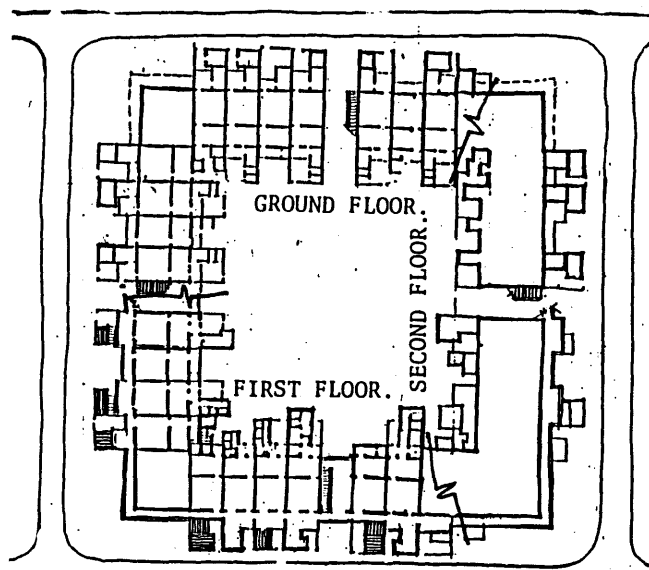




STAGE 4.



ROOF PLAN

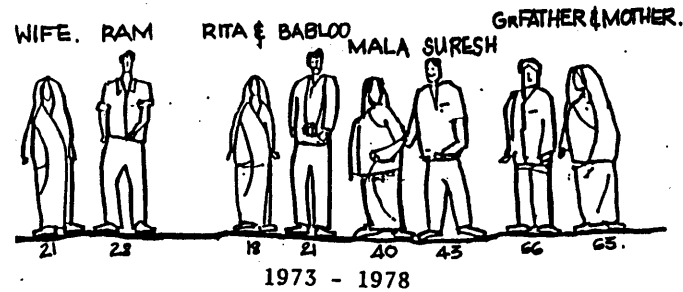


FLOOR PLANS

ADDITIONS  
& ALTERATIONS:

- 1) EXTRA FRONT ROOM
- 2) EXTENSION OF TOILET.
- 3) FLAT ROOFS OVER TOILET TO ACCOMMODATE WATER TANK.





#### STAGE 4.

##### INTRODUCTION:

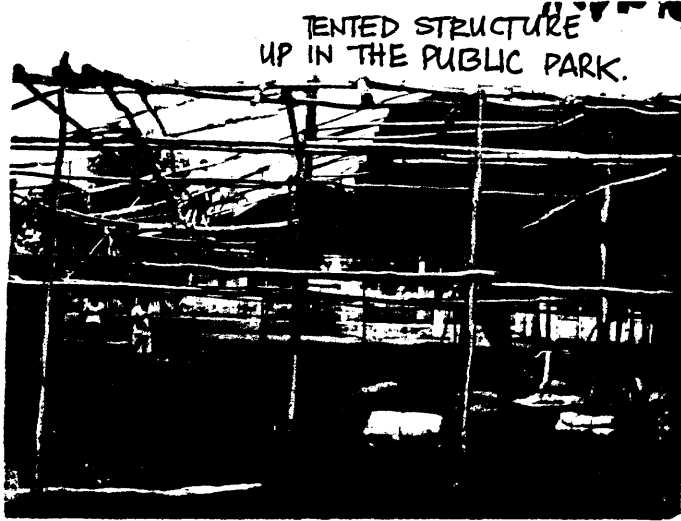
##### CHANGES IN THE FAMILY:

The family experiences an important change in their lifestyle. Suresh's cousin Ram has decided to get married. He has recently become a partner in a firm repairing electronic equipment and is now thinking of settling down.

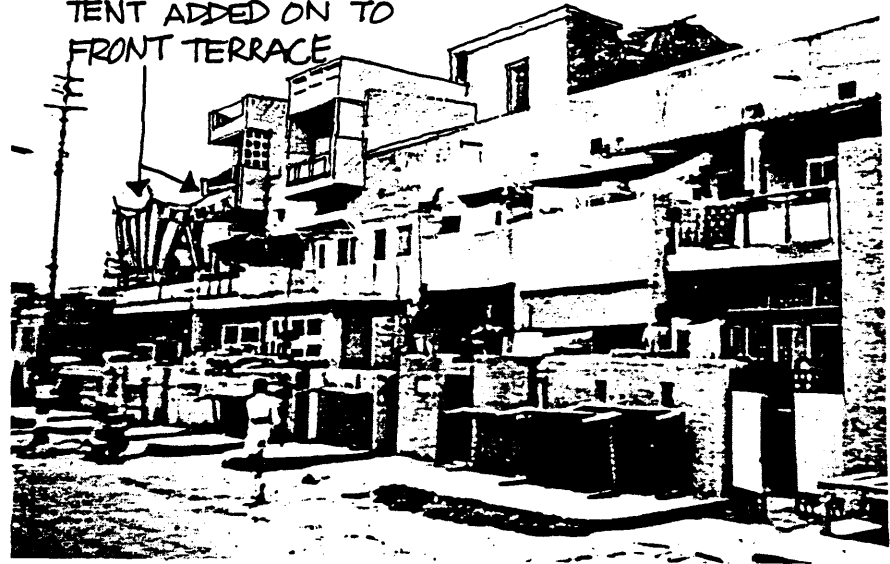
Due to the ensuing space shortage, Suresh decides to build an extra room. Part from serving as a sleeping space at night, it is also used as a small shop managed by Suresh's parents (now in their sixties). Granddad has given up his previous job of fabricating wooden crates, as it became too strenuous for him.

Babloo, now 21, decides to open up his own photographer's studio. There are no major changes in Suresh's or Mala's life. They are both middle-aged and they are watching their children grow up to be individuals themselves.

TENTED STRUCTURE  
UP IN THE PUBLIC PARK.



ADDITIONAL PUBLIC SPACE:  
TENT ADDED ON TO  
FRONT TERRACE



THEORY:

The event provides a useful insight into the way space is transformed during extreme circumstances. Public space is appropriated for short durations and adjacent roads are blocked and occupied for private functions. The living unit itself undergoes a redefinition of what is public and what is private.

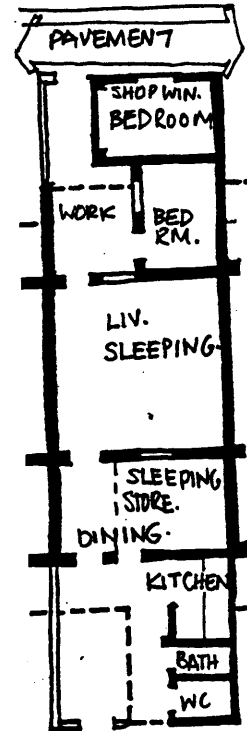
It is important to note that although there is a temporary change of use and a redefinition of public and private territories, the hierarchies and spacial relationships still remain the same. Thus, now the cooking activities shift from the kitchen to the internal courtyard and the internal court in front of the unit becomes part of the unit with its activities shifting out onto the road.

RAM GETS MARRIED:

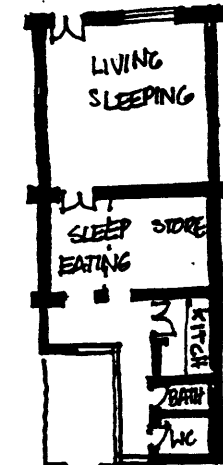
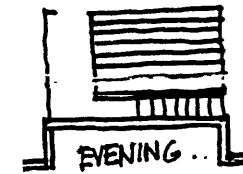
The event is a week long affair of festivities. The house is crowded with relatives and friends joining and helping to structure the elaborate ceremonies. Ram is joined by his mother and his brother's family- a couple and a young girl of five. The main ceremony is performed at the brides place. As part of the obligations of the bridegrooms family they are supposed to host a dinner for both the families. This is arranged at the local neighbourhood park, where a tented structure is put up. The tent is used for the marriage ceremony and the dinner party. Part of the structure extends onto the road, blocking it for one evening. A smaller tented structure is erected in the internal courtyard of the block and is used as a kitchen.



ROAD

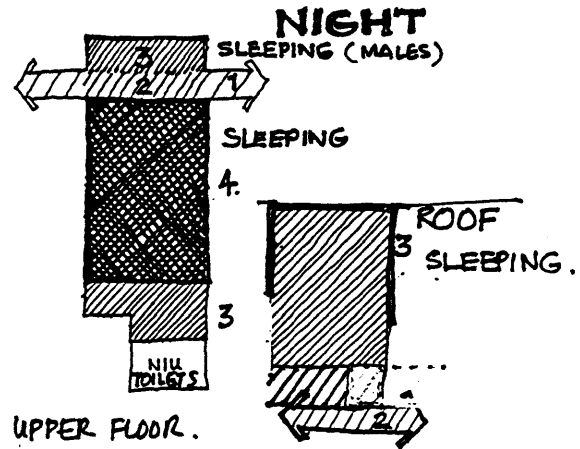
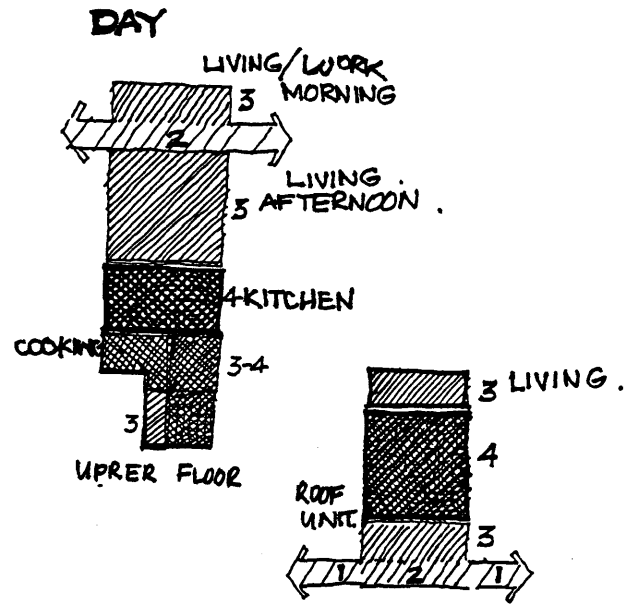
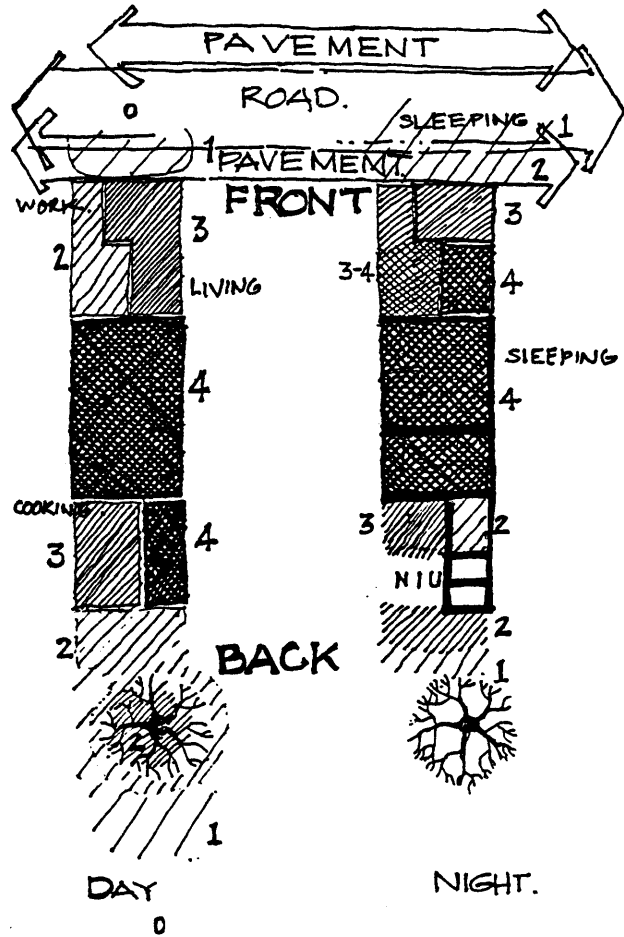


LOWER FLOOR



UPPER FLOOR

DAY TO DAY USAGE.

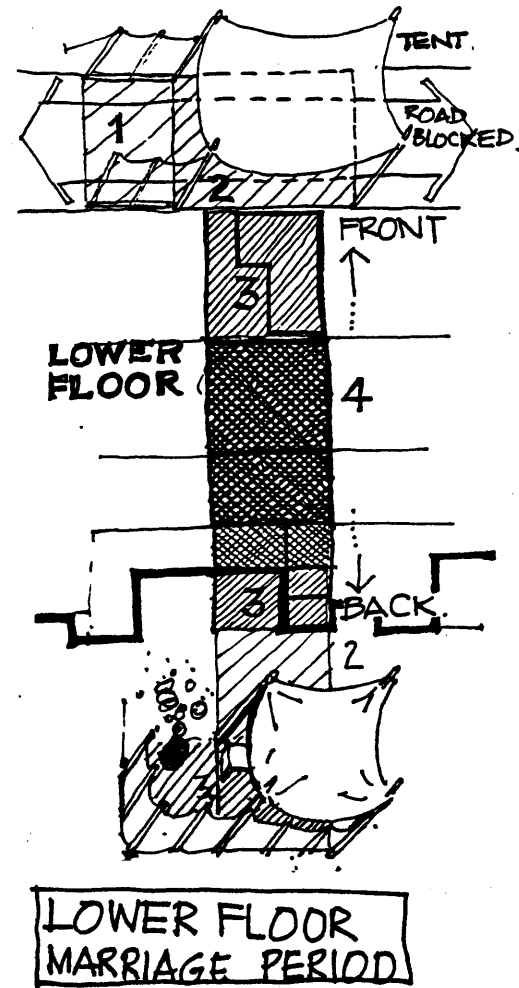


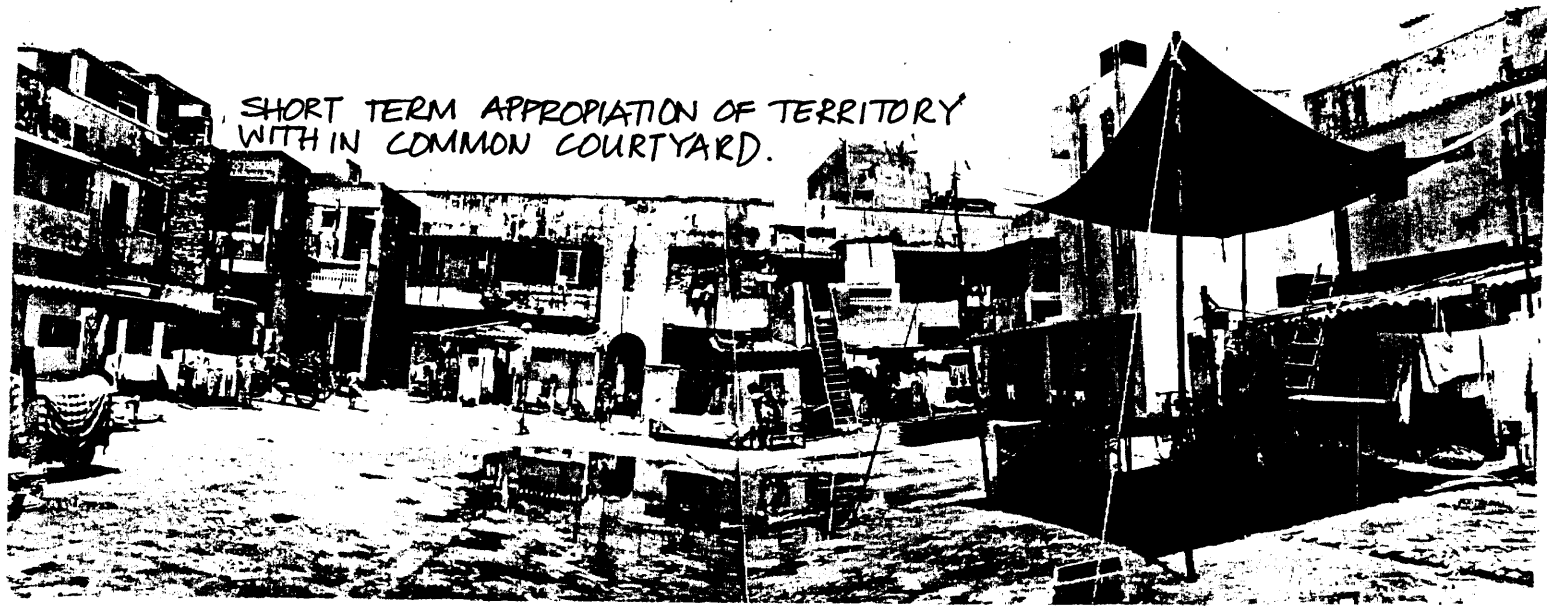
UPPER FLOOR

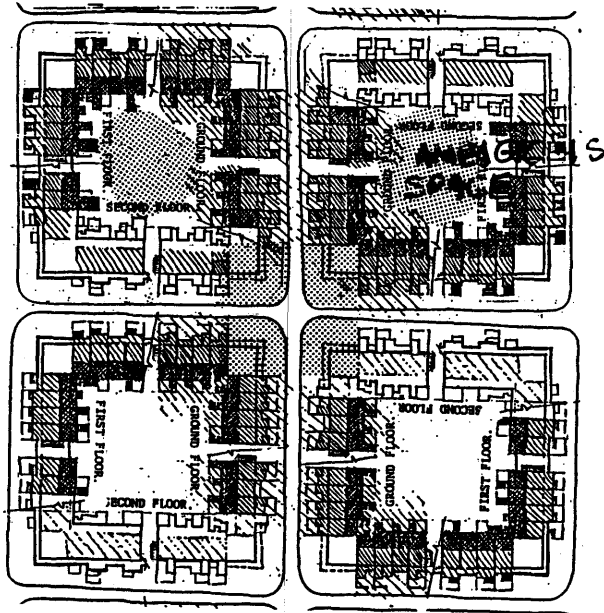


The house itself is transformed into a compact hotel- housing 6 men, 4 women, and three children. During the day there are even more people, as they are joined by relatives and friends .

The main problem arises at night when space has to be made for everyone to sleep. Most of the internal space except for the toilets are cleared of moveable furniture to incorporate wall to wall bedding on the floor. In addition the street in front is used as a extension and some people sleep in the tented structure within the courtyard.

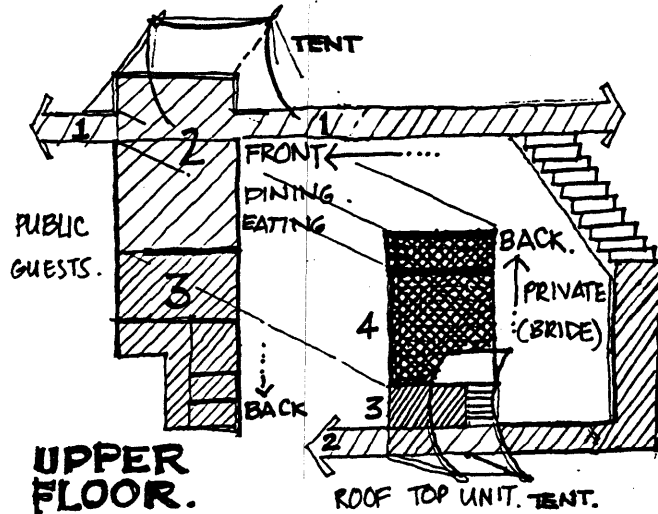




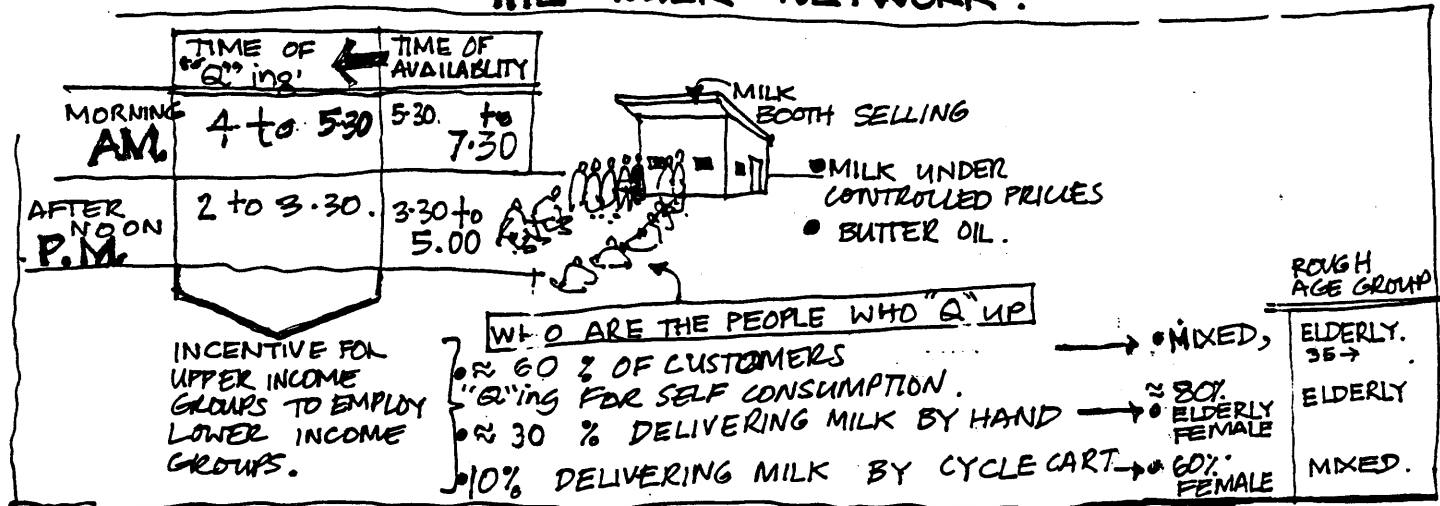


- SHORT TERM TRANSFORMATIONS TO
- 1) RE-STRUCTURE RELATIONSHIPS WITHIN PRIVATE TERRITORY.
  - 2) APPROPRIATE PUBLIC OR AMBIGUOUS TERRITORY FOR PRIVATE USAGE.

RELATIONSHIP BETWEEN "BACK" & "FRONT" MAINTAINED IN BOTH CASES.

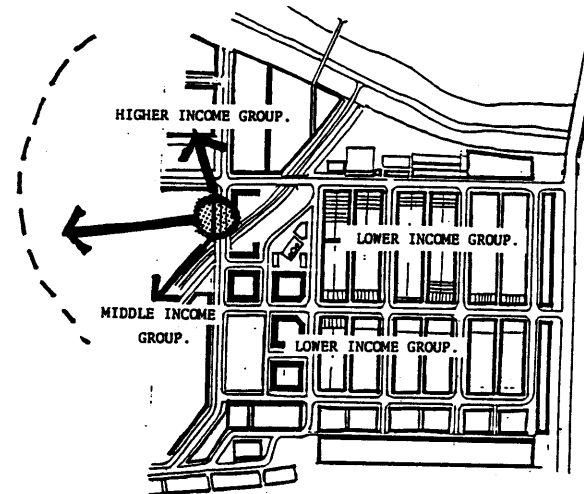


# THE "MILK" NETWORK.



## INCENTIVES TO COLLECT MILK FOR THE HIGHER INCOME GROUP

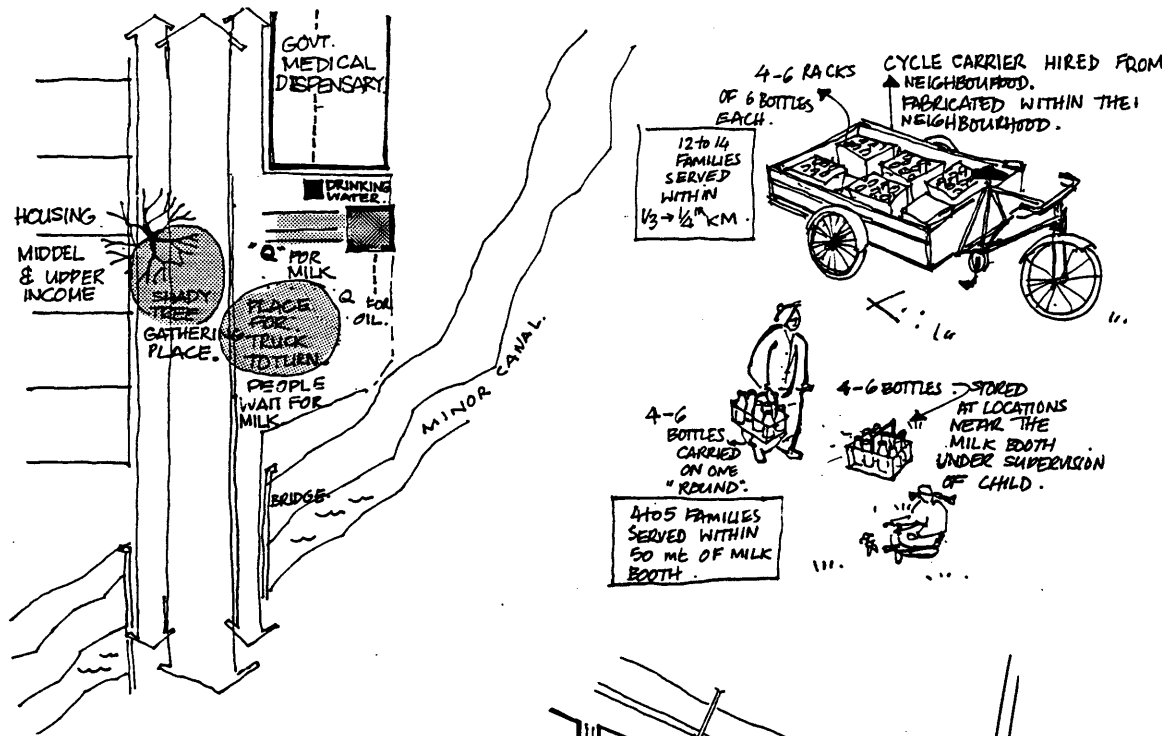
- INCOME FROM DISTRIBUTION OF MILK.
- SIDE EMPLOYMENT FOR THE ELDERLY OR HELPING WITH THE HOUSE HOLD. (i.e.) YOUNGER MEMBERS WORK DURING THE DAY TIME & THEREFORE NEED THE EXTRA HOURS OF SLEEP.
- ACCESS TO A RATION CARD. a) ACCESS TO UNUSED QUOTA OF MILK FOR HOME CONSUMPTION OR SOLD TO STREET SIDE RESTAURANTS. ACCESS TO LOWER PRICED RICE, SUGAR, GRAIN SOMETIMES CEMENT. FROM GOVERNMENT "RATION" SHOPS & OUTLETS.
- CONTACTS DEVELOPED WITH UPPER INCOME GROUP FOR EMPLOYMENT (SELF OR RELATIVES)



MALA'S JOB:

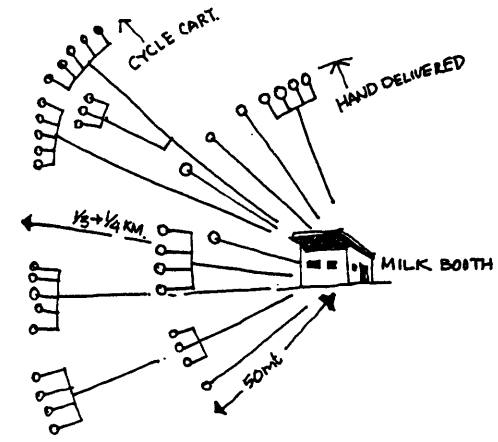
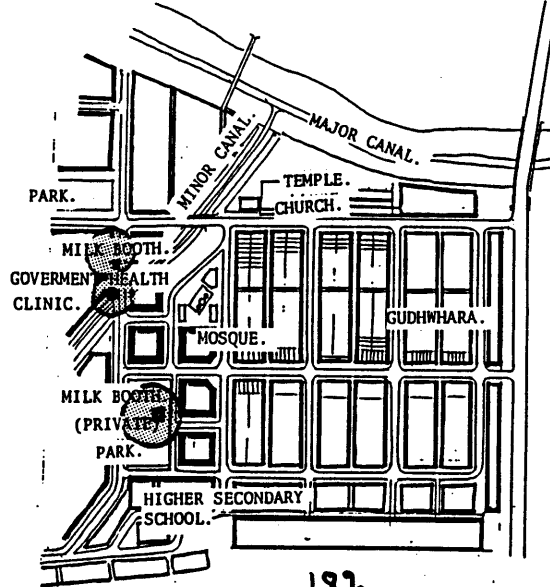
Mala has taken up another job, she delivers milk from a local government milk booth. The milk is available for only two hours each early morning, and it is distributed on the basis of ration cards. The ration cards are collected from the various families. Sometimes, when a family does not order its complete quota, there is a possibility that Mala can buy the extra milk for her children at home.

The other great advantage is that they have been able to buy cement at government regulated prices from cement depots. This is only available in limited quantities on the basis of ration cards.



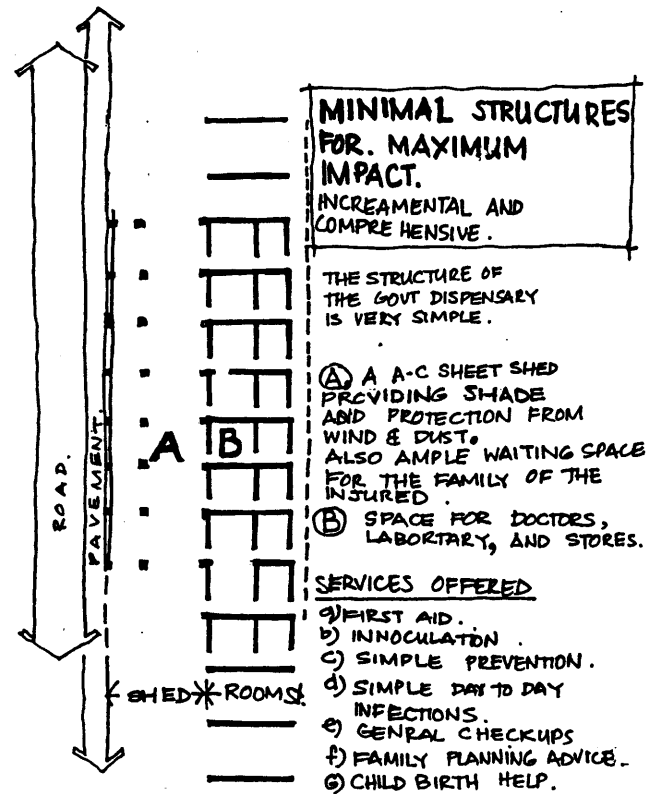
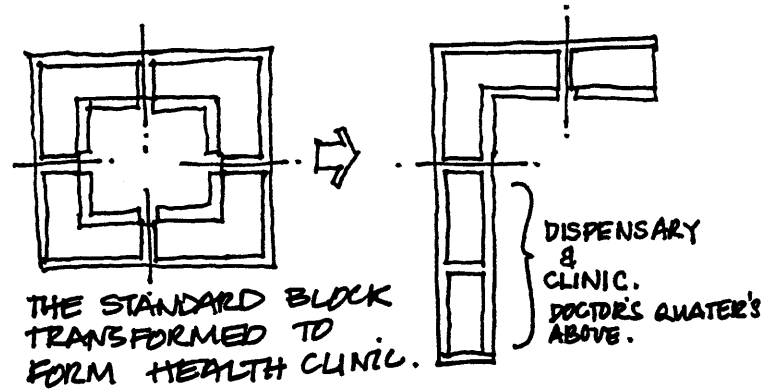
**IMPORTANT ASPECTS OF PHYSICAL STRUCTURING.**

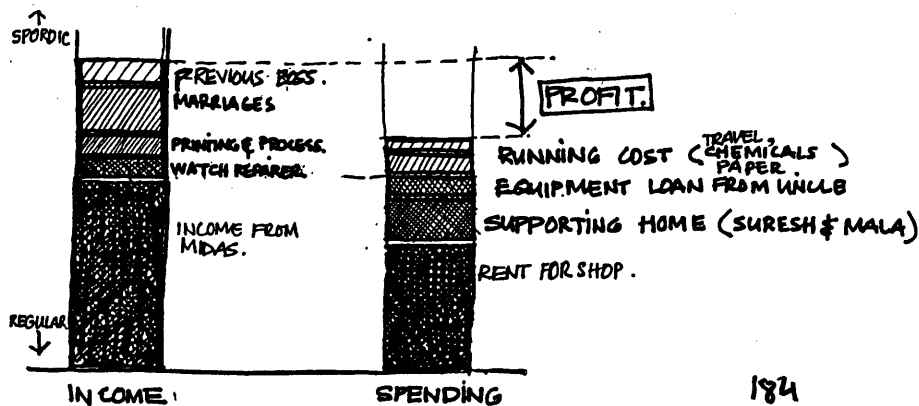
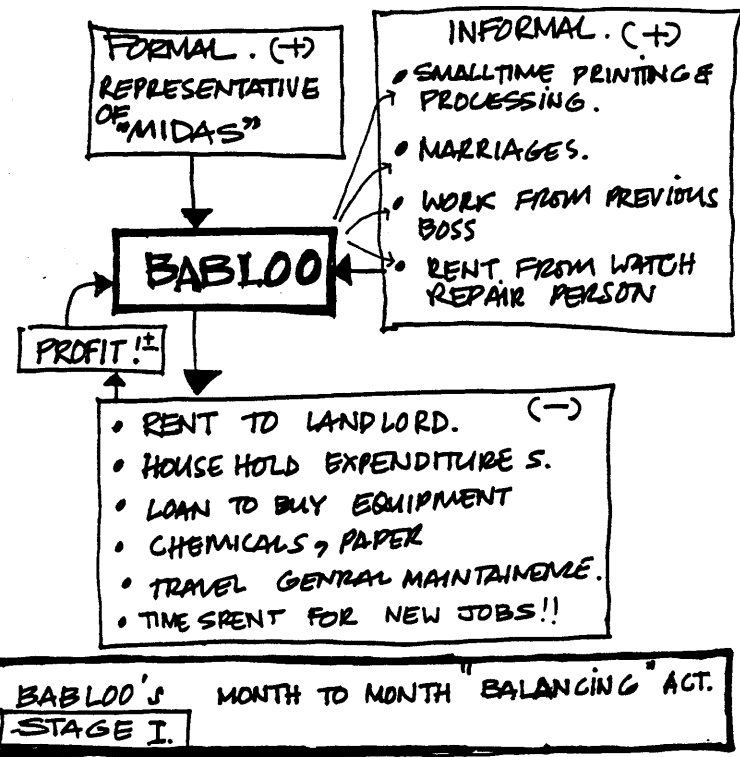
- a) CENTRALLY LOCATED WITHIN THE NEIGHBOURHOOD, AT THE JUNCTION OF A MIDDLE, HIGH INCOME HOUSING AND A LOWER INCOME AREA. I.E. THE MARKET EXISTS ADJACENT TO THE LIVING PLACE ALLOWING FOR HOUSEHOLDS TO PARTICIPATE IN THE VENTURE
- b) MILK BOOTH LOCATED AT THE JUNCTION OF THE CANAL & ROAD → PUBLIC TERRITORY ALLOWS FOR INFORMAL GATHERING - LACK OF FORMAL CONTROL.
- c) AVAILABILITY OF SPACE TO GATHER & ORGANIZE INFORMAL DISTRIBUTION FOR THE DAY.





THESE TYPES OF HEALTH CLINICS PROVIDE A REASONABLE HEALTH SERVICE. UNSOPHISTICATED THEY ARE MORE REPLICABLE ON A CITY WIDE SCALE. THE SERVICES ARE PREVENTIVE RATHER THAN CURATIVE AND ARE ABLE TO REACH OUT TO A LARGER NO'S OF PEOPLE OF A WIDER RANGE OF INCOME GROUPS.





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**REGULAR INCOME**

**PRIMARY (FORMAL)** • AGENT FOR MIDAS.

**SECONDARY (INFORMAL)** • SMALL TIME PRINTING & PROCESSING.  
• RENT FROM WATCH REPAIR PERSON.

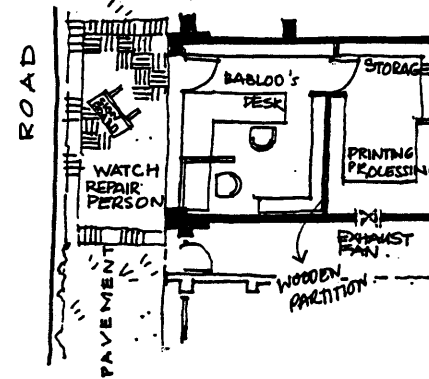
**SPORDIC**

• MARRIAGES DURING SEASON.  
• JOBS FROM OLD BO BOSS.



BABLOO'S STUDIO:

Babloo has decided to leave his job at the photographer and start off in his own studio. He rents a room in one of the neighbouring blocks and converts it to form his studio. The conversion of the room is a relatively simple affair - the front opening enlarges and a counter space is added. The interior space of the shop is very simple - it is divided into two parts, a back room used for storage and processing, and a front room serving as an office and counterspace. Part of the counter space is rented to a friend of his who repairs watches. The watch repair person has a glass encased box at one corner. In addition he also uses the front part of the shop as a sleeping space at night.



THEORY:

Most of the ground floor residents have converted their room fronting the main road to shops or workspaces. These transformations are of two types:

a) the room functioning purely as a commercial venture -- the space is rented out or run by one member of the family full time, similar if he or she had a full time job. The income generated either via means of rent or earnings form a substantial part of the household income. On the other hand, it implies that the family cannot re-use the space during the "slack" hours - that is during the late evening or the night. For the person who is running the shop such a possibility exists, but only to a limited extent.

Although the shop is rented out, the landlord still has a reasonable control over what uses the shop is put to and as to "who" is renting. There are strong social conventions as to the nature of commercial or manufacturing activities that can exist within residential clusters in the neighbourhood.

Furthermore, the shop being directly connected to the residential unit is subjected to even a stricter control. Thus although formal zoning laws regarding commercial venture manufacturing

codes are not altered, they are replaced by implicit site specific rules and conventions, and are enforced through social pressure.

The commercial enterprises are a combination of two or three businesses running side by side, but with a common ground. This permits flexibility of switching from one to another in times of changing market conditions. Babloo's shop provides a good example of this. He is the artist working on special jobs, there is a technician for regular commercial work, an accountant, and also a delivery boy who is part of the larger organization. This intermesh of formal and informal jobs provides a very good opportunity to develop links and take advantage of both. The security of a formal sector function and legitimacy and the flexibility along with the illegality of the informal. Thus it is the basis for establishment of networks - at the informal and formal scale, each interdependent with each other.

In addition by subletting part of his shop to the watch repairer, Babloo is a support for yet another link - to people who might be starting off and attempting to gain a foothold into the system.

The major income does not come from the photographic jobs, but from it's serving as a retail outlet for MIDAS, a major photographic company. Babloo travels to the head office to collect and deliver orders. At the same time he also does some small time printing, but these are sporadic. Sometimes he gets hired to photograph marriages, which is a profitable affair. Occasionally he also gets work from his previous boss to do rush jobs.



THEORY:

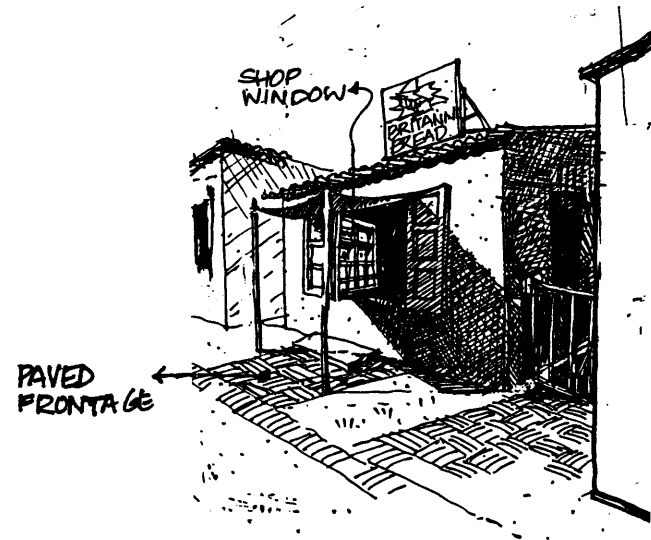
b) The shop or workspace performing a secondary function within the general economy of the house. In this case the extra room built is primarily used for domestic living and partly transformed temporarily to take on a commercial function. The products sold are usually goods for daily consumption: cookies, bread, dairy products and cold drinks. The shop is managed by whoever is around in the house- usually the elderly or the ladies of the house. The logic is simple, to use a space to be productive at a time of day when normally it would not be productive. Although the profit of margin is small, it never-the-less provides some form of security, and there is always a possibility of the shop being opened up full time, as a regular commercial enterprise.

Another version is when a semi public space is used as a work space. This is

THE SHOP:

The front room, apart from being used as an extra bedroom, is also used as a small shop. It is a simple alteration - a hinged counter fixed to the window and a few shelves added to the adjacent wall.

They store eggs, dairy products and cold drinks in an ice box. At night, the counter is folded away and the room becomes a bedroom once more. The shop is run by whomever is in the home during the daytime - Mala is able to help sometimes, otherwise it is usually her daughter, mother-in-law, or sometimes even Suresh helps out during the evening.



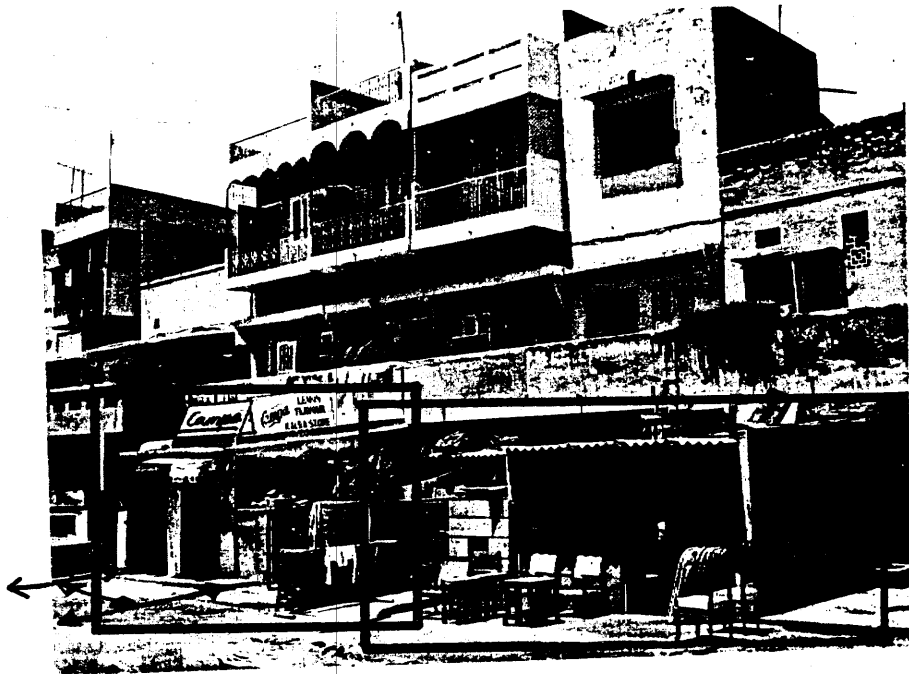
SRI-LANKA.

A bedroom has been  
converted into a shop  
Negombo  
FROM ODA REPORT.



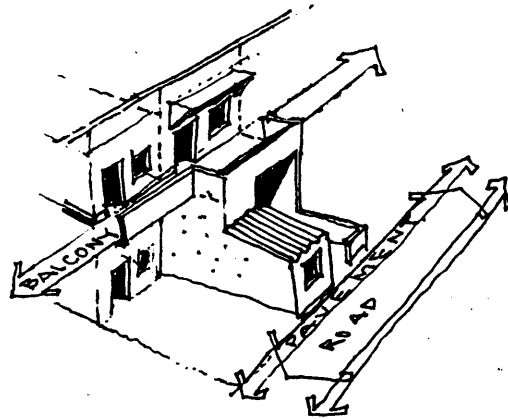
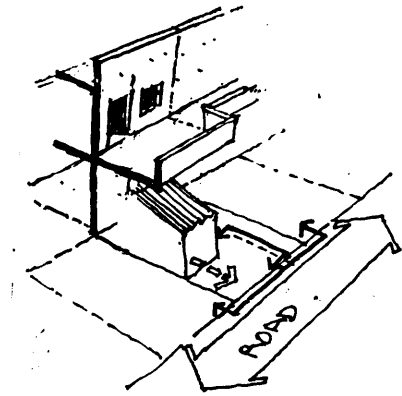
illustrated in the story by Suresh's father who uses the road side to fabricate crates

Thus commercial ventures can change their function, sometimes cease to exist and therefore utilise space and location to whatever degree allowed by other dominant functions. They are opportunistic, and temporal in nature. Due to the relatively small investment needed, they can easily be transformed to meet market demands or due to social circumstance.



THE SIDE WALKS  
THE PAVEMENT OF THE ROAD IS  
USED AS A SEMI PUBLIC SPACE  
FOR THE SHOP AND OFTENED  
MAINTAINED - PAVED WITH BRICK,  
OR A CEMENT LAYER.





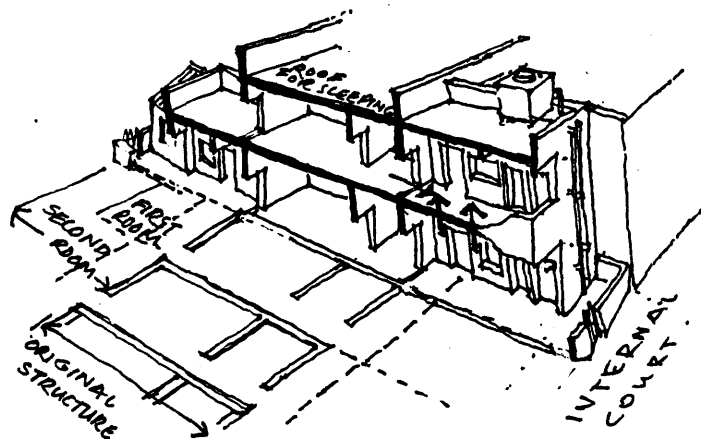
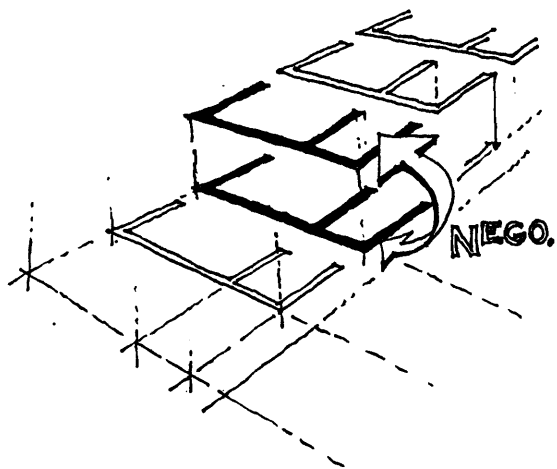
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PHYSICAL ALTERATIONS AND ADDITIONS TO THE HOUSE.

Ram's marriage has important impacts on the spatial usage within the house. To support such a large family now, changes have to be made in the existing structure. They decide to build additional space in the front of the room they had previously added. Suresh and Ram agree to share the cost of construction, whereby Suresh pays  $3/4$  and Ram pays the rest. Suresh knows that Ram would have to move into another place in the next few years. The construction is again carried out by hiring two masons and labourers. He supervises the work with the help of Babloo. The addition is a simple affair technically. An effort is made to alter the existing structure as little as possible. As before the materials are bought from a small local retail outlet.

They have known the owner for quite some time now and they can depend upon him to supply un-adulterated building materials (especially cement). A big advantage is the flexibility of credit, they are able to pay him over a period of a month or two, as and when the family is able to collect enough.

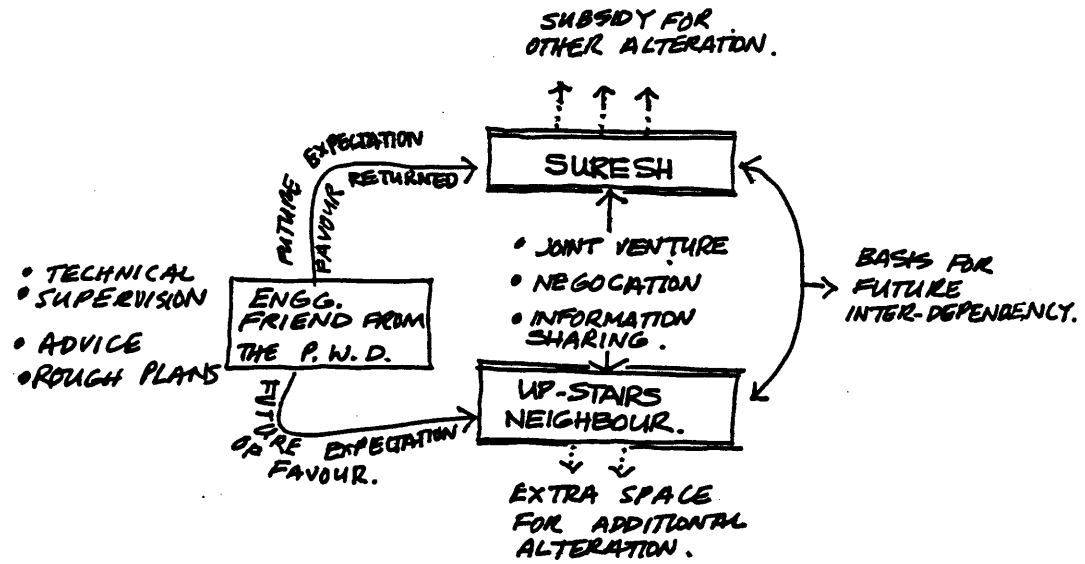


**INFORMAL CONSULTANCY:**

The neighbour contacting his engineer friend is a form of informal consultancy. It plays an important role in highly specialized construction, which the informal sector has not developed the skills for. The "engineer friend" is brought in only for those stages which the owner is not too comfortable about—services, R.C.C roofs, inserting beams in to a existing wall, and to supplement existing skills and construction procedures. The professional relations between the client, the consultant, and the builder is flexible, relatively unaffected by professional interests, i.e. standards and procedures adopted to follow official norms. Another advantage is that the fee paid need not be in monetary terms. As in this case the payment is by way of a favour to be returned when the engineer contacts Suresh when he needs help from that department.

The modification to the kitchen and toilets is a major job. Their upstairs neighbour is also interested in increasing his kitchen and toilet areas. As before, they decide to share the cost of construction. The cost of the roof is paid for by the neighbour while Suresh pays for the lower superstructure. The costs of the foundation is shared by both. The neighbour, working as a stenographer in the public works department, is able to get some rough plans drawn up from one of his friends who is a junior engineer. They agree to pay him a token fee. With Suresh now working for the Land Commission, there would always be opportunities for the engineer to ask him for a favour in return.

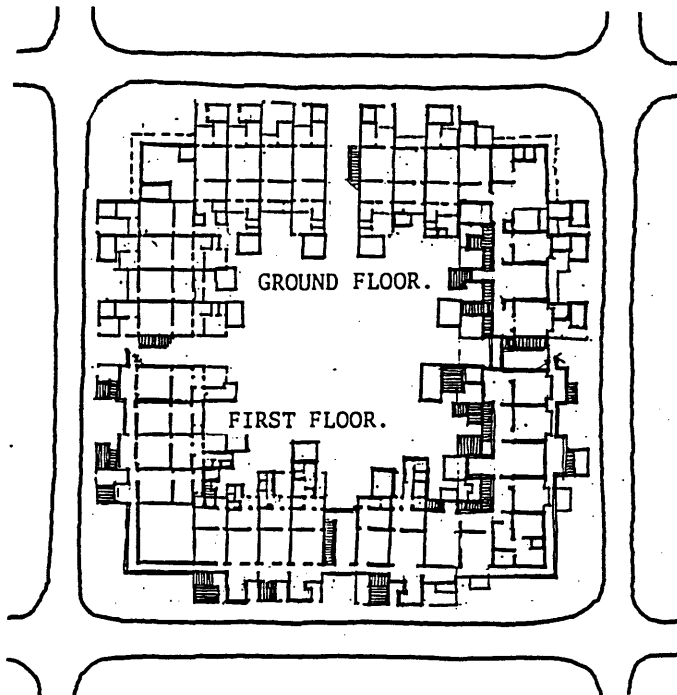
The additional toilet and kitchen area added upstairs are located over the entry below to facilitate the extension of services. The "engineer friend" gives some useful technical advice to save as much of the existing piping as possible. The manhole therefore is not altered, to avoid complications.



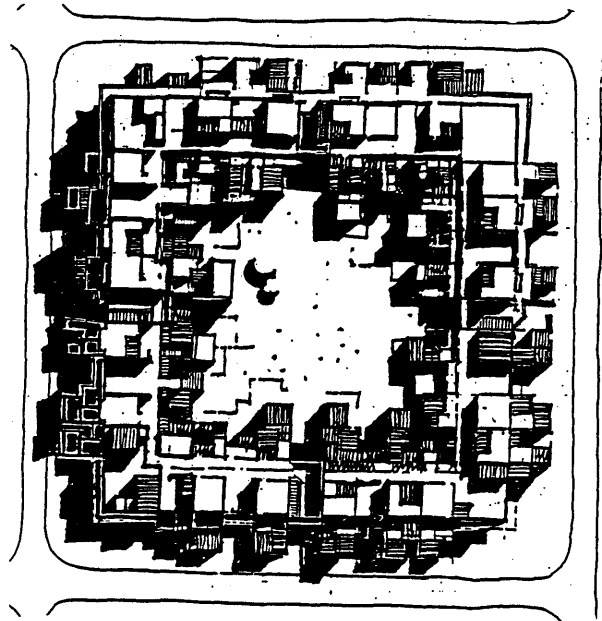




STAGE 5.



FLOOR PLANS.

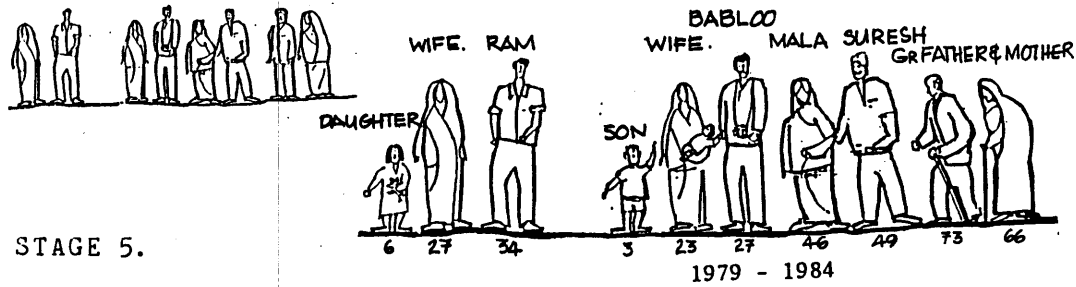


ROOF PLAN



ADDITIONS &  
ALTERATIONS  
1) ROOF TOP UNIT  
2,3) ENLARGING OPENING

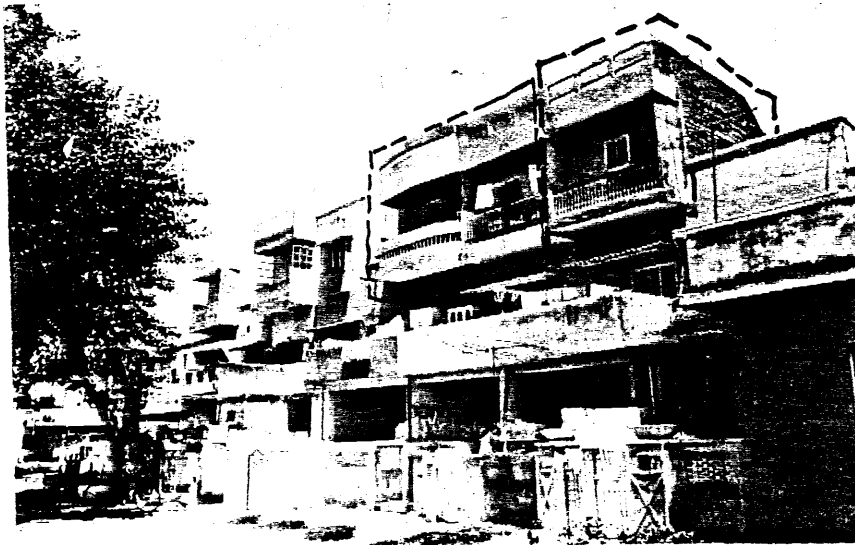




STAGE 5.

CHANGES IN THE FAMILY:

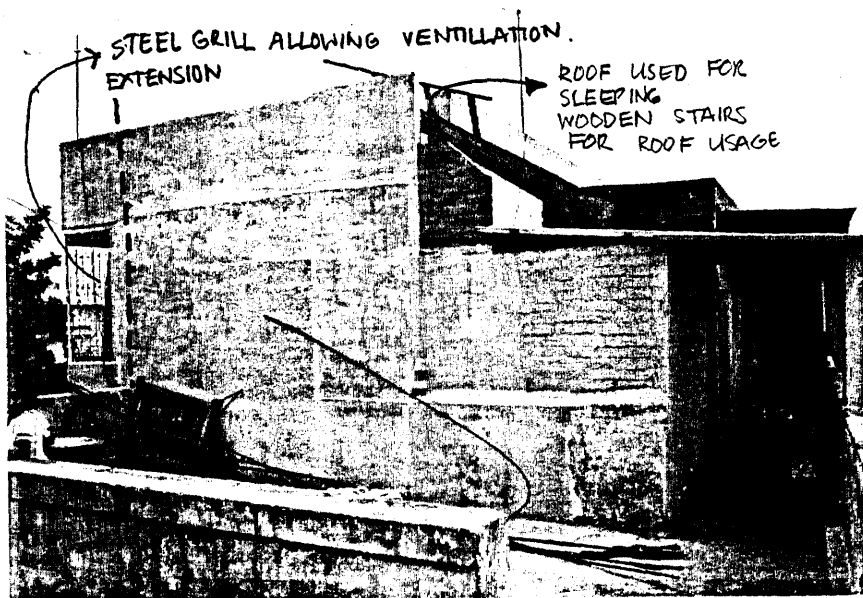
The family has experienced some important changes. By this time Suresh himself has retired and his son and daughter have married. In keeping with traditions the daughter goes to live with her husband's family. Babloo been married for four years and has two children. Suresh's cousin Ram also has a young child of 3-1/2. Thus the family faces a severe space shortage with 8 adults and 3 children. To ease the situation Ram decides to move out with his family.



## THEORY

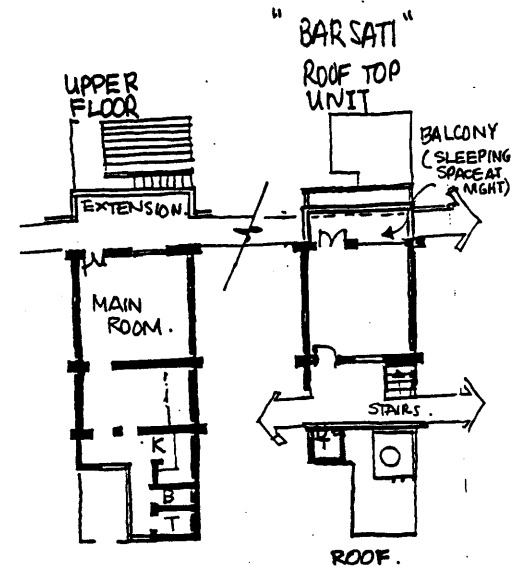
The evolution of Barsaties - rooftops has had important implications in the process of densification and generation of additional housing in Delhi as a whole. Despite providing the minimum form of shelter, the advantages of location make them very attractive to young families and individuals who need accommodations in the process of settling down in the city.

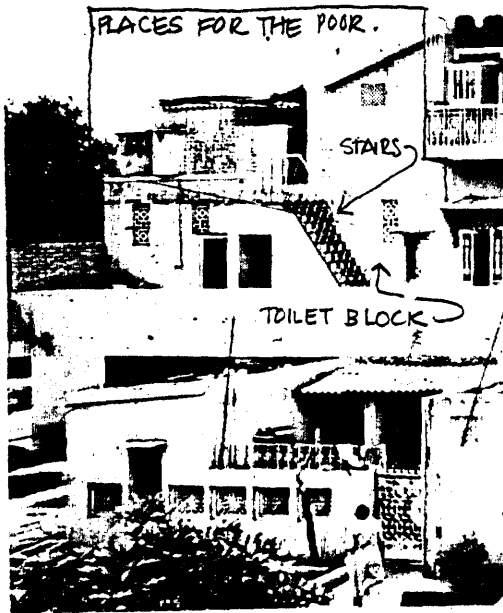
In the neighbourhood of Bhogal (largely lower middle class), such accommodations play an important role in providing a stepping stone for families like that of Ram, who want to stay in the area to maintain job opportunities and socio-economic relations with groups they have previously known. For them, displacement would mean having to start again in a new neighbourhood, developing contacts and linkages and discovering networks and how things work. The owners of the Barsaties are assured of a steady income and a possibility of increasing the rent by upgrading the quality of construction. Sometimes in order to attract higher rents, standards of construction of the rental unit are



RAM:

Ram decides to rent an apartment in one of the neighbouring blocks in order to maintain links with the rest of the family. The apartment is a one room unit on the terrace of one of the blocks—commonly known as a barsati. It has a main room of 12' x 13' and a cooking area of 5' x 8'. The toilet is roofless and also serves as a bathing area by placing a wooden plank over the WC. The major inconvenience of the toilet is resolved to some extent by placing an old asbestos sheet and some plastic for roofing. Despite these minimal amenities, the advantages are many. They live close to Suresh's family, which is a big advantage especially with the young children. Ram is also close to work, his contacts.



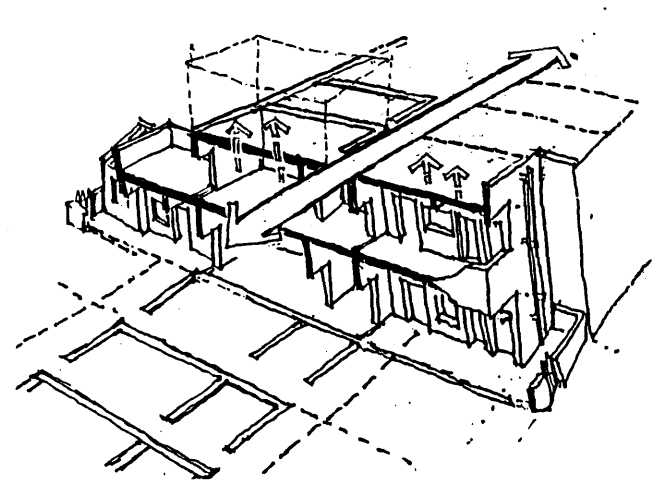
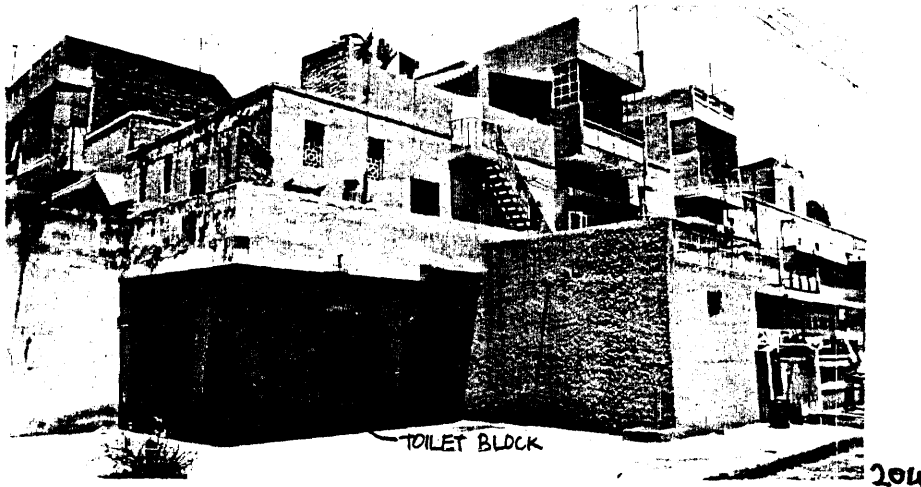


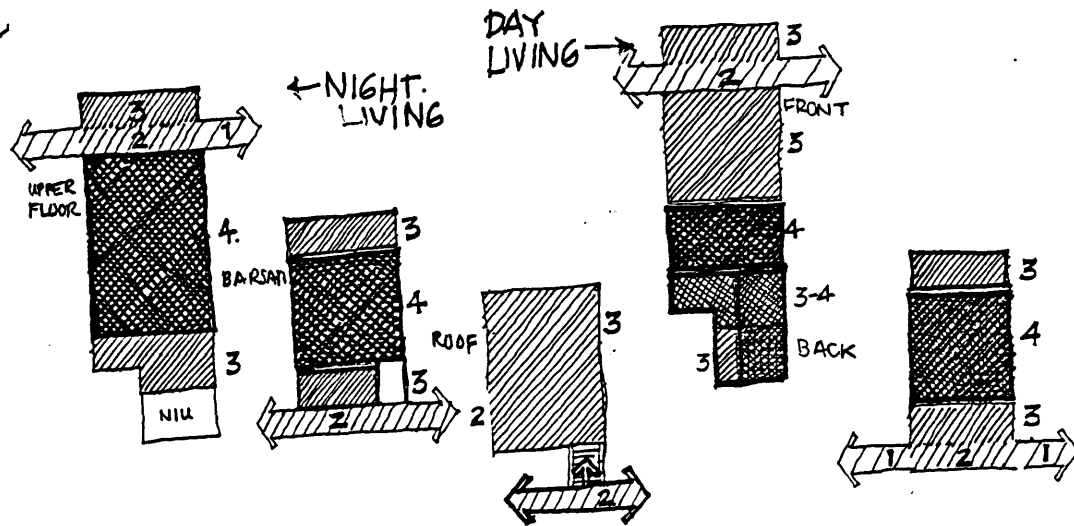
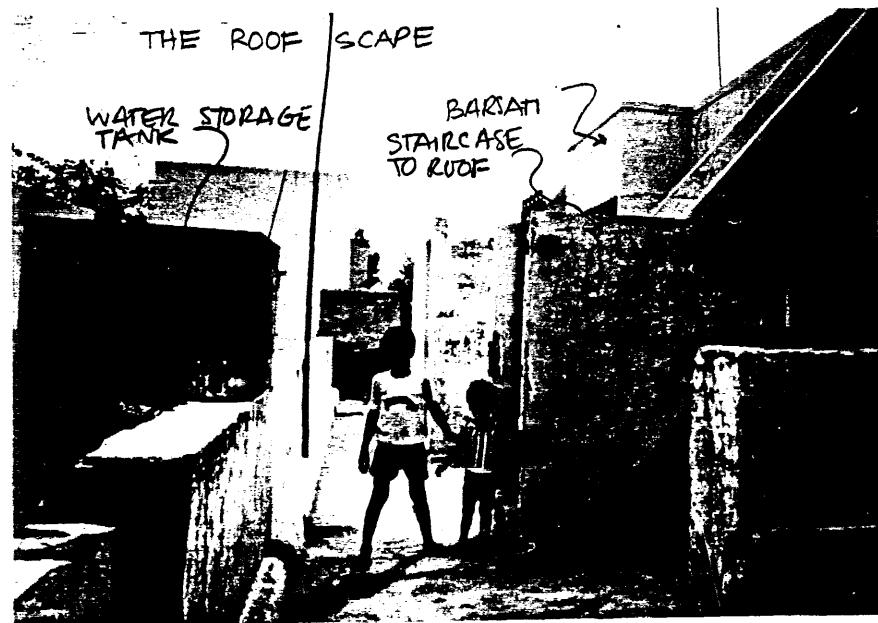
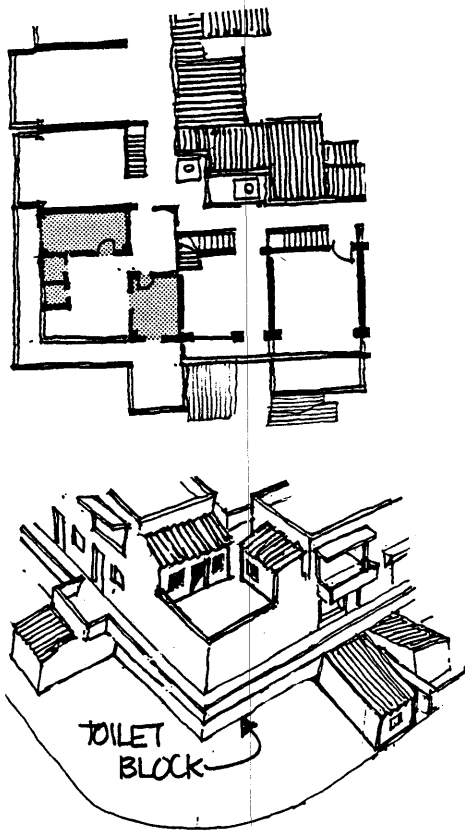
superior to that of the landlord's own house. On the other hand, due to the given inter-dependence between the landlord and tenant, extra rent is foregone in order to get a "decent" tenant, Thus there is an implicit control as to the kind of people accepted within that community. Whether this is positive or negative is a difficult issue given the definition of "decent", but it certainly indicates a strong desire to maintain the quality of the living environment of the block with the day to day living.

**PLACES FOR THE POOREST:**

A variation of this form of accomodation has evolved over the roof of the toilet block. In this case the social stigma of building over a toilet block would lower

the rents charged, if any. The form of tenure relationships is unclear, whether rents are paid to surrounding units. Never the less, they would be accessible to a still lower income group. The Bhogal blocks predominantly middle class would offer such marginal accomodations to the lower income groups. The rent, apart from being obviously dependant upon size of the unit and quality of construction, is also greatly influenced by the image of the block, its location with main roads and general state. It would be very difficult to maintain formal source to provide housing in such a variety of tenure systems and catering to a range of income groups.







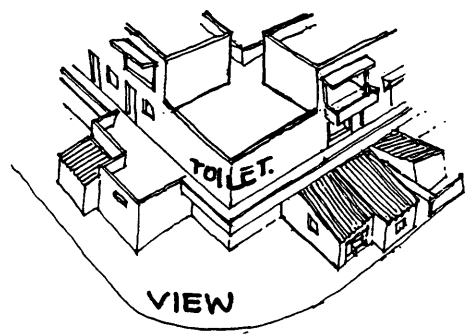
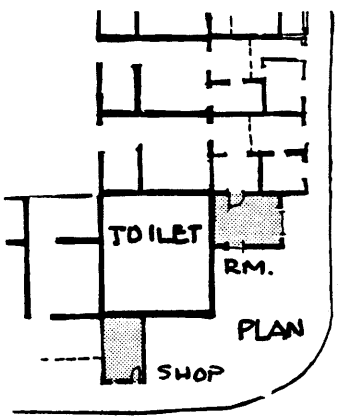
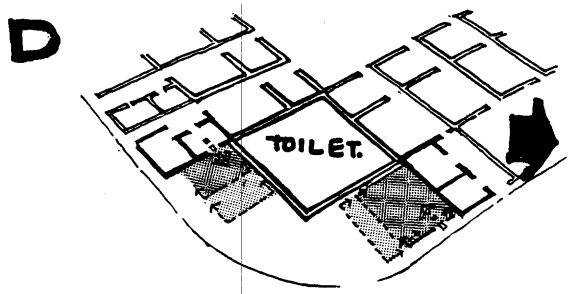
Although there is limited space available for major additions, a more efficient usage can be obtained via the process of negotiation. The Bhogal case demonstrates some interesting cases of territorial change via negotiations.

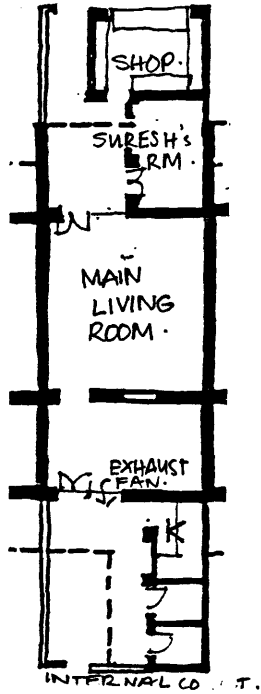
a. An occupant of a unit appropriation - the unit adjacent to his or her own (or a similar effect via a socio-process like marriage).

b. A link established between an upper and a lower unit - an introduction of a secondary vertical circulation being a major intervention.

c. An amalgamation of a semi-private or semi-public territory to improve efficiency of the previous individual territories.

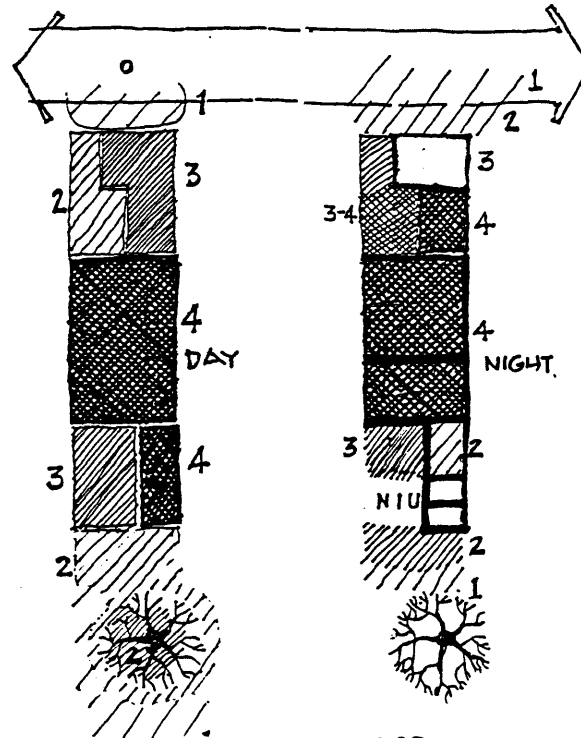
d. Appropriation of the toilet zones: due to the common toilets not being used they are liable to be encroached upon by adjacent units. Most of these encroachments are in the form of rooms built adjacent to the existing structure rather than within it. The toilets occupying corner plots are prime locations but due to an image problem and social stigma they are one of the last areas to be encroached upon.





The story of Suresh and his wife Mala illustrate another interesting aspect, that of elderly people being a useful part of the system, contributing to it in an active way. The retirement age in most public offices ranges from 53 to 56. At that age, Suresh would probably have gathered about 25 to 30 years of experience. Thus, his job apart from helping to support his family would also

be disappointing some of that experience, at a local scale, fairly easily accessible. The scale of the operation is important; operating locally from one's home provides the flexibility of operation, reduces the cost of overhead, and thus being accessible to a larger range of clients. Obviously the lack of a telephone is a handicap but it is not a crucial component in processes and dealings that are largely informal.



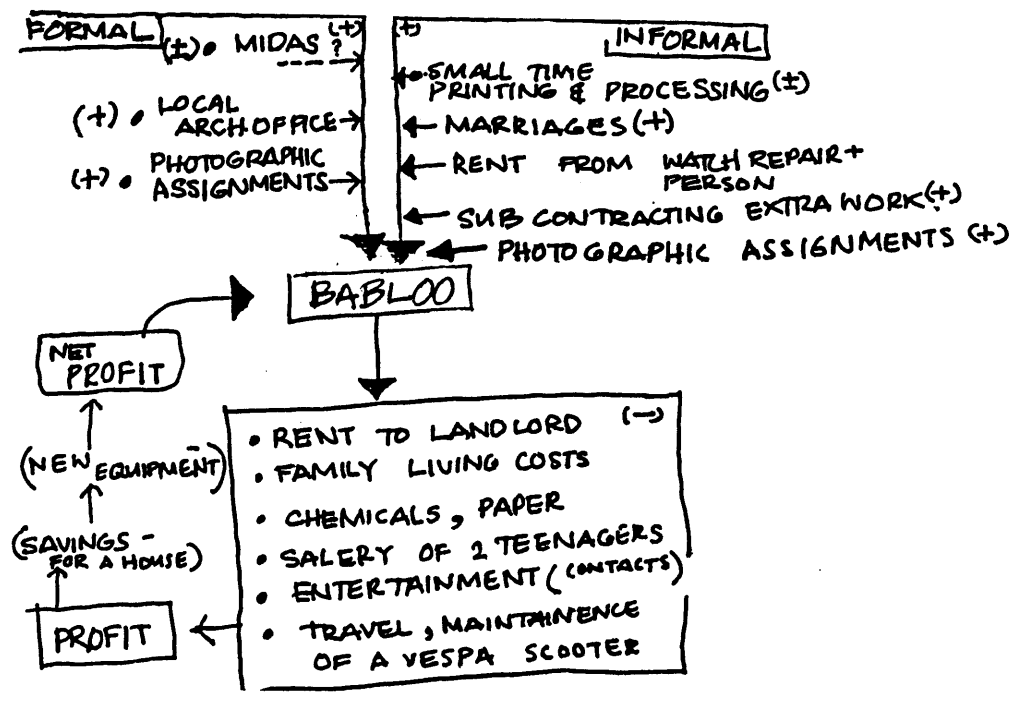
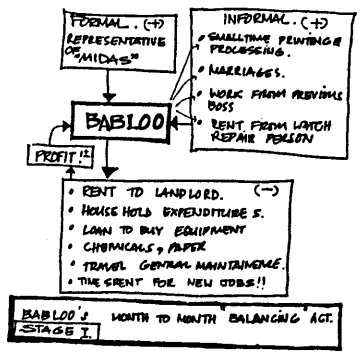


SURESH :

Suresh applied for early retirement from his government job. For the last two years he has been offering small time consultancy and legal advice. In addition, from time to time he is an insurance agent obtaining a commission on each policy sold. The first two jobs form the bulk of his work, familiar to what he had been doing in the government for the past 25 years. Because of his past experience with the bureaucracy, he attracts a lot of clients dealing with the government. The insurance work he recently started was at the suggestion of his old colleague through whom he was able to obtain the contract. Suresh uses the house as a office although the work involves a fair amount of traveling. A small sign-board serves more of a address rather than advertisement, most jobs being obtained through personal contact.

SURESH'S WIFE MALA:

Mala has left her previous job of delivering milk, as it became too strenuous for her. Suffering from some back problems, she is unable to work as a maid servant. Mala (helped by Babloo's wife and Suresh) takes charge of the shop and they have been able to expand to occupy the entire room as Ram moved out with his family. They sell a range of dairy products and general merchandise and it has become well-known in the neighbourhood. The shop has become an important source of income.



This section illustrates an important process of linkages developing. Babloo, now having been able to consolidate himself is now able to help other entrepreneurs to reach a similar position. By employing the two boys, he is in effect training them. It is not certain that they will also be photographers, but training is a valuable tool and the opportunity to get into the system.

The watch repairer himself is on the way up - maybe not as successful as Babloo, but he too is carving out a place for himself. At present he has been able to put up his own shack and it is likely that he would be able to rent a space in the main market. Babloo is also in the process of forming new linkages, and changing old ones. In the two cases the informal structure provides the necessary flexibility to cope with market fluctuations.

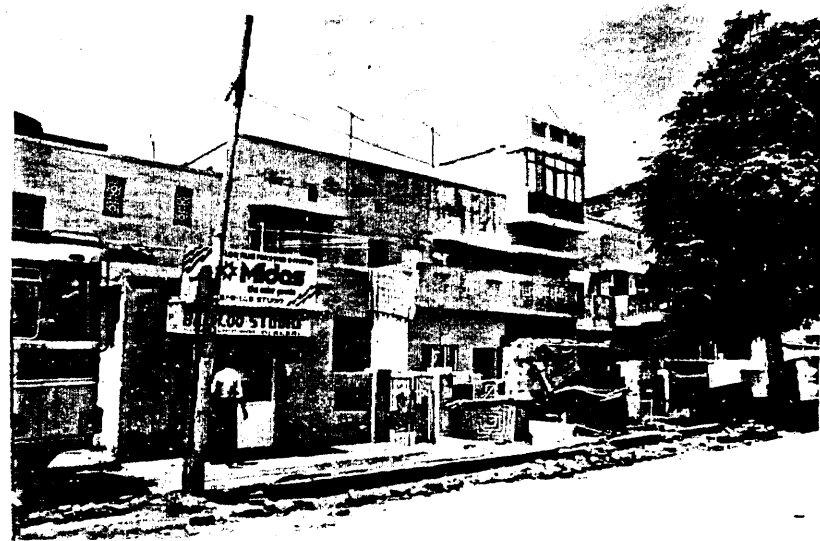
The story of Babloo and the watch repair person illustrates some important

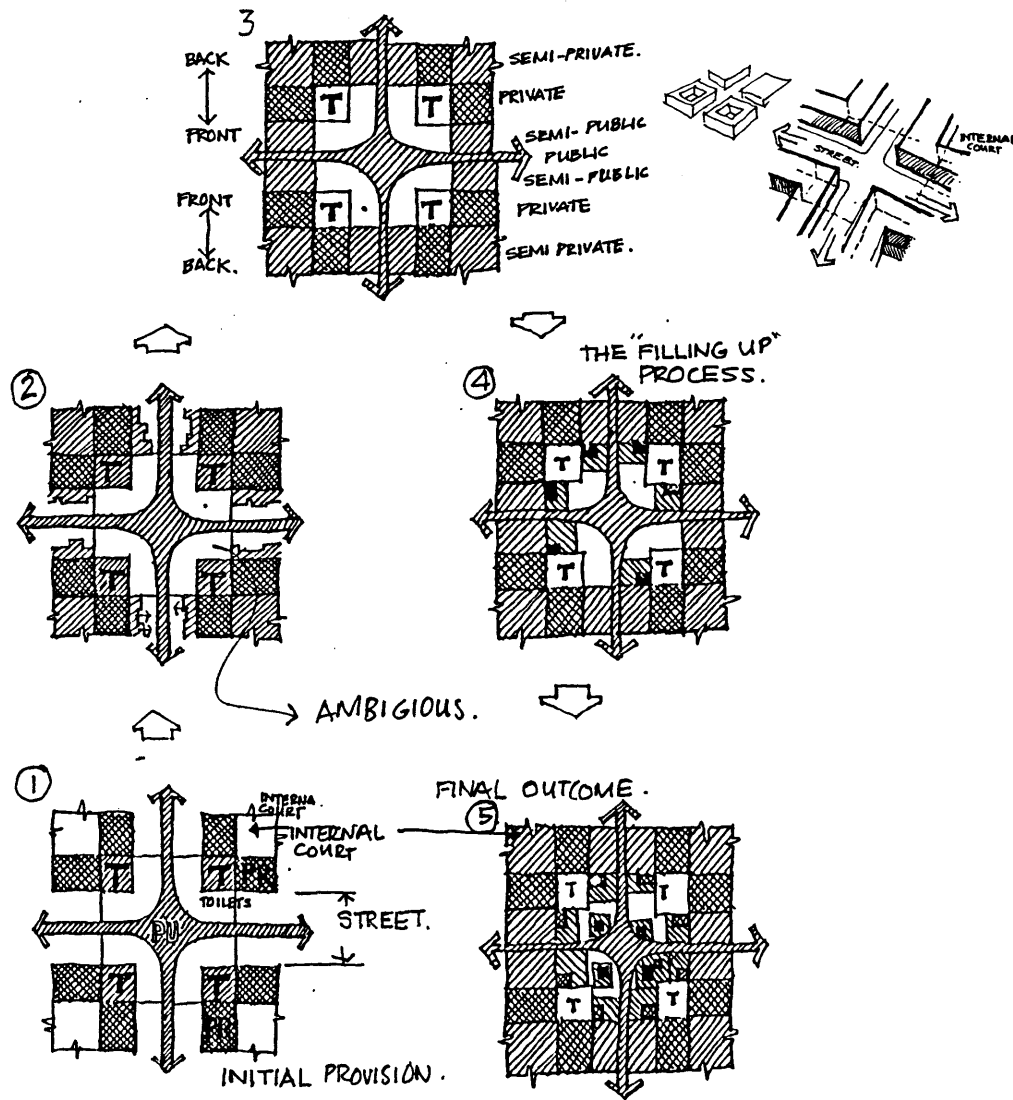
BABLOO:

Babloo is now a full time photographer, and has stopped doing part time work for his previous boss. He has hired two young teenagers and taught them filmprocessing, although for some special jobs he works himself. He handles the business side, obtaining orders for the company and photographic assignments. Sometimes he subcontracts extra jobs to another photographer friend of his.

Babloo has also made contact with a local architectural office who are able to give him a fairly constant supply of work. They prefer him to formal photographers because he can be called during a rush job to do some last minute photography and corrections. If this goes well, he plans to terminate his link with MIDAS, the large photo company.

Due to the expansion of Babloo's



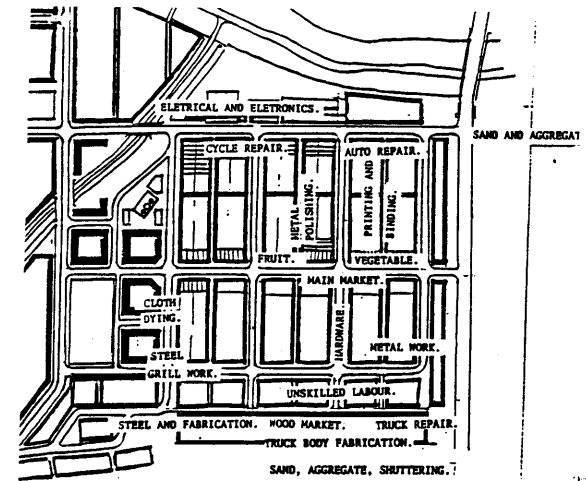
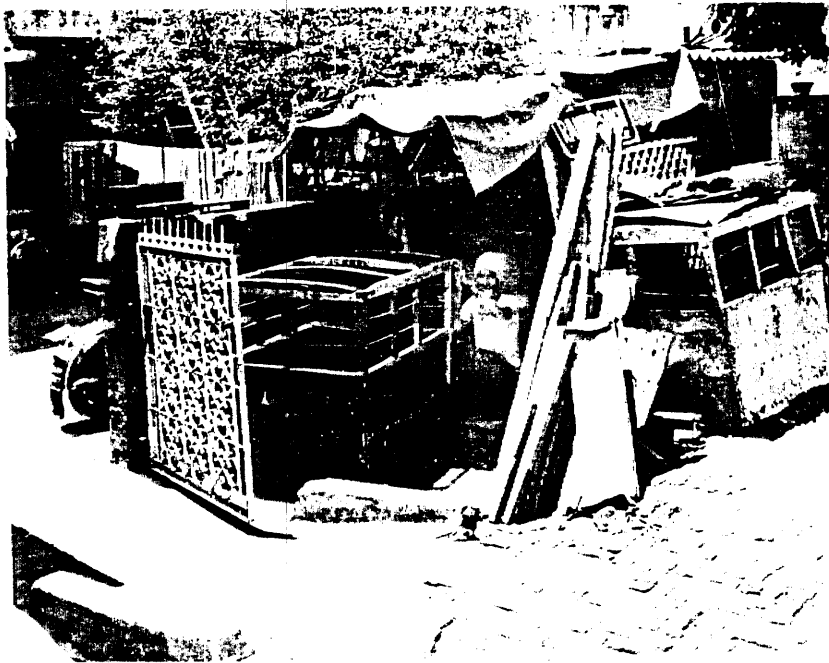


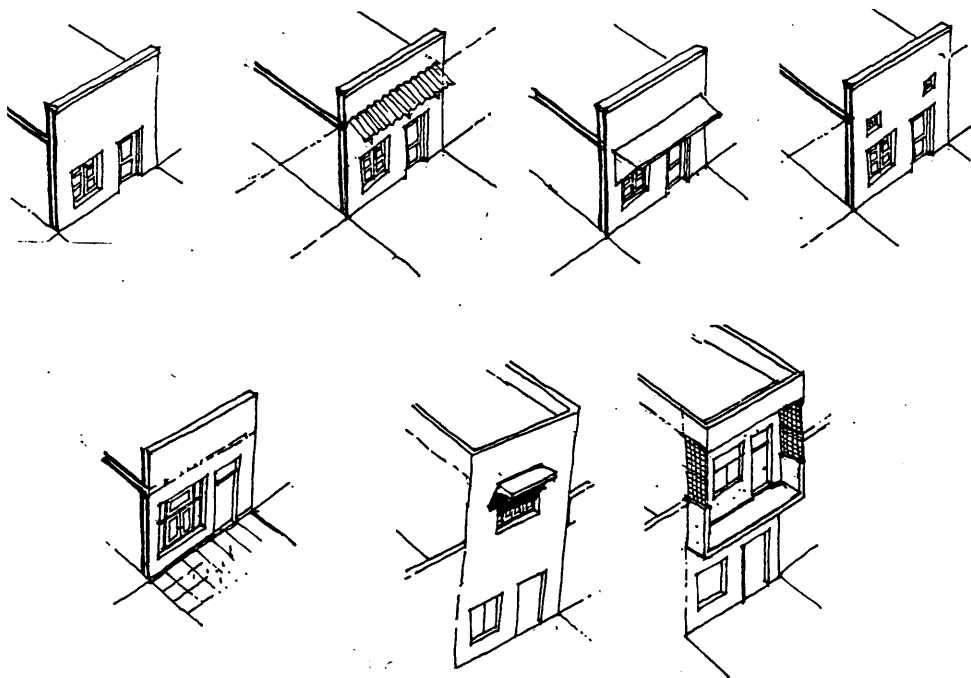
processes of socio-economic change effecting physical transformation in the city as a whole. These changes, although incremental in nature are comprehensive in scale. They are also a result of the development of linkages with formal institutions and networks.

Thus what were previously neighbourhoods with poor residential usage are now being transformed to incorporate small scale manufacturing and commercial activities. The evolution of these other functions happen on what was previously territory with ambiguous control. Most important, in a city that is facing a growing informal sector, the possibility of such a structuring allows for the lower income groups to locate themselves in positions which allow them access to markets and employment. The structure also allows links to develop between higher income groups and the informal networks.

INCREMENTAL ILLEGAL ENCROACHMENTS ON AMBIGUOUS TERRITORY - PLACES FOR THE POOR. THE ENCROACHMENTS OR TERRITORIAL APPROPRIATION EFFECTING GREATER EQUITY WITHIN THE FABRIC.

business, his watch repair person (a close friend of his for five years now) has got to move out. He decides to build a shack adjacent to Babloo's studio, but still uses part of the office to store his equipment at night.





These incremental changes can be quite varied in nature:

1. To improve the standard of construction: walls plastered, painted, services upgraded, windows enlarged or storage areas introduced.
2. To improve the performance of the structure through the use of mechanical components - water booster pumps, evaporative coolers, electric fan, exhaust fans.
3. To improve the image of the house - introduction of fancy design metal grill work for balcony or staircase railing.

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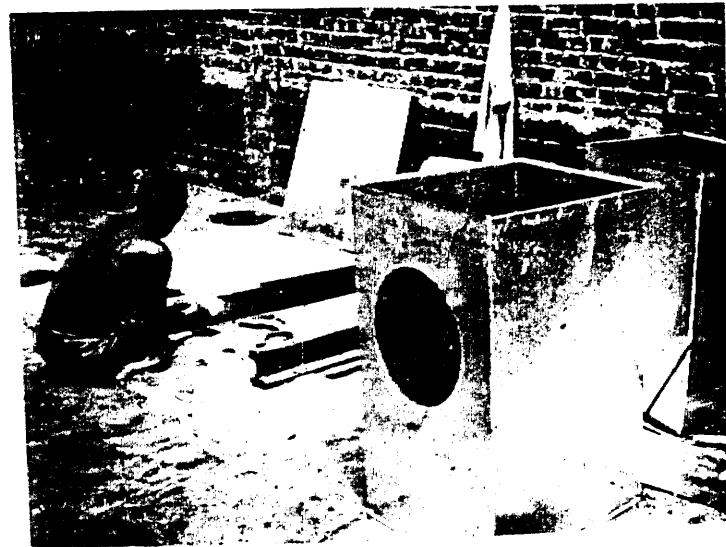
#### Implication On The Local Informal Construction Industry:

The shift in the nature of construction from major additions to incremental alterations, affects the local construction industry and is an indicator of important processes that evolve in the local industry. It is also the basis for the evolution of processes within the nonconstructive informal sector. The predominant characteristics of these processes are:

A) The formation of subsectors of manufacturing: The emergence of component fabrication, and retail outlets form important subsectors with direct links to the main construction market. These can be in the manufacturing of metal grills for staircases and windows, sheet metal boxes for water tanks and evaporative coolers, cement grills for ventilators, steel staircases constructed out of tee-sections, and a variety of the components including sanitary ware. These often have linkages to tertiary processes, i.e. oil-painting and finishing as related to a metal grill fabrication unit. Sometimes

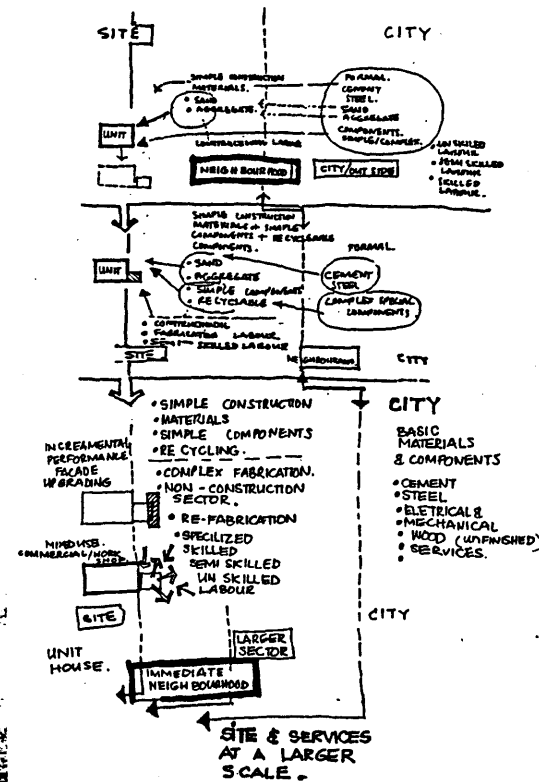
MODIFICATIONS TO THE HOUSE:

The changes made to the house are more incremental in nature: a) the shop is now plastered and painted, b) a new counter is made to protect edibles from rats and cockroaches, c) the door opening of the main room is enlarged to let in more light and ventilation. This is done by replacing the old wooden frame by a larger metal grill facade. The construction is very simple - a grid of tee sections welded together. The fabrication is done at the local construction market where window grills and staircases are fabricated with similar techniques.



linkages develop across related processes, i.e. water tanks connected implicitly with the market of booster pumps; or the fabrication of bicycle vans (used as school buses) to cater to the emergence of local "primary" kindergardens and day care centers within the residential neighbourhood.

B) Opportunities for specialization and training: It induces specialization in various degrees of specificity, i.e. metal working- it could range from a person fabricating only metal staircases, while others would manufacture a whole range of items such as grills, frames for water tanks, smaller metal grills for balconies, thus allowing for flexibility to cope with market conditions. This also induces training of various processes and opportunities to upgrade ones skills, i.e. a person starts off by fabricating sheet metal tanks, then learns basic welding of frames-to metal grills, to perhaps the fabrication of staircases. This obviously does not happen in a linear fashion as described above but through linkages within a manufacturing process, i.e. the manufacturing of grills is closely

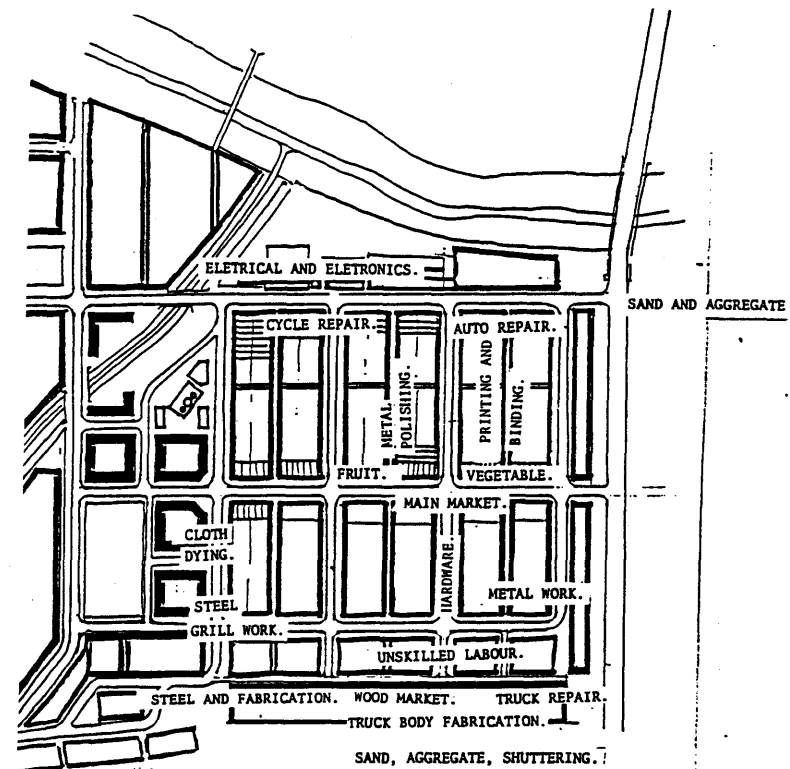


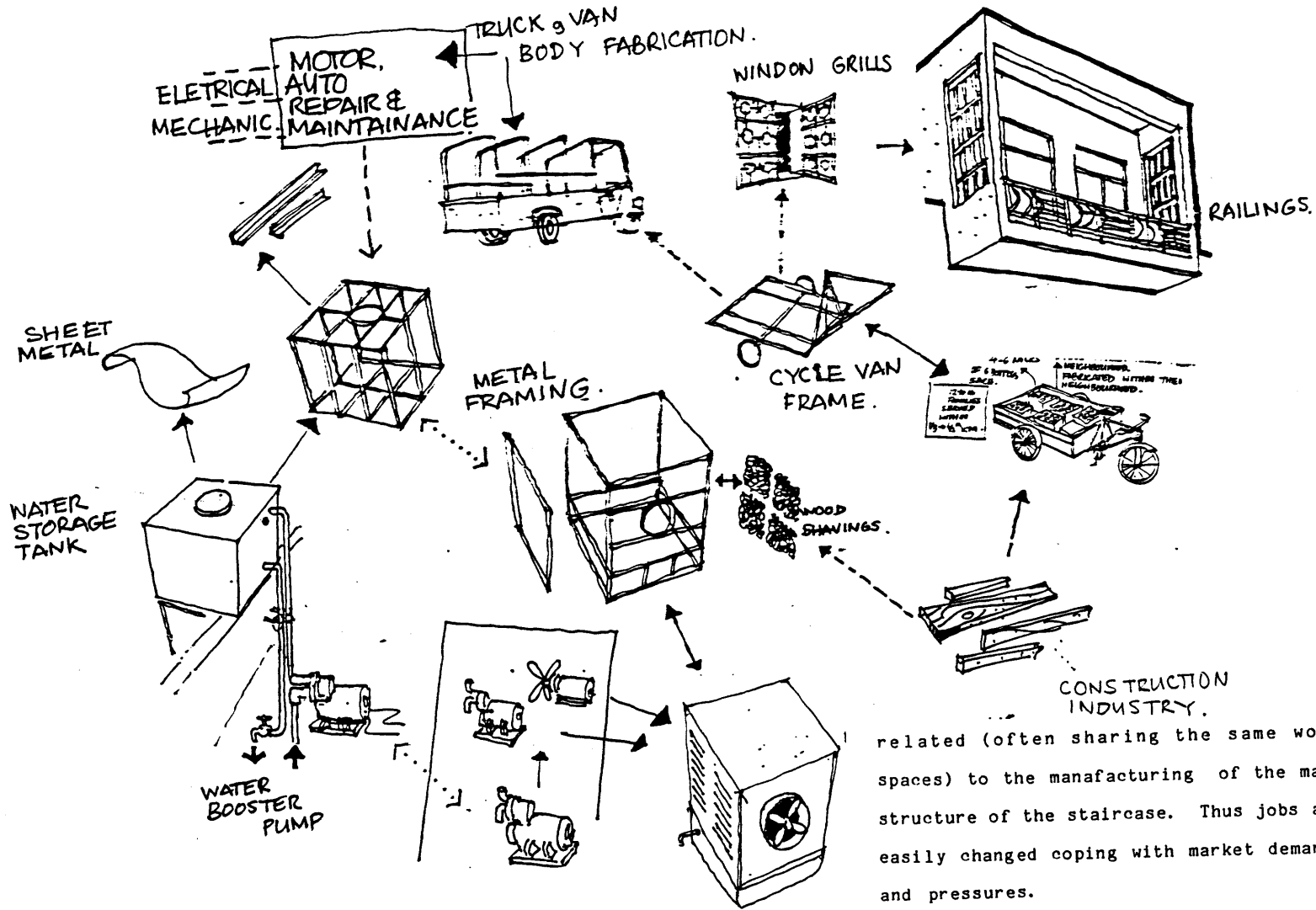
- A) STAIRCASE REPLACED
- B) ADDITIONAL ROOM ADDED.
- C) EVAPOURATIVE COOLER
- D) NEW WALL



Suresh and his neighbour upstairs decide to install a booster pump to store water in a G.I. water tank up on the roof. There is also an attempt to improve the availability of water. Water pressure, being low, is only available in the morning and evening. This would ensure a continuous water supply for most part of the day.

The pump is bought locally from Ram's shop. Ram gives them a good price on a new pump, but Suresh decides to buy a second-hand repaired one. The water tank is made-to-order from the local market. It is fabricated from sheet metal according to specifications within a range of sizes. The installation of the tank takes about two days. Suresh hires a plumber who is recommended by Ram. The plumber is a specialist who dealt with booster pumps before, and is able to give an informal guarantee towards its maintenance.

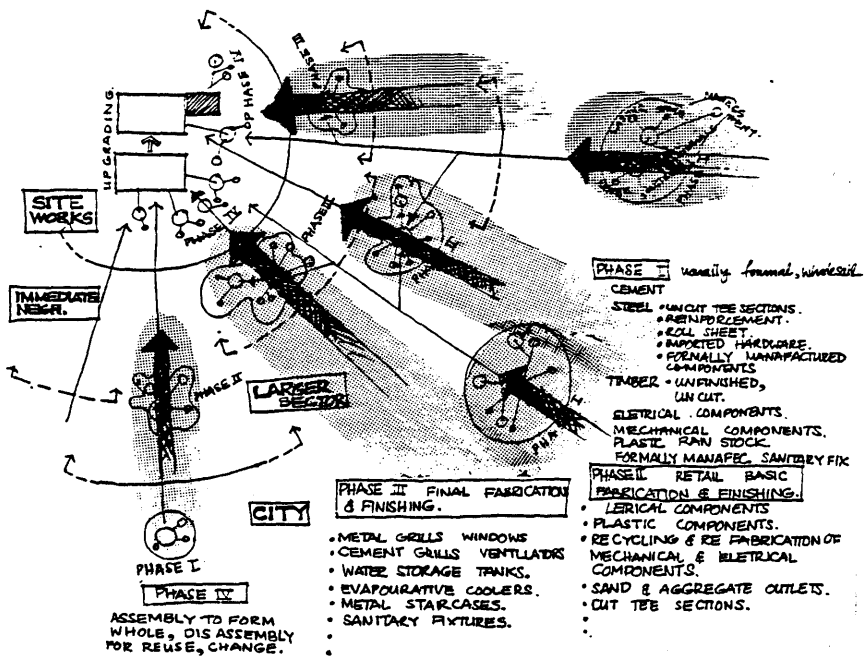




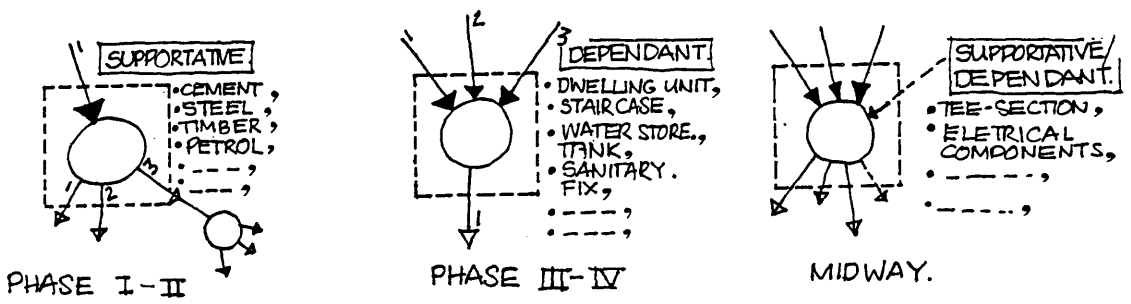
related (often sharing the same work spaces) to the manufacturing of the main structure of the staircase. Thus jobs are easily changed coping with market demands and pressures.

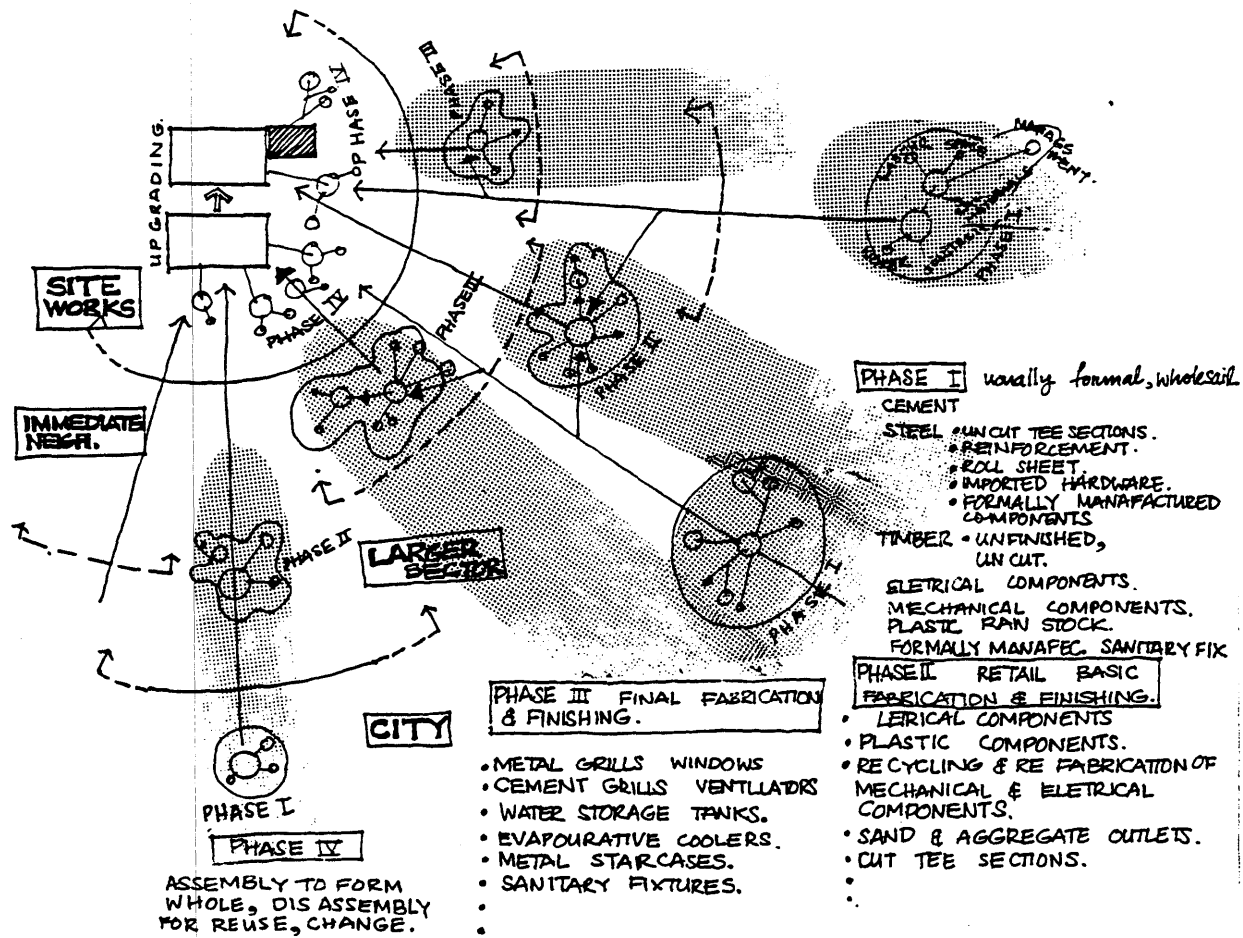
C) Trends towards mixed use within residential environments: these forms of sub-markets evolve in close proximity to





each other, and the residential areas where they are ultimately in a finished form. This is mostly due to the interdependence of one process of manufacturing upon the other, either by being part of a sequence of fabrication, retail or sharing services, workspace, often a portion of the market being devoted to "steel items", i.e steel grills, frames, staircases, and water tanks, or "cement components", i.e. cement grills, sanitary ware, and floor tiles.





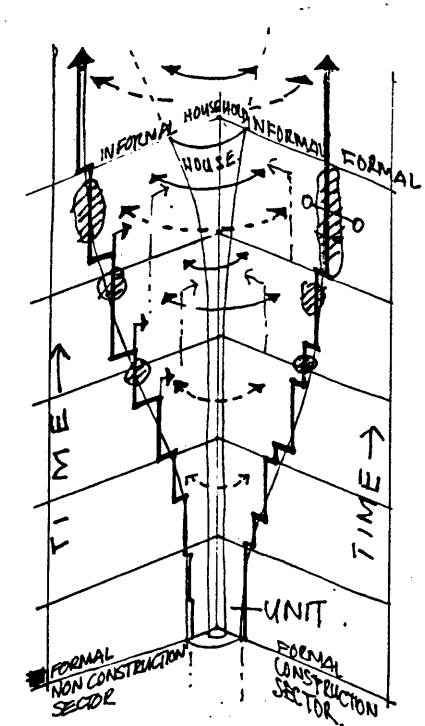
IDENTIFICATION & QUALIFICATION		LOCATIONAL CHARACTERISTICS					
SUPPLY OF A COMPONENT RETAIL/WHOLESALE MANUFACTURE/ FABRICATION.	QUALIFICATION INTERNAL/FORMAL EXCHANGE/MANAF.	SUPPORTIVE/DEPENDANT.		ACCESS	LABOUR	TRANSPORT	PROCESS
		PRIMARY	SECOND	USUALLY INTERNAL	USUALLY	TRUCK	SUPPORTIVE/ DEPENDANT



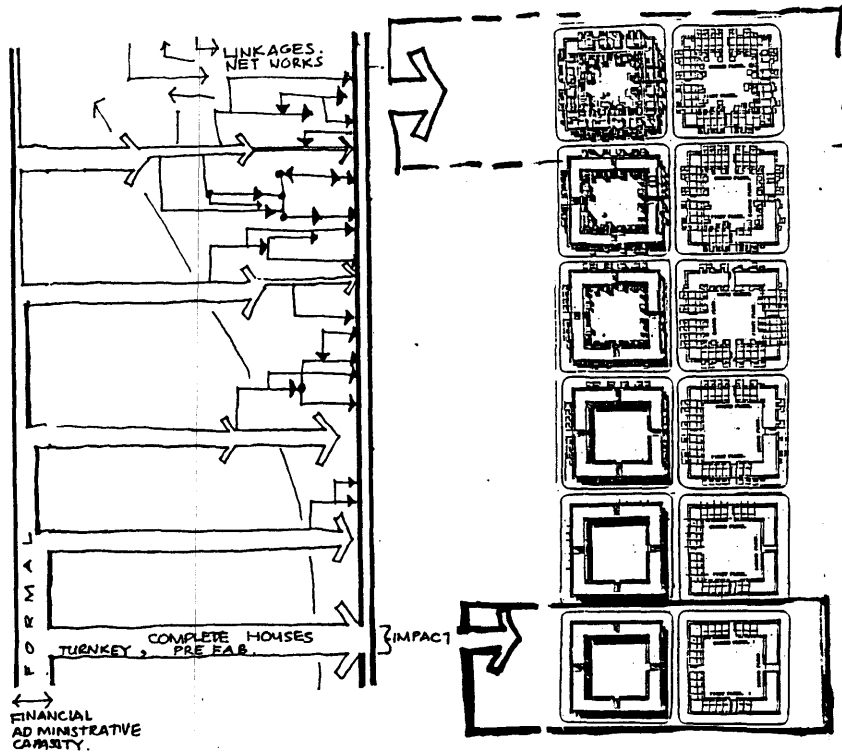
A majority of the work force live in close proximity to the place of employment usually in rented accommodations. Another part of the support activities, this is evolving in the form of supplemented street restaurants and "Hotels", providing food and night shelter.

Transportation plays an important role in the way linkages and relations evolve. Due to the close proximity of manufacturing processes and retail outlets, a variety of informal means of transport are formed. They range from manual carts, bicycle vans, 3-wheeled motorised vans to regular pickups. The industry of this support service maintains its operation. The maintenance of these itself represent a significant informal work force.

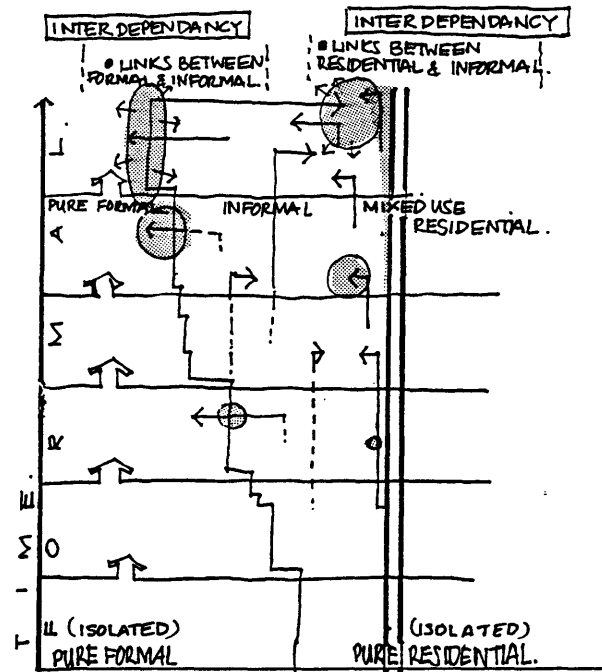
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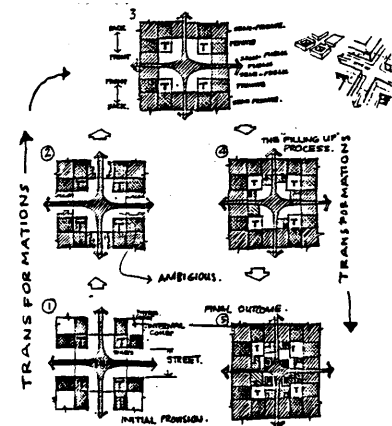
INTER RELATIONSHIPS  
DEVELOPING BETWEEN  
CONSTRUCTION &  
NON CONSTRUCTION  
SECTORS.



DEVELOPMENT OF LINKAGES



TRANSFORMATIONS TERRITORIES BEING REDEFINED, AMBIGUOUS APPROPRIATED TO PRODUCTIVE USES



## THE CEMENT CRISIS.

This incident provides an important insight into the unintentional impacts of government policy of material supply on construction markets.

During the late seventies and early eighties, the government, to cope with the shortage of cement, decided to restrict its sales only by the use of ration cards. The policy was aimed to restrain excessive consumption by the rich. The impact was however more wide spread -- a slack in the rate of construction due to the limited supply of one of its basic materials.

The policies had devastating direct and indirect impacts on the informal construction markets. They were: 1) Lack of cement availability at informal retail outlets. Most of the urban poor not having access to ration cards are excluded from the formal markets. Their only option being informal outlets. Those who do have ration cards are faced with tough competition from the upper income group, who in times of scarcity obtain materials through "contacts".

2) Contractors working at a small scale

are "pushed out", since most of the construction jobs at that time were large governmental projects by government approved contractors.

3) Growth of black markets and wide spread adulteration of existing stocks.

4) A slump in the upgrading and maintenance activities of informal housing environments.

5) Unemployment of unskilled building labour force. Delhi having one of the largest construction industries in the country has almost 1/3-1/2 of its informal sector employed in the construction industry. About 1/4-1/3 of this labour force is comprised of women. (Unskilled labour to crush stones and carry bricks.)

6) In addition secondary manufacturing activities interdependent with formal and informal sector were also seriously affected. This sector employs another large segment of the informal workforce.

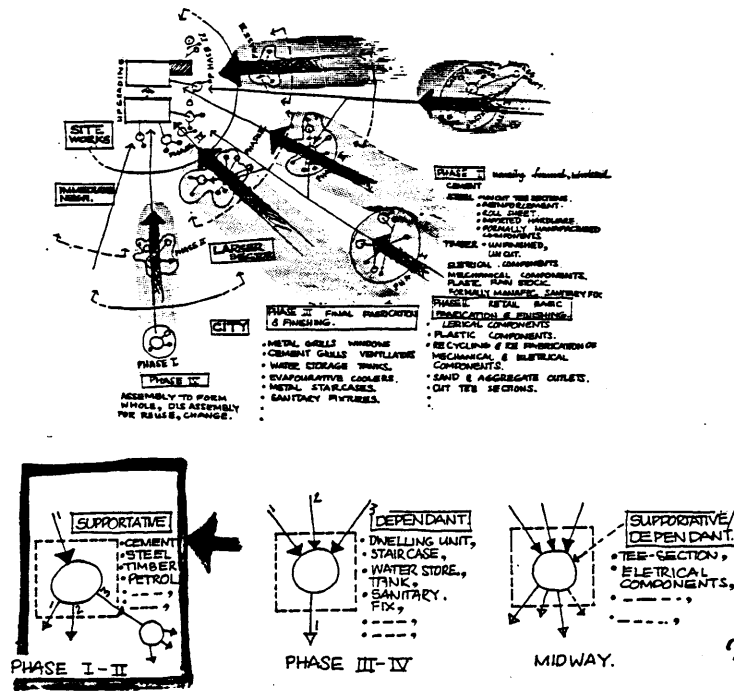
Another serious disruption was more of an institutional nature. Due to the overall blackout - it severely disrupted the important process of interdependence



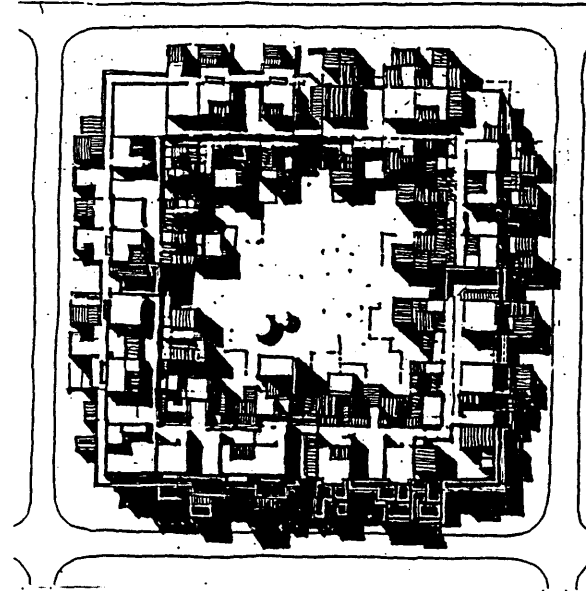
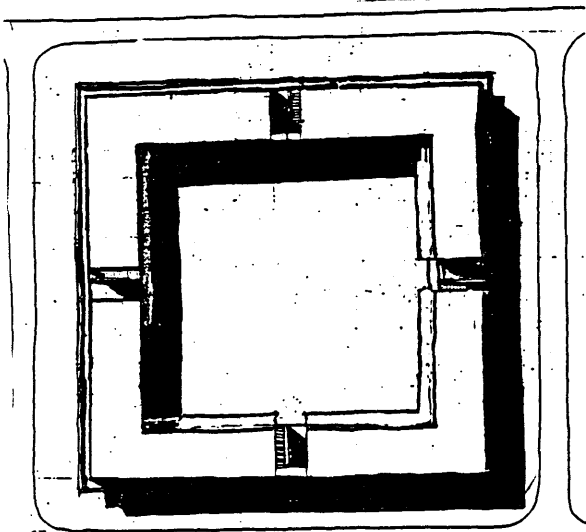


between one informal activity and another. In a time of fluctuating market conditions people switch jobs due to the easy access and exit possibilities. This usually happens within the same type of work and skills (a person fabricating metal grills would shift to sheet metal water tanks). Thus in a blanket approach,

the flexibility with which informal markets operate is reduced thus reducing the alternative options and therefore a complete breakdown of market functioning. When a supply of a basic material is drastically reduced it creates an overall black out and therefore disrupts this flexibility that would ease employment situations in changing market conditions.







MAINTENANCE						
SOURCES RESPONSABILITIES	SUPER STRUCTURE		SUB-COMPONENTS		SERVICES	
	WALLS	FOUND	ROOF	INT. WALL	EXT. DEFINITIONS	WATER   SEWAGE   ELECT.
<u>FORMAL</u> LOCAL M.C. FORMALLY HIRED CONTRAC.						
<u>IN-FORMAL</u> NEIGH. ASSOCIAT. LOCAL MKT (INFORMAL CONTRACT)						
<u>SELF GENERATED</u> MKT SELF MAINT.						
<ul style="list-style-type: none"> <li>• BULK &amp; INCREMENTAL</li> <li>• DEFINITION OF TERRITORIES</li> <li>• CONTINUITY</li> <li>• SKILLS &amp; RESOURCES REQ.</li> <li>• DEPENDABILITY (ON LARGER SYSTEM)</li> </ul>						
STANDARDS & PERFORMANCE						
RESPONSABILITIES	SUPER STRUCTURE		SUB-COMPONENTS		SERVICES	
	WALLS	FOUND	ROOF	EXTENS. INT. WALL	EXT. DEFINITIONS	WATER   SERVICES   ELECT.
<u>FORMAL</u> • CENTRAL GOVT. • LOCAL GOVT • CONSULT.						
<u>INFORMAL</u> • MARKET SKILLS & RESOURCES.						
<u>SELF GENERATED</u> • COMMUNITY CONVENTION / PRESURE. • SELF PRIORITIES						
<u>CONDITIONS</u>	<ul style="list-style-type: none"> <li>• SECURITY OF TENURE</li> <li>• ACCESS TO MATERIALS</li> <li>• DEPENDABILITY BETWEEN COMPONENTS (QUALITY OF ROAD IN &amp; OUT SERVICES)</li> <li>• MAINTENANCE</li> <li>• INITIAL INVESTMENT</li> <li>• COST</li> <li>• CONVENTIONS</li> <li>• BULK &amp; INCREMENTS</li> </ul>					

MATERIALS OBTAINED FROM.

RESPONSIBILITIES	SUPER STRUCTURE			SUB-COMPONENTS			SERVICES		
	WALLS	FOUND.	ROOF	EXTENS.	IN-FILL MODIFIC.	EXT DEFINITIONS	WATER	SEWAGE	ELECT.
<b>FORMAL</b> GOVT DEPT. OPEN MKT.									
<b>INFORMAL</b> LARGER SECT MM. NEIGH.									
<b>SELF GENERATED</b> REUSED COLLECTED.									
CONDITIONS. CRITERIA.	• ACCESSIBILITY • ELIGIBILITY • SCALE OF OPERATION • SUBSTITUTION • RELIABILITY • QUALITY v/s COST.								

FINANCE GENERATION.

SOURCES & RESPONSIBILITIES	SUPER STRUCTURE			SUB-COMPONENTS			SERVICES		
	WALLS	FOUND.	ROOF	EXTENS.	IN-FILL MODIFIC.	EXT DEFINITIONS	WATER	SEWAGE	ELECT.
<b>FORMAL</b> BANKS GOVT LOANS SAVING SCH.									
<b>IN-FORMAL</b> MONEY LENDER CREDIT FROM MKT (SUPERV. MGMT)									
<b>SELF GENERATED</b> SAVINGS NEGOTIATION									
CONDITIONS &	• LEGALITY • SECURITY OF TENURE • CO-LATRAL • FLEXIBILITY • RATE OF INTERESTS. • TERMS OF NEGOTIATION • INCREASMENTS • ADEQUACY & LOW LIABILITIES PROBLEMS.								

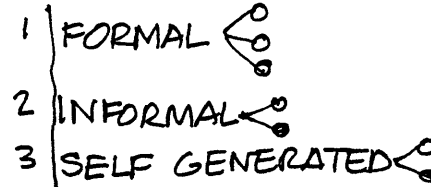
CONSTRUCTION BY

SOURCES & RESPONSIBILITIES	SUPER STRUCTURE			SUB-COMPONENTS			SERVICES		
	WALLS	FOUND	ROOF	EXTENS.	IN-FILL MODIFIC.	EXT DEFINITIONS	WATER	SEWAGE	ELECTRI.
<b>FORMAL</b> LOCAL GOVT GOVT REGRS CONTRA									
<b>INFORMAL</b> MKT + PERSONAL SUPERV MKT + PER. SUPERV + INFORMAL CONSULT									
<b>SELF HELP</b> PART LABO. SELF BUILD.									
CONDITIONS.	• SCALE OF CONSTRUCTIONS. • OPPORTUNITY COSTS • CO-ORDINATION (DEPENDENCY) • ACCESS TO MATERIALS. • FLEXIBILITY-SUBSTITUTION. • SKILLS & RESOURCES. • PRIORITIES → STANDARDS PERFORMANCE.								

FORMAT OF EVALUATION

- MATERIALS OBTAINED FROM
- FINANCE GENERATION
- CONSTRUCTION BY
- MAINTAINENCE.
- STANDARDS & PERFORMANCE.

AGAINST



TO COMPARE

BETWEEN **STAGE 0-1**

& **STAGE 5.**

STAGE 0-1.

CONSTRUCTION BY			
SOURCES & RESPONSIBILITIES	SUPER STRUCTURES	BASE COMPONENTS	SERVICES
	WALLS   FOUND   ROOF   EXTENS   MODIF   INFRA   ELEC	WATER   SEWAGE   ELECT	
FORMAL	LOCAL GOVT		
INFORMAL	BOAT REPAIR CONTRA		
	MKT + PERSONAL OWN		
	MKT + PER SUPPLY + INFORMAL CONTR		
	SELF HELP		
	DIY LAB		
	SELF BUILT		
CONDITIONS	SCALE OF CONSTRUCTIONS • OPPORTUNITY COSTS CO-ORDINATION (DEPENDENCY) • ACCESS TO MATERIALS RELIABILITY • SUBSTITUTION • SKILLS & RESOURCES PRIORITIES • TIMING		

MATERIALS OBTAINED FROM			
RESPONSIBILITIES	SUPER STRUCTURES	BASE COMPONENTS	SERVICES
	WALLS   FOUND   ROOF   EXTENS   MODIF   INFRA   ELEC	WATER   SEWAGE   ELECT	
FORMAL	BOAT REPAIR		
INFORMAL	DIY LAB		
	LABOR SKILL		
	DIY LAB		
	LABOR SKILL		
	DIY LAB		
	LABOR SKILL		
	DIY LAB		
CONDITIONS	ACCESSIBILITY • ELIGIBILITY • SCALE OF OPERATION SUBSTITUTION • RELIABILITY • QUALITY VS COST		

STANDARDS & PERFORMANCE			
RESPONSIBILITIES	SUPER STRUCTURES	BASE COMPONENTS	SERVICES
	WALLS   FOUND   ROOF   EXTENS   MODIF   INFRA   ELEC	WATER   SEWAGE   ELECT	
FORMAL	GENERAL GOVT		
	LOCAL GOVT		
	CONSULT		
INFORMAL	MARKET SKILLS		
	RESOURCES		
	MARKET SKILLS		
	RESOURCES		
	MARKET SKILLS		
	RESOURCES		
CONDITIONS	SECURITY OF INVESTMENT • INITIAL INVESTMENT • COST TENURE • ACCESS TO MATERIALS • CONVENTIONS • BULK & INCREMENTS DEPENDABILITY BETWEEN COMPONENTS (INFORMAL)		

FINANCE GENERATION			
SOURCES & RESPONSIBILITIES	SUPER STRUCTURES	BASE COMPONENTS	SERVICES
	WALLS   FOUND   ROOF   EXTENS   MODIF   INFRA   ELEC	WATER   SEWAGE   ELECT	
FORMAL	BANKS		
	GOVT LOANS		
	SAVING SCH		
INFORMAL	MONEY LENDER		
	CREDIT FROM MKT		
	SAVING SCH		
	MONEY LENDER		
	CREDIT FROM MKT		
	SAVING SCH		
	MONEY LENDER		
	CREDIT FROM MKT		
	SAVING SCH		
CONDITIONS	LEGALITY • SECURITY OF TENURE • TERMS OF NEGOTIATION COLLATERAL • FLEXIBILITY • RATE OF INTEREST • AGREEMENTS		

CONSTRUCTION

MATERIALS OBTAINED

STANDARD

FINANCE

STAGE 5

CONSTRUCTION BY			
SOURCES & RESPONSIBILITIES	SUPER STRUCTURES	BASE COMPONENTS	SERVICES
	WALLS   FOUND   ROOF   EXTENS   MODIF   INFRA   ELEC	WATER   SEWAGE   ELECT	
FORMAL	LOCAL GOVT		
INFORMAL	BOAT REPAIR CONTRA		
	MKT + PERSONAL OWN		
	MKT + PER SUPPLY + INFORMAL CONTR		
	SELF HELP		
	DIY LAB		
	SELF BUILT		
CONDITIONS	SCALE OF CONSTRUCTIONS • OPPORTUNITY COSTS CO-ORDINATION (DEPENDENCY) • ACCESS TO MATERIALS RELIABILITY • SUBSTITUTION • SKILLS & RESOURCES PRIORITIES • TIMING		

MATERIALS OBTAINED FROM			
RESPONSIBILITIES	SUPER STRUCTURES	BASE COMPONENTS	SERVICES
	WALLS   FOUND   ROOF   EXTENS   MODIF   INFRA   ELEC	WATER   SEWAGE   ELECT	
FORMAL	BOAT REPAIR		
INFORMAL	DIY LAB		
	LABOR SKILL		
	DIY LAB		
	LABOR SKILL		
	DIY LAB		
	LABOR SKILL		
	DIY LAB		
CONDITIONS	ACCESSIBILITY • ELIGIBILITY • SCALE OF OPERATION SUBSTITUTION • RELIABILITY • QUALITY VS COST		

STANDARDS & PERFORMANCE			
RESPONSIBILITIES	SUPER STRUCTURES	BASE COMPONENTS	SERVICES
	WALLS   FOUND   ROOF   EXTENS   MODIF   INFRA   ELEC	WATER   SEWAGE   ELECT	
FORMAL	GENERAL GOVT		
	LOCAL GOVT		
	CONSULT		
INFORMAL	MARKET SKILLS		
	RESOURCES		
	MARKET SKILLS		
	RESOURCES		
	MARKET SKILLS		
	RESOURCES		
CONDITIONS	SECURITY OF INVESTMENT • INITIAL INVESTMENT • COST TENURE • ACCESS TO MATERIALS • CONVENTIONS • BULK & INCREMENTS DEPENDABILITY BETWEEN COMPONENTS (INFORMAL)		

FINANCE GENERATION			
SOURCES & RESPONSIBILITIES	SUPER STRUCTURES	BASE COMPONENTS	SERVICES
	WALLS   FOUND   ROOF   EXTENS   MODIF   INFRA   ELEC	WATER   SEWAGE   ELECT	
FORMAL	BANKS		
	GOVT LOANS		
	SAVING SCH		
INFORMAL	MONEY LENDER		
	CREDIT FROM MKT		
	SAVING SCH		
	MONEY LENDER		
	CREDIT FROM MKT		
	SAVING SCH		
	MONEY LENDER		
	CREDIT FROM MKT		
	SAVING SCH		
CONDITIONS	LEGALITY • SECURITY OF TENURE • TERMS OF NEGOTIATION COLLATERAL • FLEXIBILITY • RATE OF INTEREST • AGREEMENTS		

MAINTENANCE			
SOURCES RESPONSALITIES:	INDEPENDENT	DEPENDENT	UNASSIGNED
	SMALL   FOUND   AREA   EXTENS	SMALL   FOUND   AREA   EXTENS	SMALL   FOUND   AREA   EXTENS
LOCAL M.C.	Diagonal lines	Diagonal lines	Diagonal lines
PROBABLY NEEDED CENTRAL	Diagonal lines	Diagonal lines	Diagonal lines
INDEPENDENT	Diagonal lines	Diagonal lines	Diagonal lines
AGENCY ASSOCIAT.	Diagonal lines	Diagonal lines	Diagonal lines
LOCAL MINT (CONTRACT)	Diagonal lines	Diagonal lines	Diagonal lines
SELF GOVERNMENT	Diagonal lines	Diagonal lines	Diagonal lines
MINT	Diagonal lines	Diagonal lines	Diagonal lines
SELF MAINT.	Diagonal lines	Diagonal lines	Diagonal lines
<ul style="list-style-type: none"> <li>BULK &amp; INCREMENTAL</li> <li>DEFINITION OF TERRITORIES</li> <li>CONTINUITY</li> <li>SKILLS &amp; RESOURCES REQ.</li> </ul>			DEPENDABILITY (OWN WEAPON SYSTEM)



MAINTENANCE			
SOURCES RESPONSALITIES:	INDEPENDENT	DEPENDENT	UNASSIGNED
	SMALL   FOUND   AREA   EXTENS	SMALL   FOUND   AREA   EXTENS	SMALL   FOUND   AREA   EXTENS
LOCAL M.C.	Diagonal lines	Diagonal lines	Diagonal lines
PROBABLY NEEDED CENTRAL	Diagonal lines	Diagonal lines	Diagonal lines
INDEPENDENT	Diagonal lines	Diagonal lines	Diagonal lines
AGENCY ASSOCIAT.	Diagonal lines	Diagonal lines	Diagonal lines
LOCAL MINT (CONTRACT)	Diagonal lines	Diagonal lines	Diagonal lines
SELF GOVERNMENT	Diagonal lines	Diagonal lines	Diagonal lines
MINT	Diagonal lines	Diagonal lines	Diagonal lines
SELF MAINT.	Diagonal lines	Diagonal lines	Diagonal lines
<ul style="list-style-type: none"> <li>BULK &amp; INCREMENTAL</li> <li>DEFINITION OF TERRITORIES</li> <li>CONTINUITY</li> <li>SKILLS &amp; RESOURCES REQ.</li> </ul>			DEPENDABILITY (OWN WEAPON SYSTEM)

STAGE 5.

MAINTENANCE



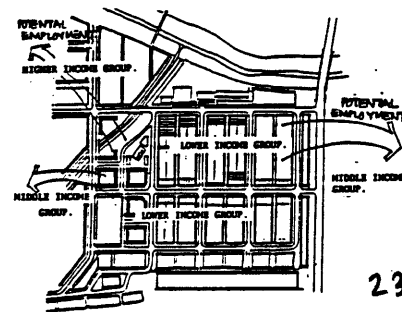
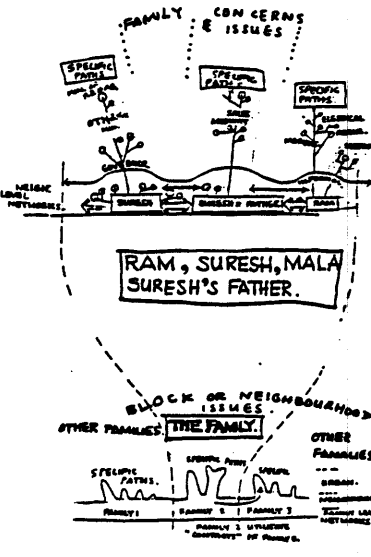
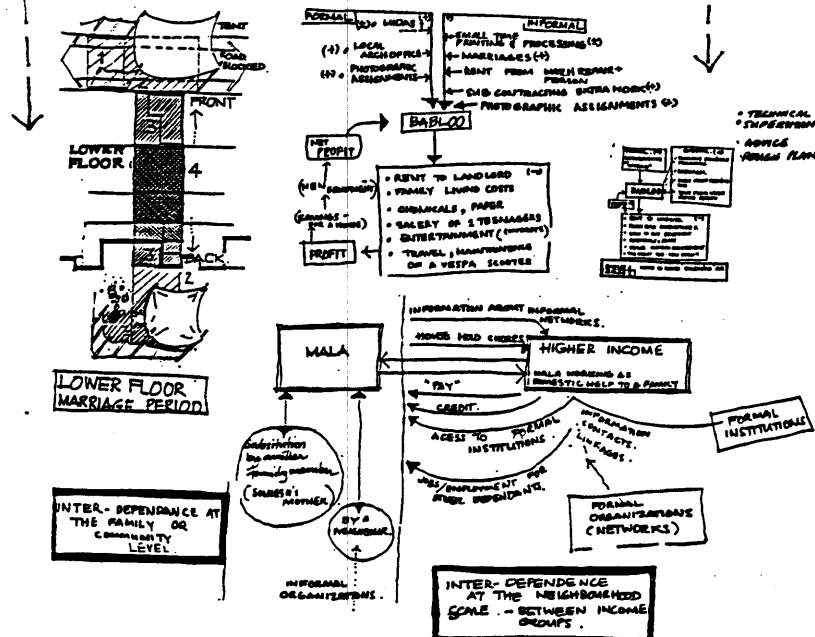


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MAPPING THE  
FIELD.

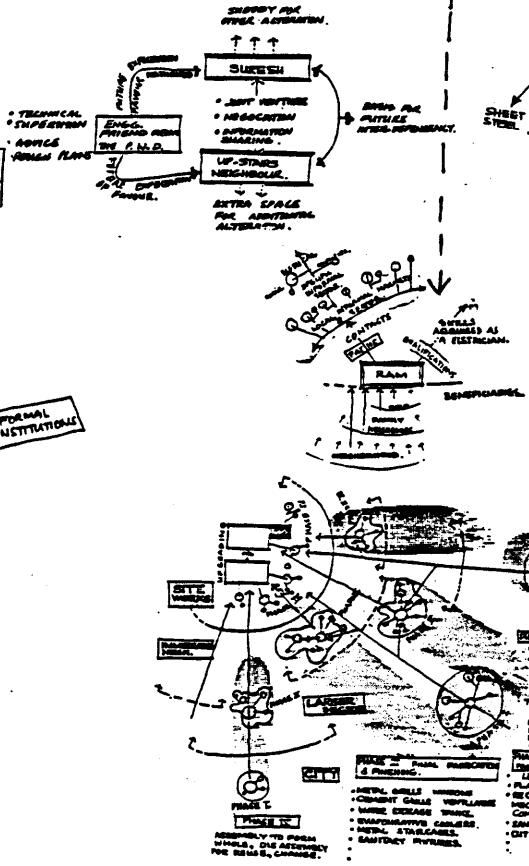


# SOCIO-ECONOMIC PROCESSES

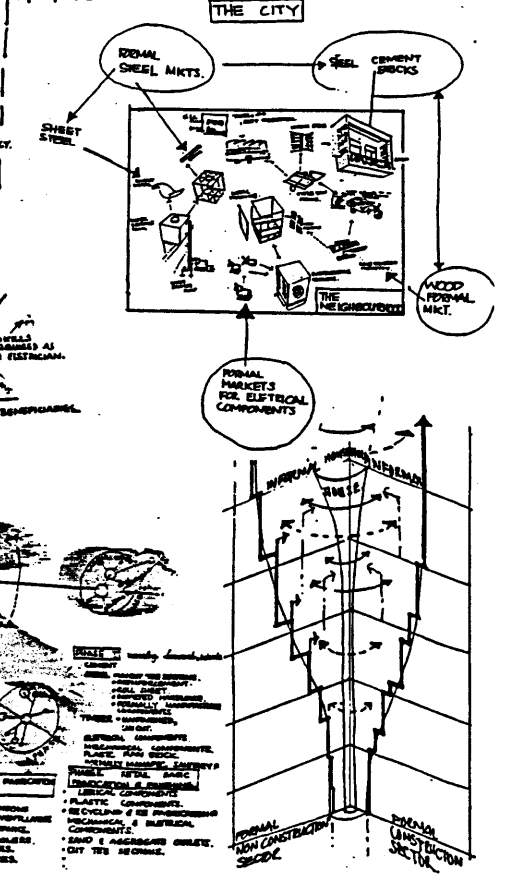


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# INFORMAL CONSTRUCTION PROCESSES



# INFORMAL NON-CONSTRUCTION PROCESSES



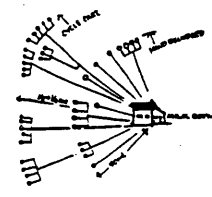
IMMEDIATE ASPECTS OF PHYSICAL STRUCTURE

1. CONTINUALLY LOCATED WITHIN THE NEIGHBOURHOOD, AT THE JOINTION OF A HIGHWAY AND SECONDARY ROAD AND A LOCAL MARKET AREA.

2. THE MARKET STOPS OCCURING TO THE LOCAL PLACE ALONG THE ROAD AND TO THE NEIGHBOURHOOD.

3. MALA SURESH LOCATED AT THE JOINTION OF THE LOCAL MARKET AND PUBLIC MARKET ALONG THE NEIGHBOURHOOD MARKET AREA OF GARDEN CENTRE.

4. AVAILABILITY OF SPACE TO GROW & GRASSY INFORMAL SETTLEMENT BY THE ROAD.





# OBSERVATIONS.

## RESIDENTIAL, UNIT LEVEL:

### PHYSICAL

- 1) CREATION OF SEMI-OPEN SPACES TOWARDS DEFINING SEMI-PRIVATE AND SEMI-PUBLIC TERRITORY.
- 2) APPROPRIATION OF AMBIGUOUS TERRITORY, TOWARDS DEFINITION OF OPEN, SEMI-OPEN AND BUILT SPACES.
- 3) ADDITIONS AND ALTERATIONS WITHIN DEFINED TERRITORY.
- 4) ADDITIONS AND ALTERATIONS WITHIN NEGOTIATED TERRITORY.
- 5) INCREMENTAL ADDITIONS TO IMPROVE:
  - A. EFFICIENCY - STRUCTURAL, LIGHT, VENTILATION STANDARDS
  - B. IMAGE-PAINTING, DECORATIVE GRILL-WORK, FENESTRATION.
- 6) APPROPRIATION OF AMBIGUOUS TERRITORY WITHIN TOILET BLOCK.
- 7) REUSEABILITY, RESALEABILITY OF CONSTRUCTION MATERIALS AS IMPORTANT CRITERIA IN THE PROCESS OF UPGRADING.
- 8) PHYSICAL DIMENSIONS - HEIGHT, WIDTH, PLOT SIZE AS A DETERMINANT OF OPTIONS OF TRANSFORMATION. OPTIONS INCREASED VIA THE PROCESS OF NEGOTIATION.

### SOCIAL

- 1) EVOLUTION OF MULTIFUNCTIONAL SPACES TO ACCOMODATE ADDITIONAL MEMBERS, SOCIAL RESPONSIBILITIES.
- 2) DEFINITION OF A "FRONT" AND A "BACK" TO DEFINE SEMI-PUBLIC, SEMI-PRIVATE, PUBLIC AND PRIVATE ZONES WITHIN THE DWELLING UNIT.
- 3) TEMPORAL APPROPRIATIONS OF PUBLIC SPACE.
- 4) TEMPORAL SHIFTS IN USAGE - SHIFTING IN LOCATION BUT MAINTAINING THE EXISTING HIERACHY OF SPACES.
- 5) EVOLUTION OF NEGOTIATION PROCESSES TO HELP SET UP INFORMAL COMMUNITY NETWORKS, BASIS FOR BLOCK SCALE COMMUNITY ORGANIZATION.
- 6) SECURITY OF TENURE AS A DETERMINANT FOR SOCIAL LINKAGES TO DEVELOP (SOCIAL LINKAGES LINKED PHYSICAL AND ECONOMIC INTERDEPENDENCE).



## ECONOMIC

- 1) EVOLUTION OF MULTIFUNCTIONAL SPACES TO ACCOMMODATE EXTRA EARNING MEMBERS - MONETARY AND NON-MONETARY BENEFITS (CONTACTS).
- 2) EVOLUTION OF COMMERCIAL/FABRICATION ACTIVITIES TO HELP HOUSEHOLD ECONOMIES.
- 3) EVOLUTION OF BARSATIES (ROOFTOP RENTAL UNITS) AND "EXTRA ROOMS" ON RENT - CATERING TO PERSONS OF VARIOUS INCOME GROUPS AND CIRCUMSTANCES.
- 4) RENTAL POSSIBILITIES AS AN INCENTIVE TO IMPROVE STANDARDS OF CONSTRUCTION.
- 5) SECURITY OF TENURE AS A BASIS FOR INVESTMENT.

## NEIGHBOURHOOD LEVEL AND CITY LEVEL

### PHYSICAL

- 1) DEFINITION OF AMBIGUOUS "PUBLIC TERRITORY TO PRIVATE CONTROL TO EFFECT MAINTENANCE AND UPGRADING POSSIBILITIES - STREET EDGE, STREET JUNCTIONS, INTERNAL COMMON COURTYARDS.
- 2) EVOLUTION OF TEMPORAL STRUCTURES TO PROVIDE FLEXIBILITY OF USE, TEMPORAL DEFINITIONS OF TERRITORY AND EFFECT SOCIO ECONOMIC EQUITY.
- 3) EVOLUTION OF MIXED USE CHARACTERISTICS OF A PREVIOUSLY RESIDENTIAL NEIGHBOURHOOD; REDEFINITION OF PUBLIC TERRITORIES AND EMERGENCE OF SEMI-OPEN STRUCTURES SUPPORTING SUCH ACTIVITIES. IMPACTS ON SERVICES AND INFRASTRUCTURE.
- 4) OVERALL DENSIFICATION OF EXISTING STOCK IMPACTS ON SERVICES AND INFRASTRUCTURE.





## SOCIAL

- 1) LINKS ESTABLISHED BETWEEN FAMILY MEMBERS IN THE CITY (BLOCK) AND LESS URBANIZED AREAS. FAMILY ACTS AS A TEMPORARY/PERMANENT SUPPORT. REDEFINITION OF THE TRADITIONAL EXTENDED OR JOINT FAMILY. EVOLUTION OF NETWORKS FOR THE POOR TO "GET INTO THE SYSTEM".
- 2) EVOLUTION OF LINKAGES BETWEEN FAMILIES OF THE HIGHER INCOME GROUP TO EFFECT. INTERDEPENDANCY AND IMPLICIT SOCIAL RESPONSIBILITY.
- 3) EVOLUTION OF "SOCIAL INSTITUTIONS" - DAY CARE CENTERS, NURSERY AND PRIMARY SCHOOLS, CLINICS.
- 4) EVOLUTION OF INFORMAL LINKAGES AND NETWORKS AS A BASIS OF GRASS ROOT COMMUNITY ORGANIZATIONS.
- 5) EVOLUTION OF SOCIAL SERVICES CATERING TO THE UPPER INCOME GROUPS WITH MONETARY AND NONMONETARY BENEFITS TO THE POOR.
- 6) EVOLUTION OF TEMPORAL STRUCTURES ON AMBIGUOUS TERRITORIES - SUPPORT FOR THE VERY POOR IN LOCATIONS CRUCIAL FOR THEIR SURVIVAL - PHYSICAL STRUCTURING TO EFFECT SOCIAL EQUITY.

## ECONOMIC

- 1) EVOLUTION OF INFORMAL CONSTRUCTION AND NON-CONSTRUCTION MARKETS PROVIDING SKILLS AND RESOURCES FOR SITE SPECIFIC CONDITIONS AND PRIORITIES.
- 2) INFORMAL MARKETS PROVIDING EMPLOYMENT AND OPPORTUNITIES FOR TRAINING AT VARIOUS LEVELS OF SKILLS AND PERSONS OF SOCIO ECONOMIC CIRCUMSTANCE.
- 3) LINKS STRENGTHENED BETWEEN INFORMAL CONSTRUCTION AND INFORMAL NON-CONSTRUCTION ACTIVITIES.
- 4) LINKS STRENGTHENED BETWEEN INFORMAL COMMERCIAL AND FABRICATION AND FORMAL COMMERCIAL AND FABRICATION MARKETS.
- 5) FINANCIAL INTERDEPENDENCE BETWEEN INCOME GROUPS. POSSIBILITY OF CROSS SUBSIDIZATION FOR COMMON "SERVICE" AND "SOCIAL" INSTITUTION - HEALTH, EDUCATION. POSSIBILITY OF SUPPORT, SPUR TO INFORMAL CONSTRUCTION MARKETS. IMPLICIT CROSS SUBSIDIZATION FOR THE POOR.
- 6) EVOLUTION OF TEMPORAL STRUCTURES PROVIDING OPPORTUNITIES FOR THE VERY POOR TO START SMALL SCALE ECONOMIC ACTIVITIES WITHIN THE PRIME COMMERCIAL ZONES, THUS ENCOURAGING EQUITY WITHIN THE BUILT AND UNBUILT FABRIC.
- 7) POSSIBILITY OF COST RECOVERY TO PAY FOR ADDITIONAL STRAIN ON INFRASTRUCTURE AND EXTERNALITIES THRU INCREASE IN LAND VALUE. COST RECOVERY ON A ONE TO ONE BASIS WITH PROCESS OF UPGRADING.



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