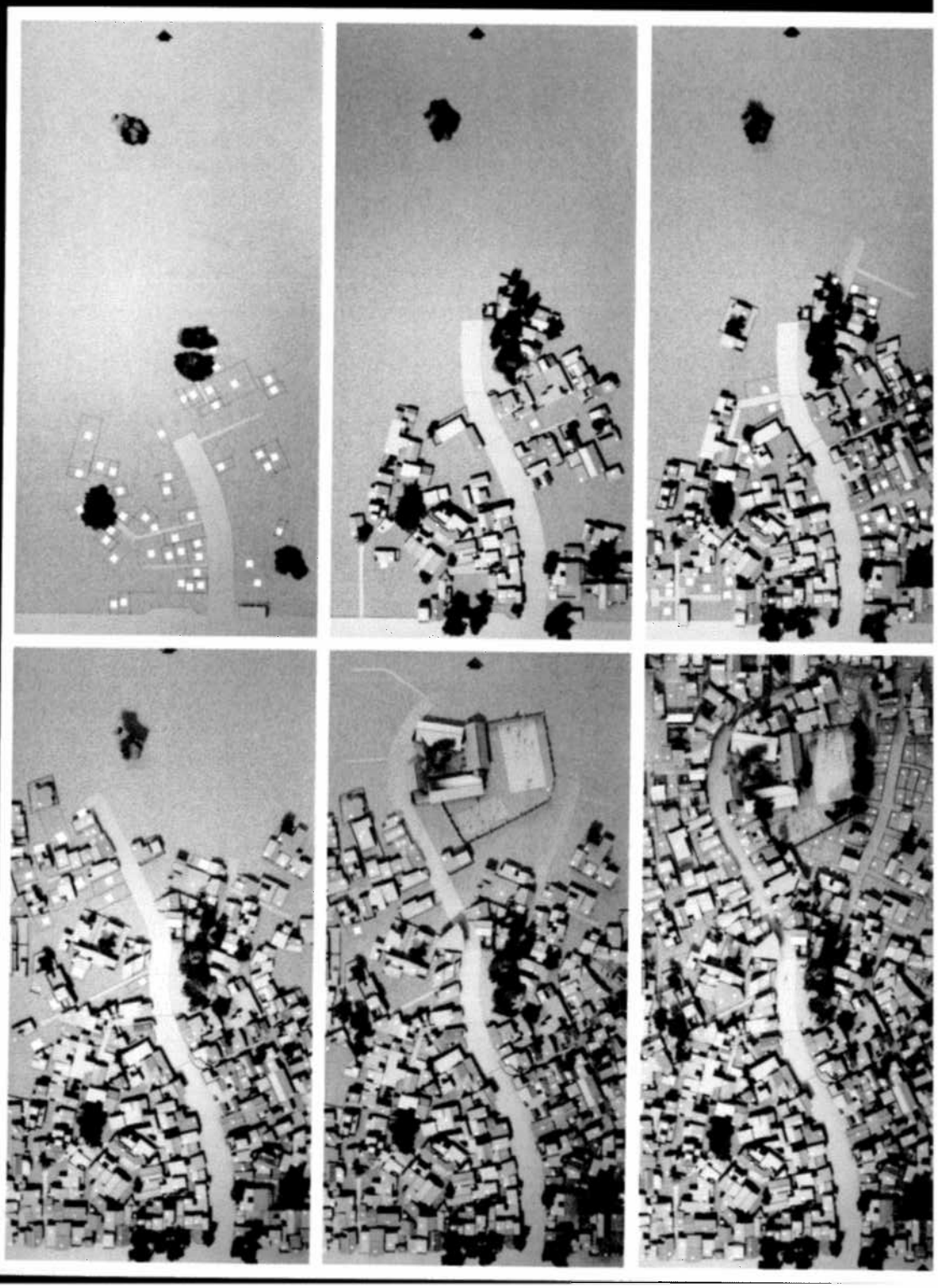
HOW THE OTHER HALF BUILDS



HOW THE OTHER HALF BUILDS

Volume 3:
The Self-Selection Process

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Contents

Foreword

This report forms the third volume of the continuing series of publications **"How the Other Half Builds"** based on the long-term research undertaken by McGill University's Minimum Cost Housing Group. The first volume, entitled *Space*, was an investigation of the activities that take place in public spaces adjacent to and around dwellings in unplanned settlements, and how such spaces are arranged to accommodate these activities. Volume two in the series, *Plots*, examined how and why plots in unplanned settlements acquire certain physical characteristics. A quantitative approach was taken to these questions using certain statistical techniques employed in the social sciences.

The study reported in the present volume departs slightly from the previous two. It is not directly concern with extending our understanding of the underlying order in unplanned settlements. Rather, it consists of an experiment in which the findings of the earlier studies were applied in a search for new design methods for the production of user responsive housing for the poor. The discussion is structured around a hypothetical approach we have called the **Self-Selection Process.** This was developed through a design/build simulation exercise undertaken by a group of graduate students in the Minimum Cost Housing Program. The new approach simulates the settlement process which might take place in an unplanned settlement. Where, however, sufficient control to integrate proper services in a cost effective manner, is mantained by the formal sector. The study points out inherent limitations of conventional design methods used in planning sites and services and other low-cost housing projects. It contributes to the argument for user-participation in settlement design by demonstrating an experimentally effective model for an optimal collaboration of formal and spontaneous agents in the housing process.

This work has been carried out under the auspices of the Minimum Cost Housing Graduate Program of the McGill School of Architecture. It forms one part of the project "Human Settlements Training, India," which is supported by the Special Program Branch of the Institutional Cooperation and Development Services Division of the Canadian International Development Agency, the Vastu-Shilpa Foundation and McGill University. We would Like to thank Dr. Donald Chan for his help in generating the random family profiles for the simulation, and my friend and colleague Prof. Witold Rybczynski for his suggestions at different stages of the project.

Vikram Bhatt

1. PROBLEMS ASSOCIATED WITH SITES AND SERVICES AND FORMAL HOUSING

BACKGROUND

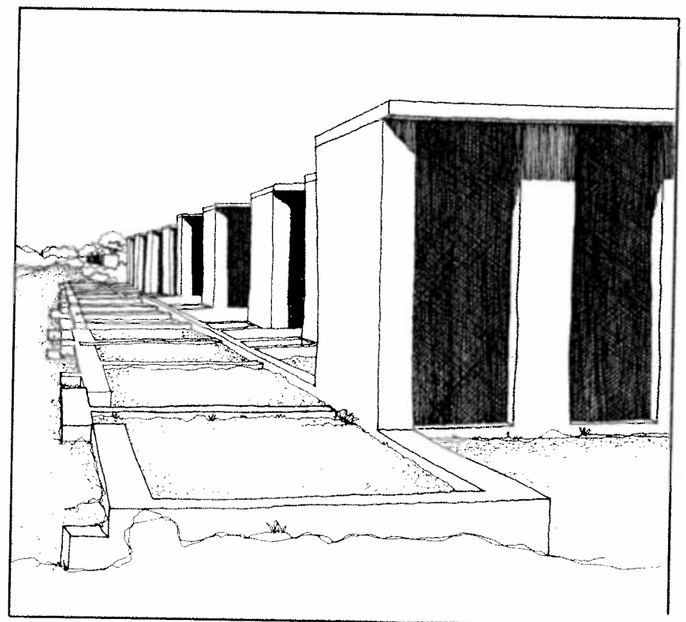
One popular approach to the provision of low-cost housing for the urban poor is the so-called "sites and services" strategy. This has been advocated by several international aid agencies such as the World Bank and the United Nations and adopted by many housing authorities in developing countries during the last decade and a half. In a typical sites and services project, the serviced land is provided by the housing authority while the actual house building is left to the home-owner. This change of role, from being a provider of housing to that of a facilitator that makes infrastructure and other related facilities available to users, represents a significant departure from the traditional attitude of housing agencies.

The success of the sites and services strategy can, in large part, be explained by its economic rationale. Most developing countries are poor and cannot subsidize housing on a large scale for their growing populations. Limited resources can be usefully distributed among a larger number of beneficiaries, however, if housing authorities refrain from building complete dwellings and commit public funds only to the provision of land and infrastructure. Typical sites and services schemes are formally subsidized packages of shelter and related services that range in complexity from simple "surveyed plots," to an intemediate level of "serviced sites," to an upper level of "core housing" complete with utilities and access to community-based services (Mayo and Gross, 1987). Depending upon the capacity of the beneficiary to pay for the housing, the authority can choose the level of servicing. This flexibility permits the formal sector to target its projects towards very low income groups.

ASSOCIATED PROBLEMS

Sites and services make housing available to the urban poor at a relatively low cost. However, there are several problems that are associated with this design approach. A survey of key sites and services projects in major cities of India (Bhatt, 1986) and several other studies of completed projects, have identified the following problems that are inherent in this design approach:

1) The bias of economics in planning typically discounts the social aspects of design. 2) Projects lack quality and variety of open spaces. 3) During project planning incorrent assumptions are made concerning family income and plot sizes. 4) Projects lack variety of plot sizes. 5) Projects do not provide multi-family plots. 6) They follow a blind plot allocation process. 7) Project planning and implementation takes a very long time.

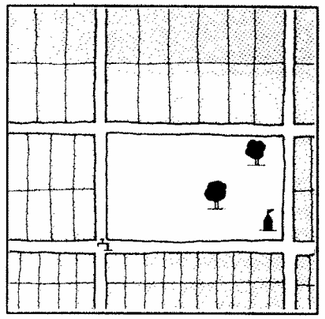


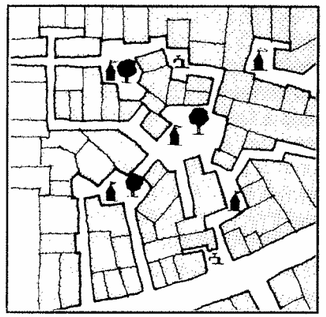
A typical sites and services project.

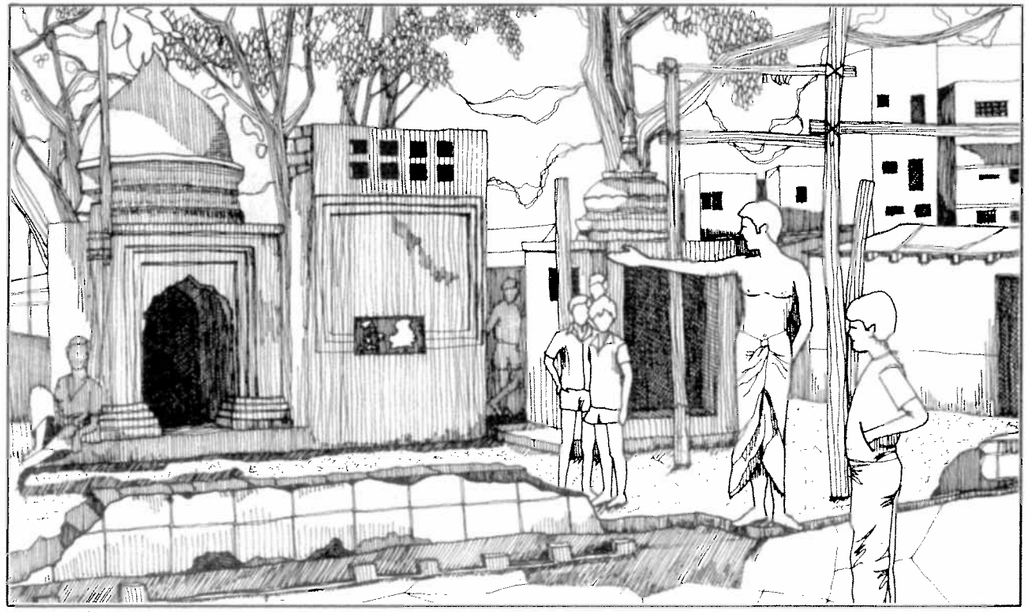
1) Poor consideration of cultural and social factors:

The design of sites and services projects is primarily based on economic factors and cultural and social factors are rarely taken into consideration. As a result, the current planning methods emphasize economic efficiency in site layout by optimising variables such as plot ratios and road widths, but have been less successful in responding to the cultural and social factors (Rybczynski et al., 1983). For example, in a study of a sites and services project in Ahmedabad, India, it was found that the typical pre-designed service core, built for each plot was altered by more than 90% of the occupants (Mellin, 1983).

Various aid agencies such as the World Bank and India's Housing and Urban Development Corporation have developed mathematical models for the analysis of alternatives for low income shelter (Bertaud 1986, Bertaud and Wright, 1981; Housing and Urban Development Corporation of India, 1982). These models can be run on a hand-held calculator or a micro computer. The intention behind these models is to alert planners to the economic advantages of rationalized layouts. But often they are used as an excuse for unimaginative planning and a means to achieve higher densities and cheaper ways of subdividing land. The result is a monotonous, mind-numbing grid and blocks of housing that are rubber-stamped, over and over again, without any social or cultural considerations. For any housing design approach to be successful it is essential that it goes beyond mere economic factors, considers social and cultural aspects, and responds to the lifestyle of the people who will live in it.





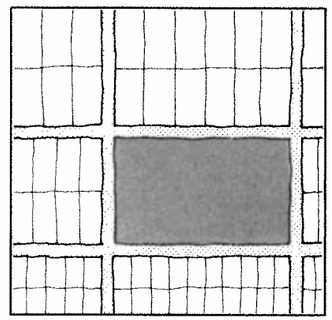


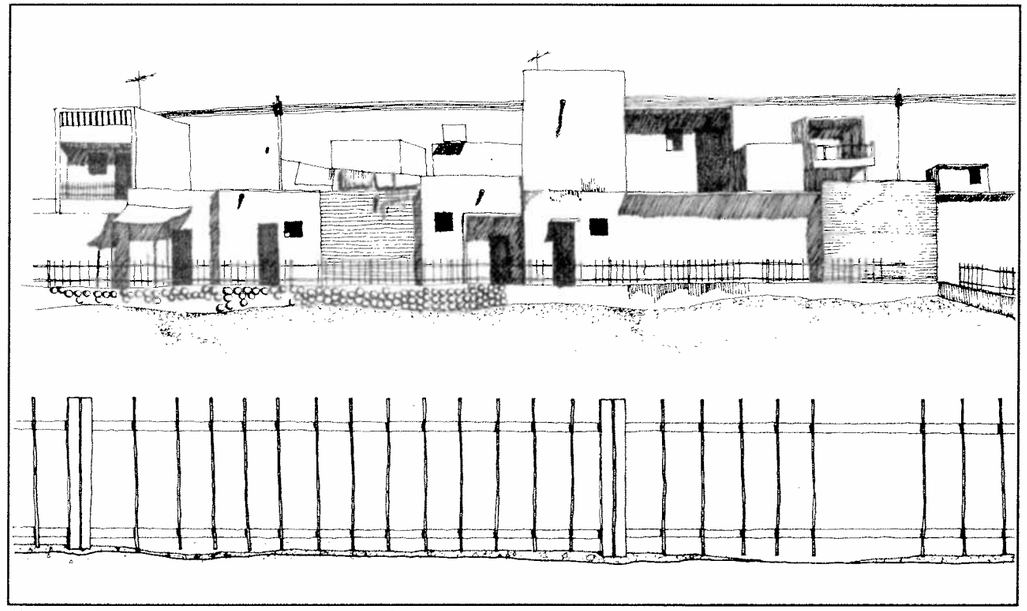
Informal Settlements: socio-culturally appropriate built environments.

2) Poor quality and variety of open spaces:

In most housing schemes the public open spaces lack diversity and richness. The quality of spaces provided is such that they often remain empty and unused; this is a waste of a valuable resource. On the other hand, studies of informal settlements in India have shown that the public open spaces in these settlements - while typically small in scale - are rich and diverse in spatial qualities, lively, full of activities, and well integrated with the housing (Rybczynski et al., 1984).

When designing a formal sites and services housing project the designer does not know who will be living where and what their common spatial needs will be. Therefore, a close relationship between individual homes and public spaces is impossible to achieve. For open spaces to be successful it is essential that they are conceived along with the housing and other surrounding amenities.





Sites and Services: spaces which are not well integrated remain empty and unused.

3) Incorrect assumptions concerning family income and plot sizes:

For the sake of efficiency and planning ease in sites and services projects the target population is divided into several income catagories. For example, the Government of India uses four income categories: Economically Weaker Sector (EWS), Low Income Group (LIG), Middle Income Group (MIG) and High Income Group (HIG).

EWS below Rs 700/month
plot size: 30-35 M2

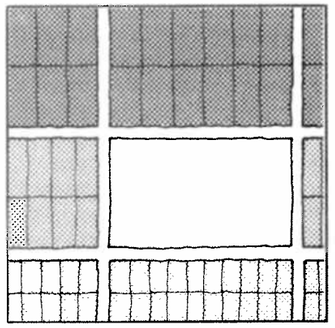
LIG Rs 700-500/month
plot size: 55 M2

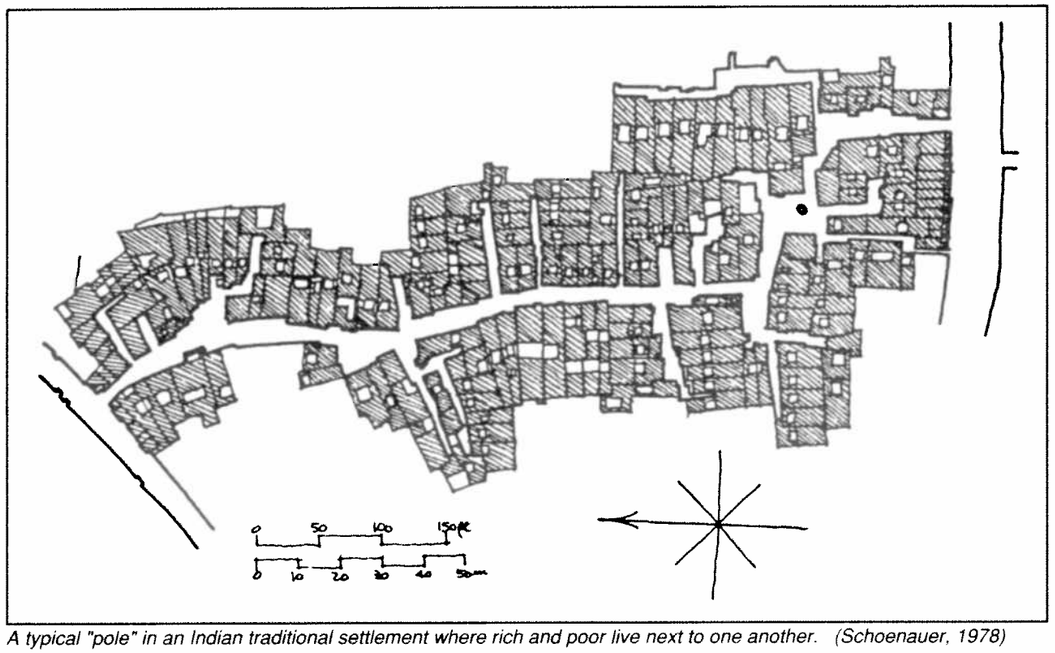
MIG Rs 1500-2500/month
plot size: 100-140 M2

HIG over Rs 2500/month
plot size: 325-475 M2

Based on these affordability criteria, it is assumed that higher income families need larger plots whereas lower income families smaller plots. However, studies of informal settlements have shown little correlation between family income and physical plot characteristics (Rybczynski et al., 1986).

In designing actual housing projects, in which it is necessary to accommodate several income groups the segregation of different income groups is taken a step further. Different income groups are seldom mixed. This separation of housing, based on income, is contrary to the settlement patterns observed in traditional housing (Schoenauer, 1978; Oliver, 1969). In informal settlements, regardless of their income level, families from the same clan or religious group live next to one another (Brook, 1988; Rybczynski et al., 1986).

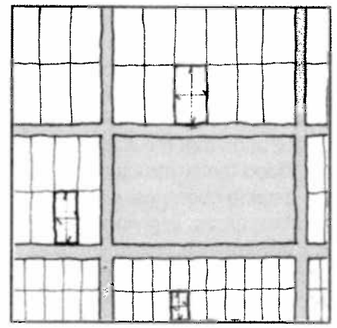


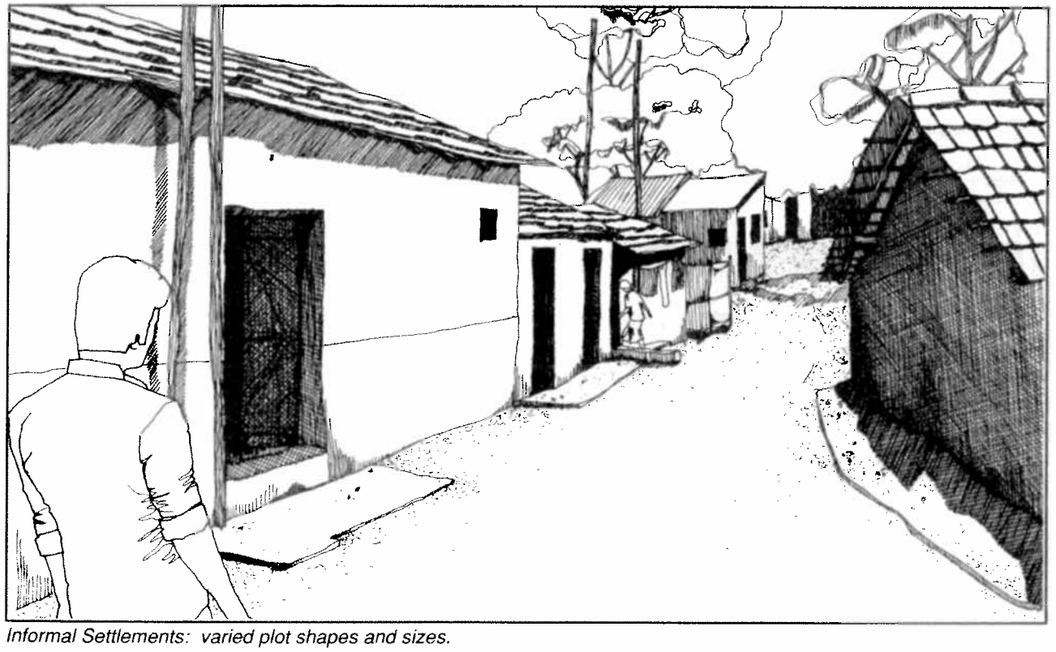


A typical "pole" in an Indian traditional settlement where rich and poor live next to one another. (Schoenauer, 1978)

4) Lack of variety of plot sizes:

When planning sites and services projects it is assumed that if two families earn the same amount of money their spatial requirements should be the same, thus plot sizes within each income category in typical sites and services projects are kept uniform. However, this supposition is wrong. The spatial needs of low income population are not uniform, but vary considerably from one family to another. These variations depend on several factors such as: the size and structure of the family; their occupation; if the family engages in some economic activity (work) at home or not; whether they maintain animals at home or not; and so on (Pandya, 1988). In a survey of informal settlements in Indore the average size of plots was found to be 32 M2 which is very close to the official government standard (30 to 35 M2) for the EWS category. But on a closer look it was also found that no one size of plot predominated; plots less than 20 M2 accounted for 25% of the total, plots 20-30 M2 and 30-40 M2 for 22% each, and plots over 40 M2 for 31% (Rybczynski et al., 1986). These figures are not absolute, but show that there exists a very large variety of plot sizes in informal settlements. To make sites and services projects more successful it is important to incorporate a wide variety of plot sizes within each income category .

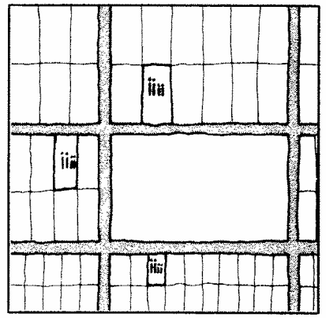


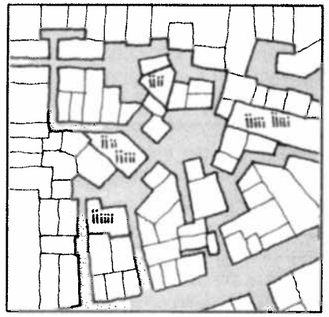


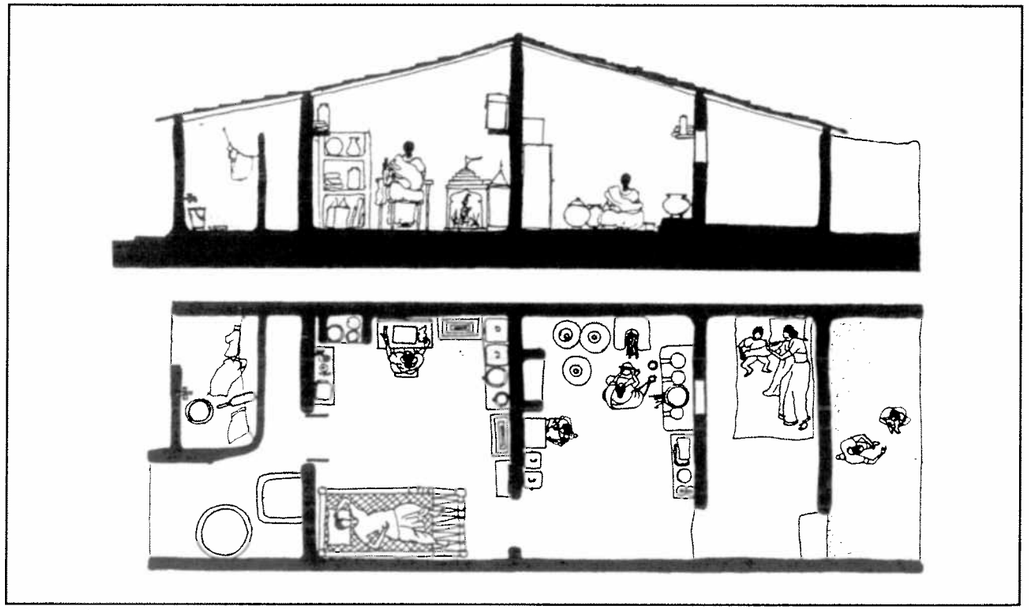
Informal Settlements: varied plot shapes and sizes.

5) The provision of multi-family plots:

Typical sites and services projects provide one plot for every family. If not merely for simplicity in planning, this is probably based on an assumption that the traditional extended family structure in developing countries, especially in urban areas, is giving way to nuclear families. However, a large percentage of plots in informal settlements contain more than one family. In a study of six informal settlements in Indore it was found that slightly more than half the population (51%) was living on multi-family plots (Rybczynski et al., 1986). The extended or multi-family organization is a good economic survival strategy that should be reckoned with in planning new housing projects. The family size, family type (nuclear or extended) and whether there are tenants, are important factors that distinguish single family plots from multi-family plots. The spatial requirements of a single family plot vary considerably from a multi-family plot. The shape and layout requirements of single vs. multi-family plots also differ considerably from one another. A nuclear family can organize its house plan in a narrow front plot, but in a multi-family situation it may be necessary to have a wide front plot or a plot with more than one side exposed to give separate access to different sub-units of the family (Pandya, 1988). For any low cost housing design to be successful it is essential to have both single- and multi-family plots.



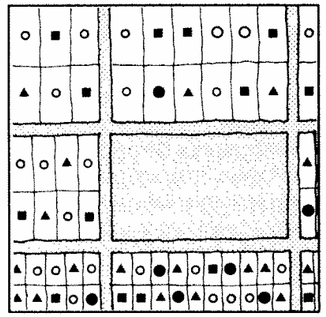


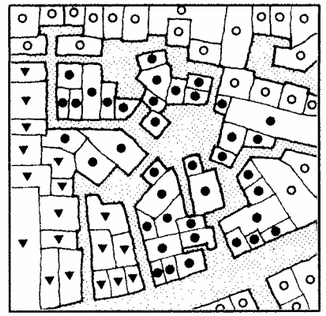


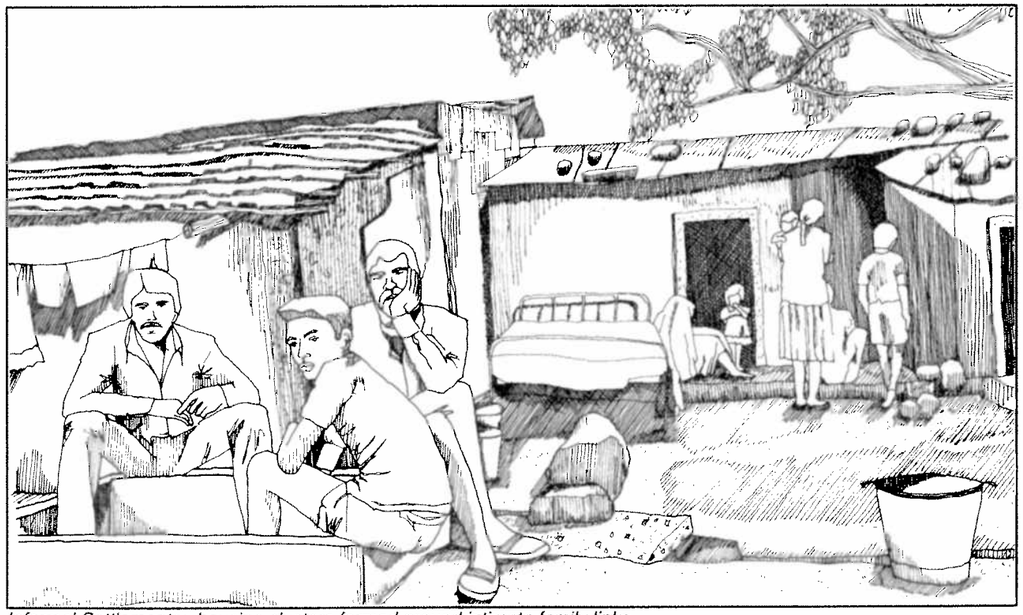
Informal Settlements: extended families as a survival economic strategy.

6) A blind process of plot allocation:

The allocation process in a sites and services project is controlled by the official authorities. Generally, there are more beneficiaries than the number of plots available, so plots are allocated using a random draw of names - a lottery. This "blind" allocation process does not allow users to select the location of their plot within the project, or to choose their neighbors. On the other hand, the traditional towns and new informal settlements are organized around linguistic, religious, economic and other family ties. Where the housing clusters are formed around the immediate family links, groups of housing clusters respond to the economic and religious links based on crafts and clan, and neighborhoods are formed according to the linguistic background of the community (Brook, 1988). For a housing project to be successful, it is essential to respond to the linguistic, religious and family ties of its occupants.







Informal Settlements: housing clusters formed around intimate family links.

7) Extended planning and implementation time:

Large urban development projects take a long time to complete. According to the U.S. Agency for International Development's Office of Housing and Urban Programs, which has been instrumental in helping many developing countries formulate their national housing programs, large "area development" projects usually require three to four years to complete (PADCO, 1984). The Aranya project in Indore, designed by the Vastu-Shilpa Foundation, took five years to complete. This is a long time span. Considering the scale and urgency of the urban housing problems in the developing countries, time is one luxury which they can ill-afford. If the urban migrants and poor communities have to wait for five years to get a plot, they are bound to end up in informal settlements. The shelter problems of the urban poor are so urgent that every effort should be made to develop new approaches that can save time at every stage of the housing delivery system, from planning and design to production and delivery of houses. After all, the time saved can always be used to produce more housing.

TOWARDS A NEW APPROACH

The problems associated with sites and services range from the lack of culturally appropriate housing, to the creation of impersonal urban environments, to wrong assumptions about the clients' needs, and so on. The same problems are common in most public housing projects. These problems are not technical, but more fundamental in nature, and are closely associated with the way sites and services or formal housing projects are conceived and implemented.

The framework of ideas behind sites and services and other formally planned low-cost housing schemes as presently implemented does not take into account the actual user. Conventionally-planned projects are developed in a few definite stages by a planner or an architect, and the involvement of the project participants in the decision-making process is kept to a minimum. In a typical sites and services project, the level of user participation is greater but limited to the construction of individual houses. The project participants are still excluded from the crucial planning and design stages of the project, and thus, from the actual process of development.

To address the problems associated with conventionally-planned projects, a new design approach, radically different from the formal production of housing, is proposed. It is called the "self-selection" design process, a term borrowed from economics. The ideas behind the "self-selection" design approach are discussed in the next chapter.

2. SELF-SELECTION DESIGN PROCESS: A NEW DESIGN METHOD

THE IDEA

The framework of ideas behind the typical low-cost housing scheme does not take into account the user. On the other hand, the characteristics inherent in the development process in informal settlements permit the user to be involved in the design process at various levels in creating their environment. It is no wonder that informal settlements (i.e. slums) have proved to be better housing environments than planned housing projects in terms of satisfying user-needs.

A design method that can recreate the order, spatial standards and physical characteristics of unplanned settlements, and follow their development dynamics should produce a better urban environment. It is proposed that the development process of a traditional or unplanned urban settlement should be adopted, but in such a way that it would also overcome the problems of poor and inadequate infrastructure which are associated with unplanned settlements.

THE PRINCIPLES

Two principles inherent in the planning process of informal settlements are **autonomous growth** and **continuous development**. The increased use of these two concepts in planning new housing could produce a better living environment.

Autonomous growth: The idea behind autonomous growth suggests that the user should be involved in the housing process at every level of design. For a built environment to be socio-culturally appropriate it should have, as a primary element, the contribution of its future residents. To achieve this, user participation in the decision-making process should be increased from the "micro level" of individual homes to the "macro level" of the settlement. Conversely, the duties of the design team should be decreased to the level of a general regulator of the settlement.

To achieve a greater degree of user input in the housing process, changes are required in the conventional design practice. For example, conventionally-planned settlements rely on 'blind' methods for the allocation of plots, but the new approach will require an open ended plot-allocation system. Thus, project participants are given the freedom to choose (self-select), not only how they want to live, but also where they want to live, and by whom they are to be surrounded.

Continuous development: Conventional modern housing schemes are developed in a single or a few definite stages. Continuous development, on the contrary, assumes the development to take place in an unbroken cycle of events. This prevents the settlement from adopting an artificial or mechanical character. The organic nature of the urban fabric, representative of the traditional cities and unplanned settlements, can be attributed to such an autonomous and piece-meal growth process.

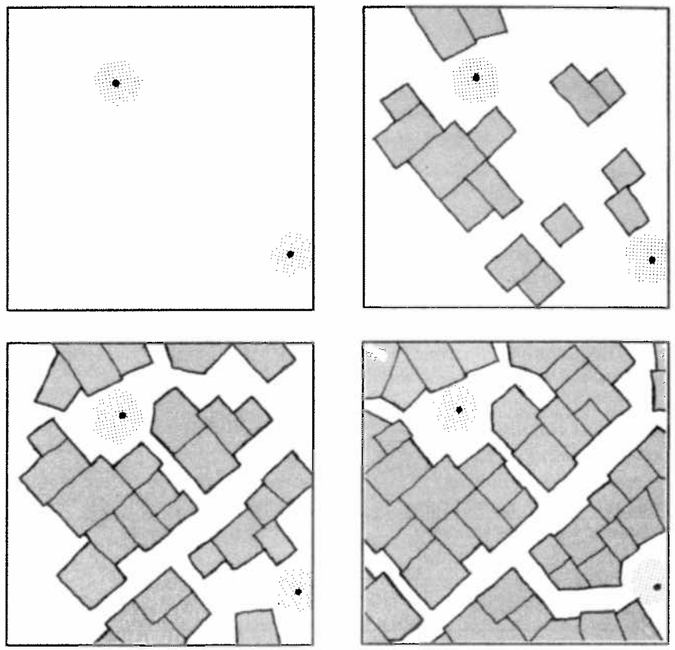
The attempt at integrating autonomous growth and continuous development processes in low-cost housing schemes is not new. The two key components of the sites and services strategy, the self-help element which is similar to the autonomous growth and the idea of progressive development, are effectively used in the construction of individual homes (probably the most successful aspect of sites and services projects). Instead of limiting the idea of autonomous growth and continuous development to the "micro" level, or individual homes, it is proposed to apply them at the "macro" neighborhood, or settlement level.

STRATEGIC CONSIDERATIONS

For the new design approach to increase the user input, the following development strategies are proposed: no pre-conceived development plan; progressive provision of major infrastructure; self-selection of plots; and a free choice in the selection of different plot sizes and shapes. The development strategies are such that they complement each other and will sustain the new approach.

No pre-conceived plan:

There should be no pre-conceived plan to regulate the development and support the self-selection process. The location of streets, open areas and plots should take place in response to the requirements and aspirations of the project participants, to produce a culturally responsive environment. However, the creation of a set of rules is necessary to help the implementing team lead and ensure the development of a non-chaotic settlement.

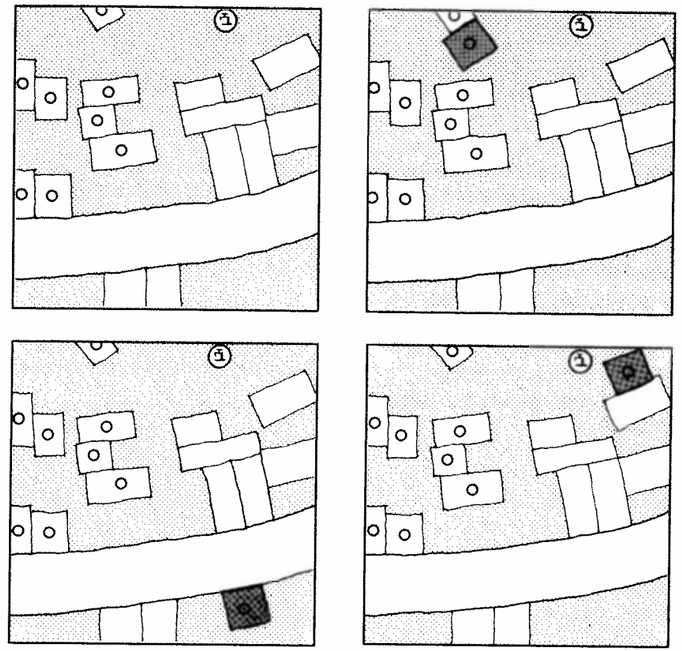


Progressive infrastructure:

The infrastructure should not be viewed as something to be made most efficient without any regard to the quality of the living environment, or something that could be pre-imposed on the settlement without real considerations about user needs. Rather, the infrastructure should be seen as a tool to assist the development of a new settlement, and also to serve the existing settlement, so instead of planning the entire infrastructure at once it should be introduced gradually. With the use of infrastructure - community water taps, public structures and paved roads - the designer can steer families in the desired direction and maintain a general control of the development. The progressive introduction of the infrastructure will also ensure that the new settlement will be more convenient and responsive to user needs.

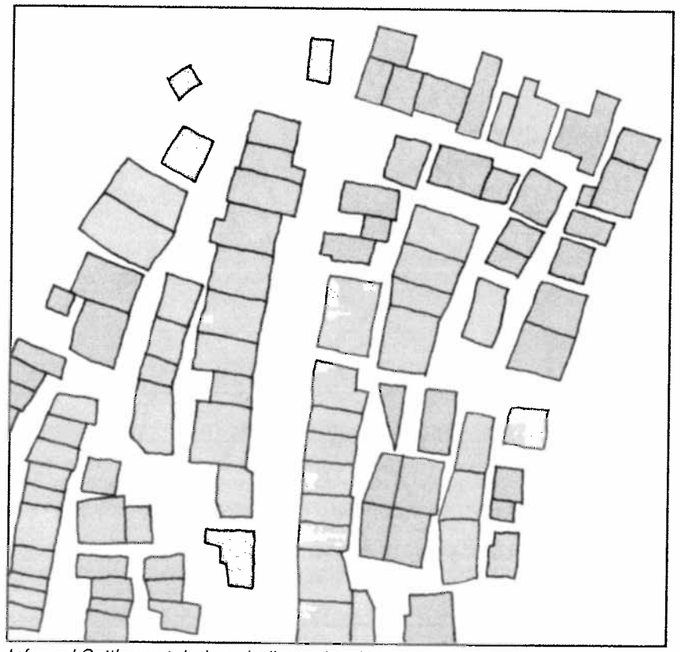
Self-selection of plots:

It is important to have an open plot-allocation system. In informal housing, families can select, according to their particular preferences, the location of their plots within the settlement. Under the self-selection design process families will be free to choose the location of their plot. The freedom of choice, regardless of their income level, will permit families to cluster around immediate relations and group homes according to their family and cultural ties, or their trade and economic links.



Variety of plot sizes:

There should not be predetermined sizes or shapes of plots based on the economic classification of the beneficiaries. Plot sizes, shapes and proportions should be determined by the families themselves or self-selected. The plot size should be chosen according to individual family needs and its ability to pay for the plot. When users are permitted to work out the tradeoffs between the size and price it will produce a more diverse and better settlement.



Informal Settlement, Indore, India: notice the variety of plot sizes.

The use of the proposed planning strategies will produce a better housing environment because they overcome the problems inherent in the formal housing and sites and services projects. The built environment, produced through the self-selection design process, will bring back the positive physical features of informal settlements, clearly lacking in the formal housing projects. To test the self-selection design process an experiment was conducted which is described in the next chapter.

3. THE DESIGN EXPERIMENT

METHODOLOGY

To test the self-selection process a design exercise was conducted during the winter semester, January to March 1989, with a group of graduate students in the Minimum Cost Housing program. The participants were two professors and four graduate students. The professors accepted the role of the planner working for the development authority in charge of implementing the experimental project. The students assumed the role of the heads of different households being settled in the proposed development.

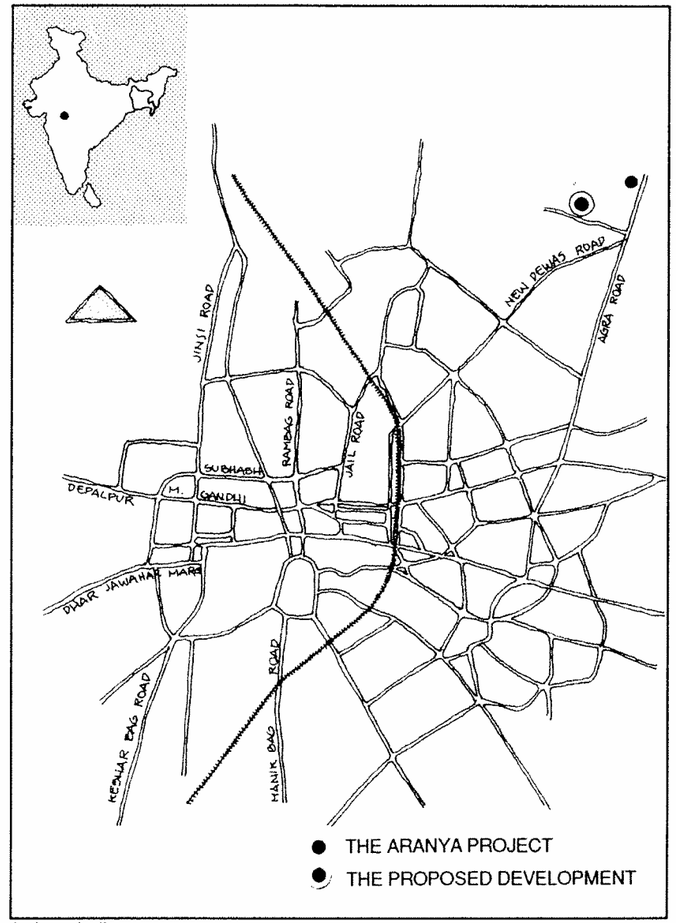
The planner supervised and controlled the general design development, the infrastructure layout and plot allocation process. The heads of different households, on the other hand, remained responsible for selecting the location of thejr plots and designing and building their houses. In conducting the design exercise, every effort was made to simulate, as closely as possible, the real situation that one would encounter in the field.

ASSUMPTIONS

To place the experiment within the socio-cultural framework of a given community the planners made certain assumptions. The planners determined the general context of the project, the site, the socio-cultural background of the client group and detailed family profiles.

The Context

The project was situated in Indore, a city in the state of Madhya Pradesh in central India. Indore, a rapidly growing urban centre, was chosen because the housing problems of that city are similar to those in many other comparable urban centres in India. Indore, has an estimated population of about 800,000 that will reach over one million by the year



Indore, India.

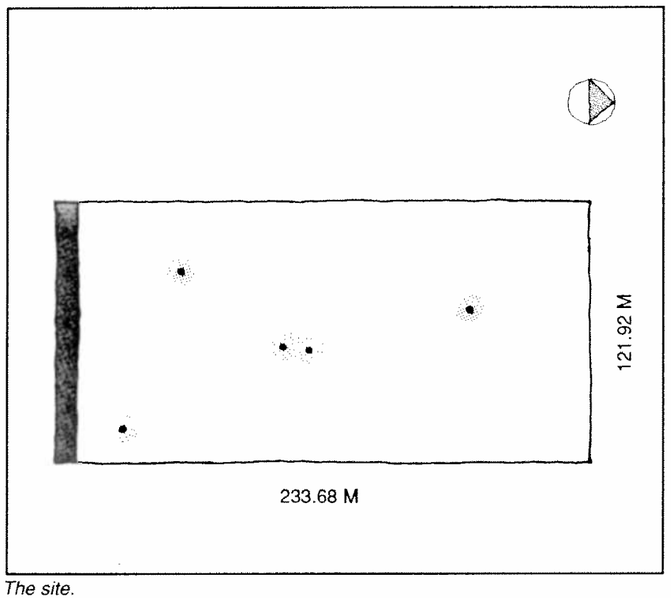
1991 (IDA, 1983). The city is facing a rapidly growing housing deficit that has led to an increasing number of slums and squatter settlements. According to a recent estimate the number of households living in slums is 60,000 (World Bank, 1984).

The other reason for choosing Indore was our familiarity with, and knowledge of the city. The Vastu-Shilpa Foundation, which has been collaborating with the Minimum Cost Housing Group on research in human settlements since 1983, has designed a 6,500 plot sites and services project for the Indore Development Authority. This sites and services project, developed under a state-wide comprehensive urban development project, is financed by the World Bank. As a part of the collaboration, Indore has been made the focus of the human settlement studies. The field work in Indore has produced interesting information on local housing conditions, especially in the informal sector. Over the past six years, the Minimum Cost Housing Group has collected a considerable amount of background information on Indore, including the local building by-laws, the development plans, survey maps, social and economic surveys of the informal settlements, photographs and so on.

The Site

A site, located six kilometers north of the city centre, was chosen for the experiment. A major road, on the southern boundary of the site, connects the project to the urban core. In terms of links with the city and proximity to employment opportunities, the site is ideally situated. It is also well connected to the city centre by public transport.

The site is a featureless plain with a total area of 2.84 hectares. It is 233.68 M long and 121.92 M wide with the major axis oriented in the north-south direction; there are five mature Neem trees on the site, two on the southern end, two in the middle and one towards the north.



The site.

The Client Group

It was assumed that the local government - the Indore Development Authority - wished to develop a small housing project to accommodate 400 - 450 families. The project was primarily aimed at families from the economically weaker sector (who earn less than $ 45/ month), but not limited exclusively to that income group. Surveys of informal settlements in Indore have shown that the population of these settlements is not limited to a single income group (Rybczynski et al., 1984).

Typical informal settlements have several distinct sub-groups. Each sub-group contains people from a specific geographical region of the country having definite linguistic, regional, ethnic, religious and family ties. The social background of the sub-group has an influence on the physical arrangements of the informal settlements. Based on these observations, it was assumed that our client group would be made up of several such sub-groups with diverse language and ethnic backgrounds.

Family Profiles

Indian culture is extremely rich and diverse. In such a context, the question of which aspects should be judged important to re-create a group of households that could be considered representative of an Indian community is difficult to answer. However, studies of the informal settlements in India have found that in low-cost urban housing, besides the physical needs of a family and its linguistic and regional associations, it is also important to consider its survival strategy (Brook, 1989; Pandya, 1988). The survival strategy of a family is complementary to the definition of the family profile, as it represents the manner in which low-income urban families manage to make a living. These economic activities, marginal to the formal sector, are characteristic of the so-called economically weaker sector, and take many forms: owning a small business or a shop adjacent to the house, doing work at home, renting out a room or two, keeping animals - mostly cows and water-buffalos - to sell their milk products and so on. To recreate a group representative of a low-income urban community, a detailed profile of 550 families was randomly generated incorporating the following 11 attributes:

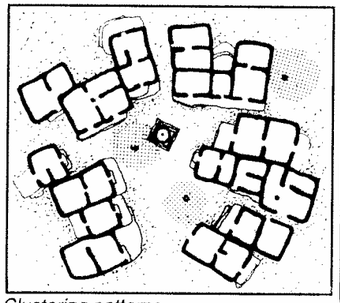
Native Language: People prefer to live next to neighbors who speak their own mother tongue (Brook, 1988). The native language of each family was determined and the total population divided into five languages groups; Marathi, Rajasthani and two Hindi speaking groups, one from Madhya Pradesh and other from Utter Pradesh. The fifth group, considered more cosmopolitan, and not having a preferred language, could settle among any other language group.

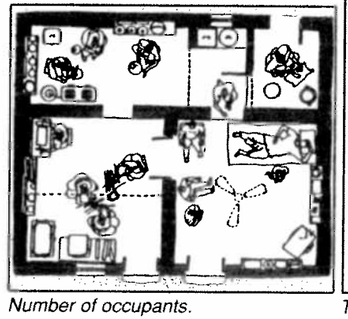
Clan: People speaking the same language also prefer to live next to those who come from the same region (Brook, 1988). To reflect this, each linguistic group (except the last) was divided into three/four sub-groups, indicating the region from which they came.

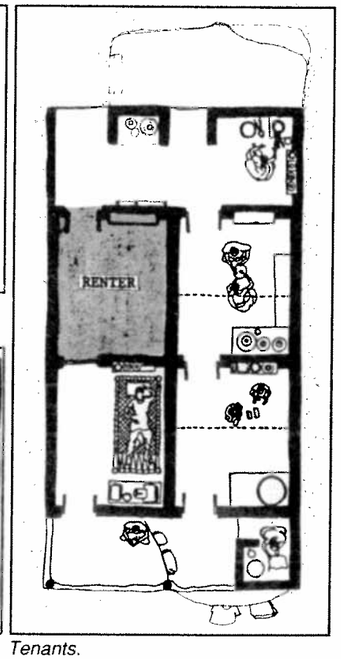
Family Cluster: Traditional settlements in India have developed around immediate family links, where people related to one another live in the same neighborhood (*mohalla* or a *pole*). A similar preference also exists in informal settlements. To reflect this grouping pattern, families within each language and regional sub-group were further divided into several groups.

Number of Occupants: Plots in the informal settlements frequently house many people so it is important to determine the actual number of occupants rather than assuming an average family size. Besides the family type the total number of occupants for each plot was also randomly generated.

Tenants: If extra space is available - it is common to see people making an extraordinary effort to create this extra space - it is often rented to augment the family income. To reinforce this practice, it was assumed that a certain number of families would have either one or two tenants.


Clustering patterns.

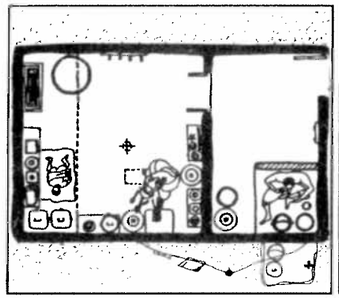

Number of occupants.



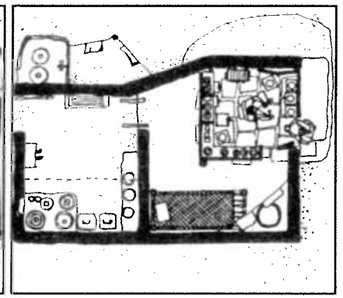
Tenants.

Family Type: The families were divided into two groups, extended and nuclear. Family structure is very important in determining how the home should be organized. For example, in an extended family, where several generations live together the physical needs arising out of concerns for privacy between the older generation and young married couples would be totally different from that of a nuclear family (Pandya, 1988).

Commerce: Small shops are important income generators in the informal sector housing and are generally located at street corners and along main streets where there is traffic and exposure to passersby. However, it is also common to find some smaller shops well inside the neighborhood to serve local needs. To reflect this pattern, it was assumed that some families would have a business at home, some of them with location preference.



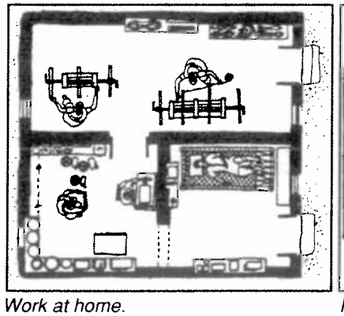
Family type.



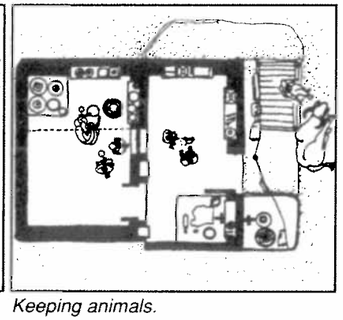
Commerce.

Work at home: It is important to incorporate work spaces in the living environment. House extension or the spaces next to homes are ideally suited for this type of activity. To create a suitable mix of working and living environment it was assumed that a certain percentage of families would work at home.

Animals: Like the work activities at home, keeping animals, to sell their milk and milk-products is another vocation practiced by many residents, mostly the Rajasthanis. Keeping an animal at home requires a larger than average plot size. It was assumed that the Rajasthanis would have a higher tendency to keep animals and if they had an animal or two their plots would be slightly larger than the average.



Work at home.



Keeping animals.

Building Type: The preference for a building type, either a single or two storey dwelling, was also ascertained.

Plot Size: Based on the range and percentage of different plot sizes observed in the informal settlements in Indore, preferences were divided into four broad categories: small plots of 15-20 M2, medium plots of 20-30 M2, large plots of 30-40 M2, and extra large plots greater than 40 M2.

Using the above eleven attributes profiles of 550 families were randomly generated by the planner and recorded in a "family profile booklet." The attributes were duly weighted to reflect the preferences observed in the informal settlements of Indore.

DESIGN TOOLS

A 1:100 scale model was the main design tool used to conduct the experiment. The entire housing design process, which comprised site planning, infrastructure lay out, allocation of plots and dwelling unit design was recorded on this large model. The 2.3 M x 1.2 M model was considered an ideal vehicle to record the process. It simulated, very closely, the actual development process which would occur in the growth of any informal settlement. A photographic record of the different stages of development was also kept. It was only at the end of the design exercise, when the settlement was fully developed, that the project records were transferred to drawings. Large photographs of the model were used as base maps (almost like aerial survey photos) to make the final drawings of the project.

THE DESIGN PROCEDURE

Using the computer-generated "family profiles" and the empty model base as the starting points, the design experiment was conducted in four stages: drawing of cards, development of family profiles, self-selection of plots, and designing and building of houses.

The draw of cards: Cards bearing numbers from 1 to 550 were made. The heads of households drew one card each time from a hat. Using the number on the drawn card, the head of the household refered to the family profile booklet. The general parameters related to individual family, the 11 attributes described earlier, were listed in the booklet. The amount of computer-generated information was kept to a minimum, and the next step in the design process was the development of detailed family profiles.

The development of detailed family profiles: A more detailed description of each family and their needs was developed by the head of the individual household. For example, the computer-generated family profiles gave only the total number of family members, but it was left to the family head to define the family composition. They determined the composition of the family, number of sons and daughters, brothers and sisters, uncles and so on, to form a specific household. Similarly, the head of the household defined the economic activities of the family. To record a more detailed family profile and make a reasoned selection of the plot location and shape the family heads were required to fill out a standard facts sheet. Students who had assumed the role of the heads of households completed these facts sheets. This step took a very short time, hardly ten minutes. It was, however, an important step because it gave a sense of belonging and a greater understanding of the family being accommodated.

A

FAM. NO. 358: 3/40/100; FAM. TYPE E/N; #7; TEN. Y/N; #1; ANIMAL Y/N; # ; BUSINESS Y/N; LOCATION IMPORTANT Y/N; WORK Y/N; FLOORS 1/1+; 36

B

FACTS SHEET

01) FAMILY NUMBER: 358

02) FAMILY ASSOCIATION:
Language Group: 3
Clan: 40
Extended Family Cluster: 100

03) FAMILY Extended: 7 Nuclear:
Description: wife, 3 kids, mother, father

04) TENANTS Yes: ✓ No:
One: ✓ More than one:
Description: single male

05) ANIMALS Yes: No: ✓
One: More than one:
Description:

06) BUSINESS Yes: ✓ No:
Location Important / Not Important
Description: Groceries

07) WORK Yes: No: ✓
Description:

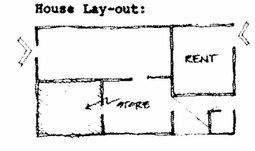
08) BUILDING One Floor: ✓ Two Floors:

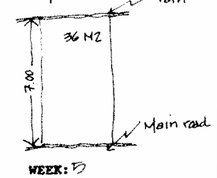
09) PLOT AREA: 36 M2

10) GIVE REASONS FOR THE FOLLOWING:
Location of the Plot:
On the main road → to give maximum dwell for business and on path to create fronts for both tenant and family

Shape of the Plot:
Square with extension into road.

House Lay-out:





NAME: SW

WEEK: 5

A. *Computer-generated data.* **B.** *A fully developed family profile.*

The self-selection of plots: In an informal settlement, the settler may go to a slum landlord and with his help, identify an appropriate site, stake out the plot according to his financial capability and needs, and finally design and build his house. Similarly, in this exercise, the heads of households identified the desired plot locations and demarcated them on the model base with the help of the designer.

With a completed facts sheet, the family heads came to the planner to confirm the location of their plots. It was considered important for all plots to be located close to the existing urban infrastructure, roads and water taps. However, the location was also to be based on the specific characteristics of the family associations. It was assumed that families speaking the same language, coming from the same region and having the same family background would like to live close to one another. When it was difficult to match all three variables, the language group was considered to be the determinant for the location. When none of the family association could be matched, resulting from space saturation, users selected new areas. In addition to, the family association (language group, clan, and family cluster), the survival strategy of the allocated family was also considered an important factor when selecting the plot location. For instance, if a family had a small shop, and location was considered important for the business, it was permitted to locate the plot away from the immediate family and language group, in a better business location, either close to a main road or on a corner of two intersecting streets, where the business could prosper. The settlers were required to justify the location and shape of the plot selected; the justifications were also recorded on the fact sheets.

Once the location of the plot was chosen and approved by the planner, it was marked on the model with pins and tapes (i.e. staked out). A small label with the family number, family association (language group, clan, and family cluster), and name of the student, was affixed on the plot. The label worked as a guide to the subsequent settlers giving them clues about neighbours, language groups and family ties and made the settlement process simpler. Depending on the time available, at the beginning of each week, these three stages were repeated about 10 to 15 times.

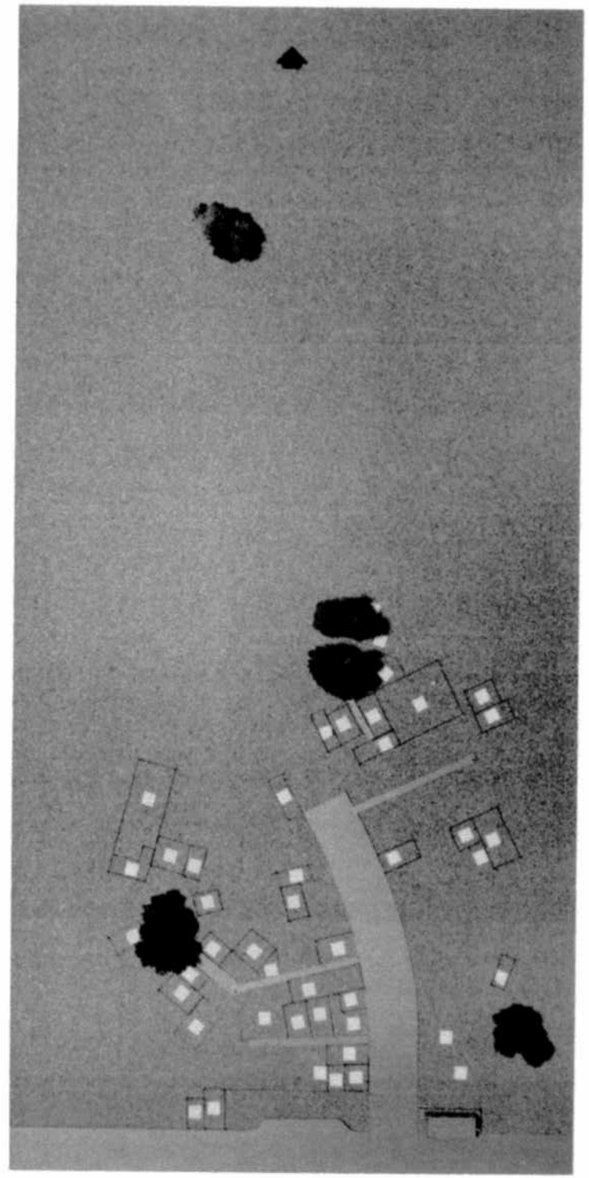
The heads of households were indirectly responsible for designing the urban environment because they were free to choose the location of their plots. However, to maintain a certain degree of control on the quality of the urban environment and public amenities, the planner remained in charge of introducing the infrastructure in stages. To organize open spaces within the settlement, several simple rules were established. A setback of three meters around public water taps and five to seven meters around existing trees was required. Minimum distance between two plot faces was required to be two to three meters, depending on location.

The design and construction of houses: After selecting the plot at the beginning of a week, the rest of the week was spent designing and building individual homes. Instead of planning the dwelling on the drawing board the homes were designed on the model. At the time of selecting the plot, the settlers were expected to make only a rough sketch design of the house. Based on this sketch they proceeded immediately to a model and designed their houses in three dimensions. The house models were in block form, but it was required to show the fenestration, stairs, balconies, terraces, shops and other house extensions to give a better definition to the urban character of the project. Completed house models were added to the site model. The house designs were based on the social organization and economic capability of the family, as described in the facts sheet.

At different stages of the development, important public amenities such as a primary school, market areas and so on were introduced by the planner. The planner also took care of upgrading the open spaces by building platforms around trees and building public structures, such as temples and shrines.

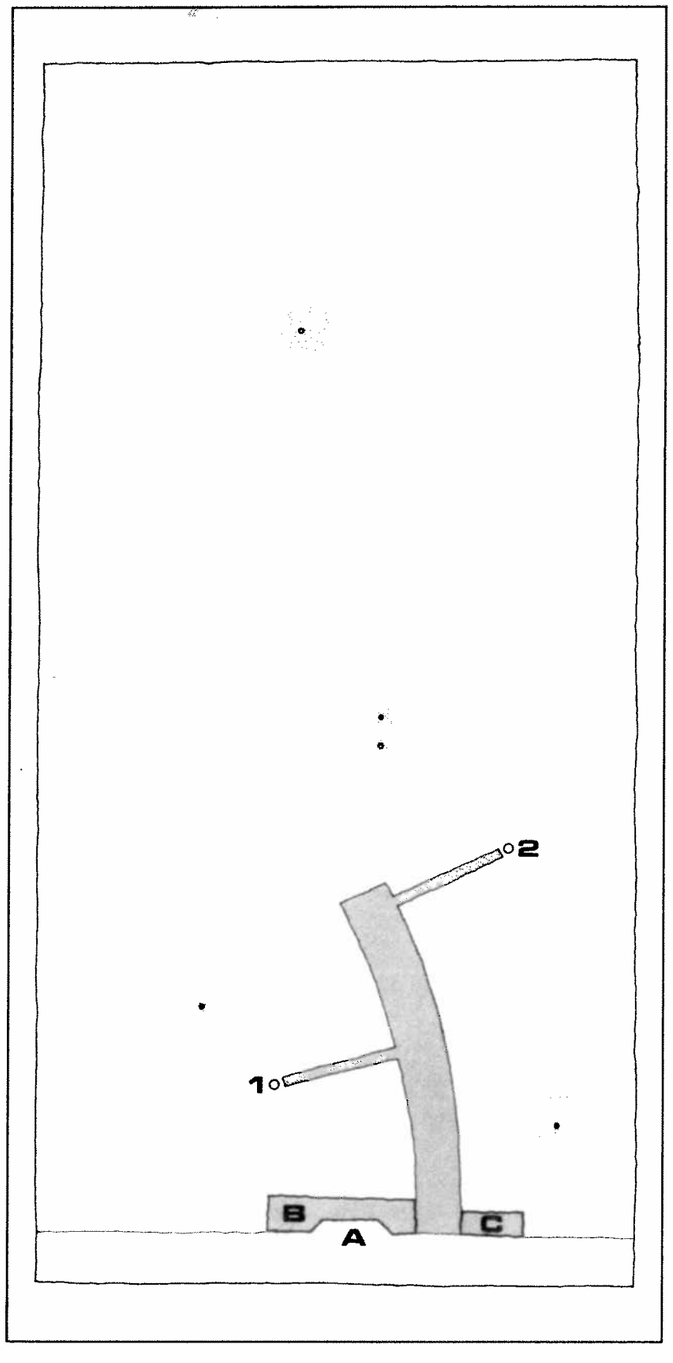
The self-selection process took several weeks to complete. A detailed record of different stages of its development was kept, and is described in the next chapter.

4. THE SETTLEMENT DEVELOPMENT PROCESS



A photograph showing an early stage of the self-selection process; notice the initial infrastructure provided and the first group of self-selected plots.

STAGE ONE



The hypothetical settlement was developed in seven stages, having two distinct parts, corresponding to the responsibilities of the two parties involved in the design process, the planner and the heads of households, and related to two aspects of design: Infrastructure and Self-selection of Plots.

Infrastructure:

The initial infrastructure that was added to the settlement consisted of an access road, approximately 10 meters wide and 72 meters long. Starting from the main road that links the settlement to the urban core, a bus stop (A), was placed along the main road immediately west of the access road, a convenient location for all the residents. In front of the bus stop, a strip of land (B), 167 sq. meter in area, was designated as a market to be used by hawkers. The planner's site office (C), was located to the east of the intersection between the access road and the main road. Two public water taps (number 1 and 2), were placed one on either side of the access road about 25 meters back.

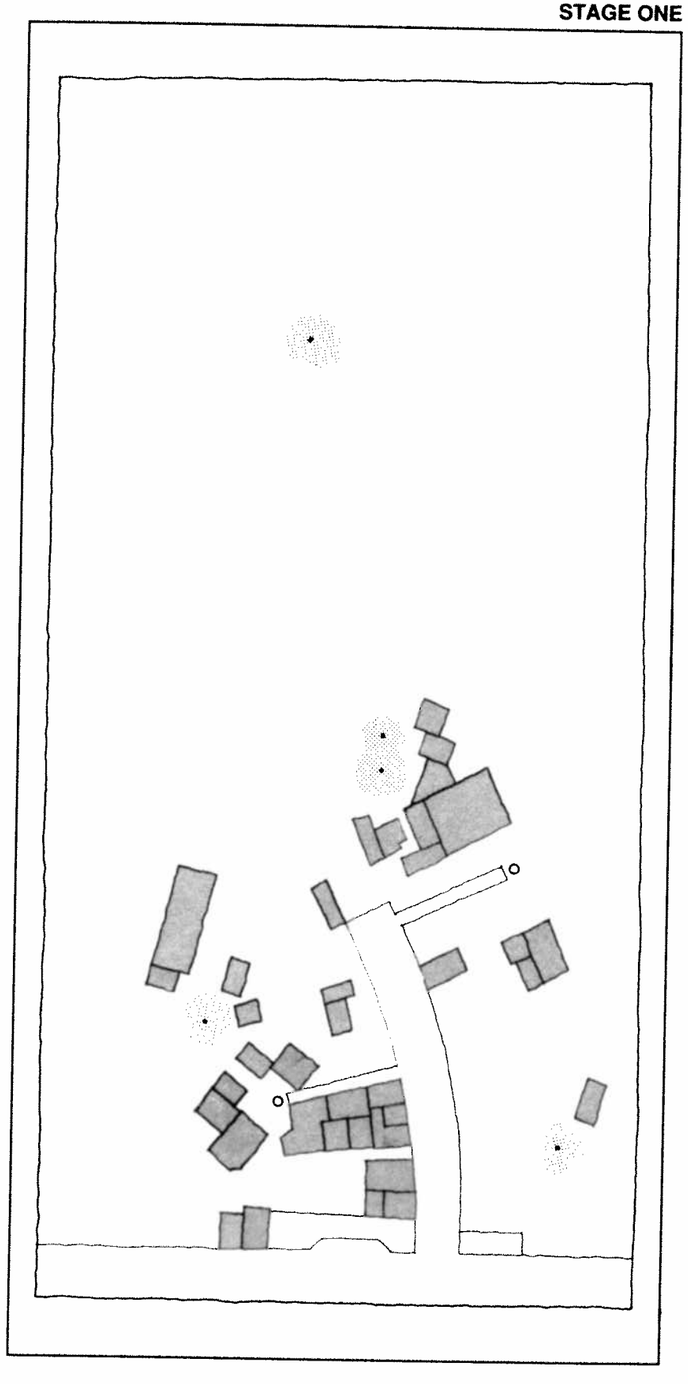
Initial Infrastructure:

Paved Main Streets	750.00 M2
Length of Street Addition	72.00 M
Paved Narrow Lanes	50.00 M2
Public Open Spaces	225.00 M2
Public Water Taps	2

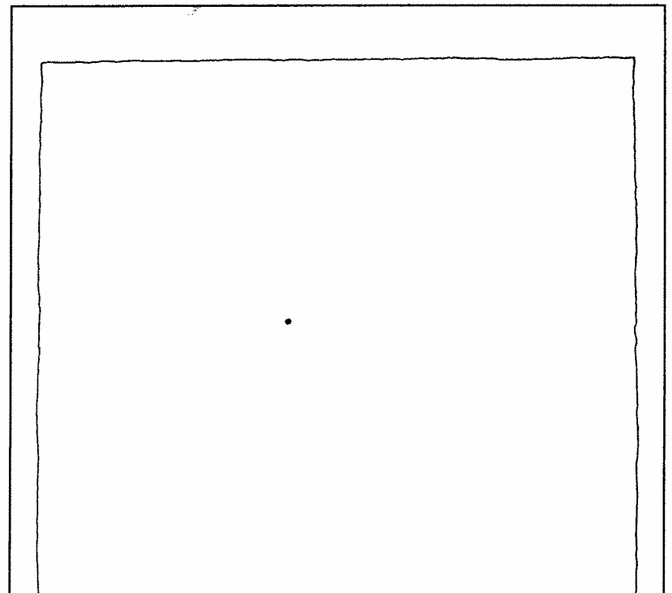
STAGE ONE

Self-selection of Plots:

The plots started to cluster to the west of the access road, around public water tap number 1 and along the path leading to it. Other plots began to locate on the access road and along the main road connecting the site to the city, taking advantage of the good business location. Another plot-cluster developed at the end of the access road around the two existing trees, not too far from public water tap number 2. One smaller cluster, based on family association, developed just north of public water tap number 2, next to an existing tree. Several other plots were located in a haphazard way without any visible links. However, two of these plots were located in anticipation of the access road extension. The majority of the plots had a square or rectangular shape.



STAGE TWO



Infrastructure:

The second installment of the infrastructure entailed the introduction of a third public water tap and a path connecting it to the main road. Two new paths, one in the south-east corner of the site and another to the west of the access road, were added. Finally, a central market square (D), was created next to the existing access road. The central square was intended for weekly markets and social gatherings of the community. The square took advantage of the two existing trees and the extension of the access road. The shape of the market square was based on the spread of the existing trees and surrounding plots.

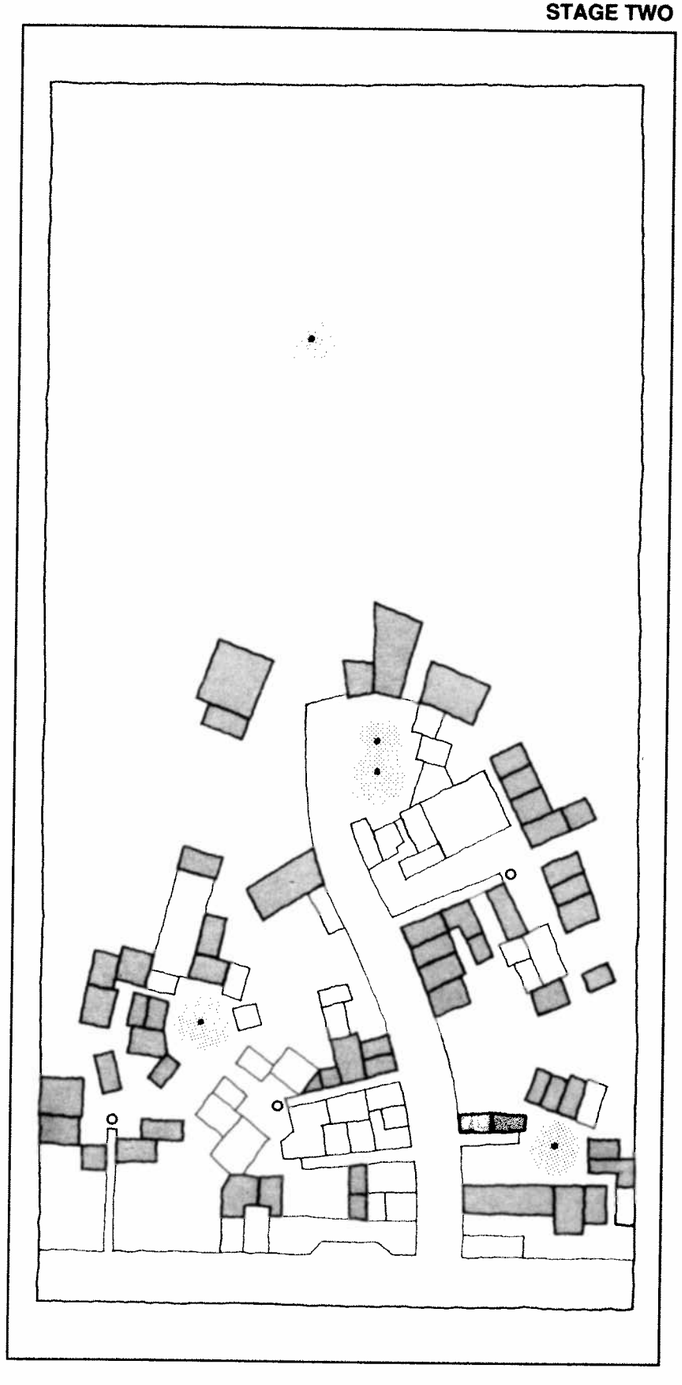
Infrastructure Additions:

Paved Main Streets	452.90 M2
Length of Street Addition	49.53 M
Paved Narrow Lanes	137.00 M2
Open Public Spaces	334.00 M2
Public Water Taps	1

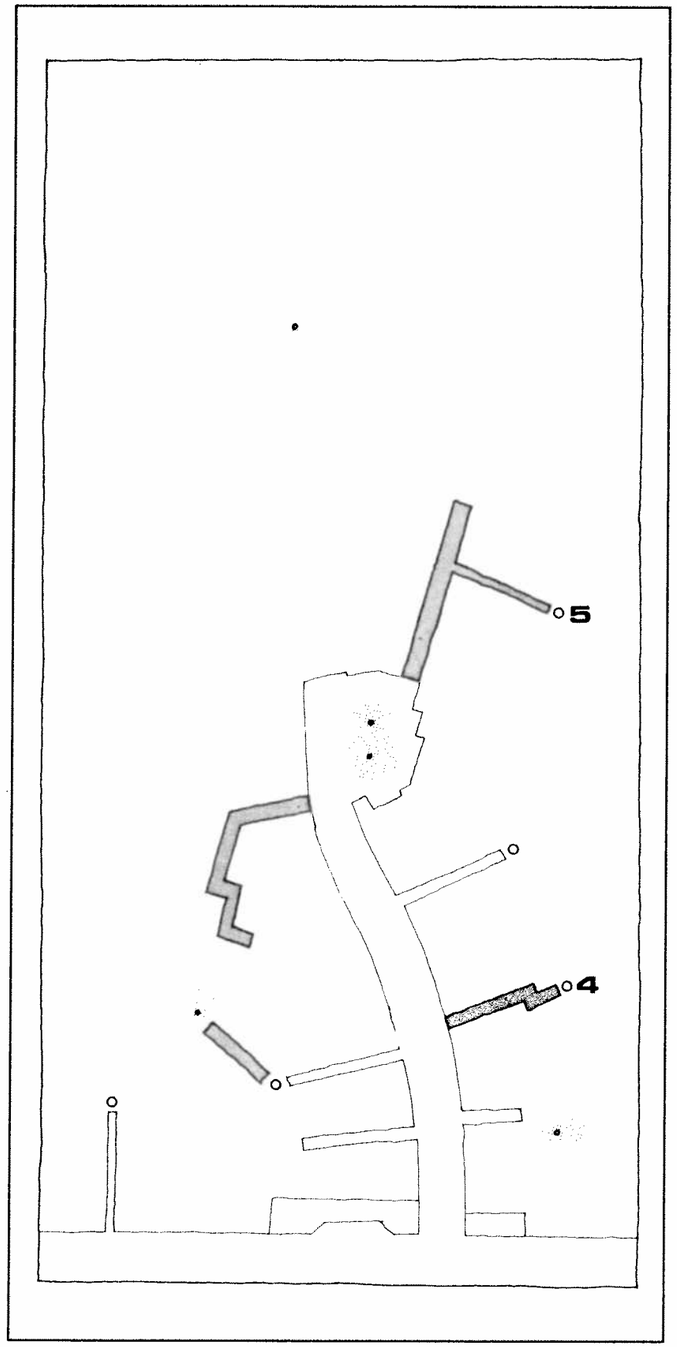
STAGE TWO

Self-selection of Plots:

In the second stage, a considerable amount of clustering around public water taps 1, 2 (the first two stand-pipes) and 3 took place, and also around the two southernmost trees and the market square. Several new plots developed along the main road and the access road for commercial reasons. The smaller paths, acting as pedestrian links between stand-pipes and access road or tree-squares and access road, also attracted a number of new plots.



STAGE THREE



Infrastructure:

Two more public water taps, numbers 4 and 5 each with a path, were added. A path to the west of the central square was also added, its shape based on the location of existing plots. Another path connected public water tap number 1 to the access road and an adjoining square with a tree.

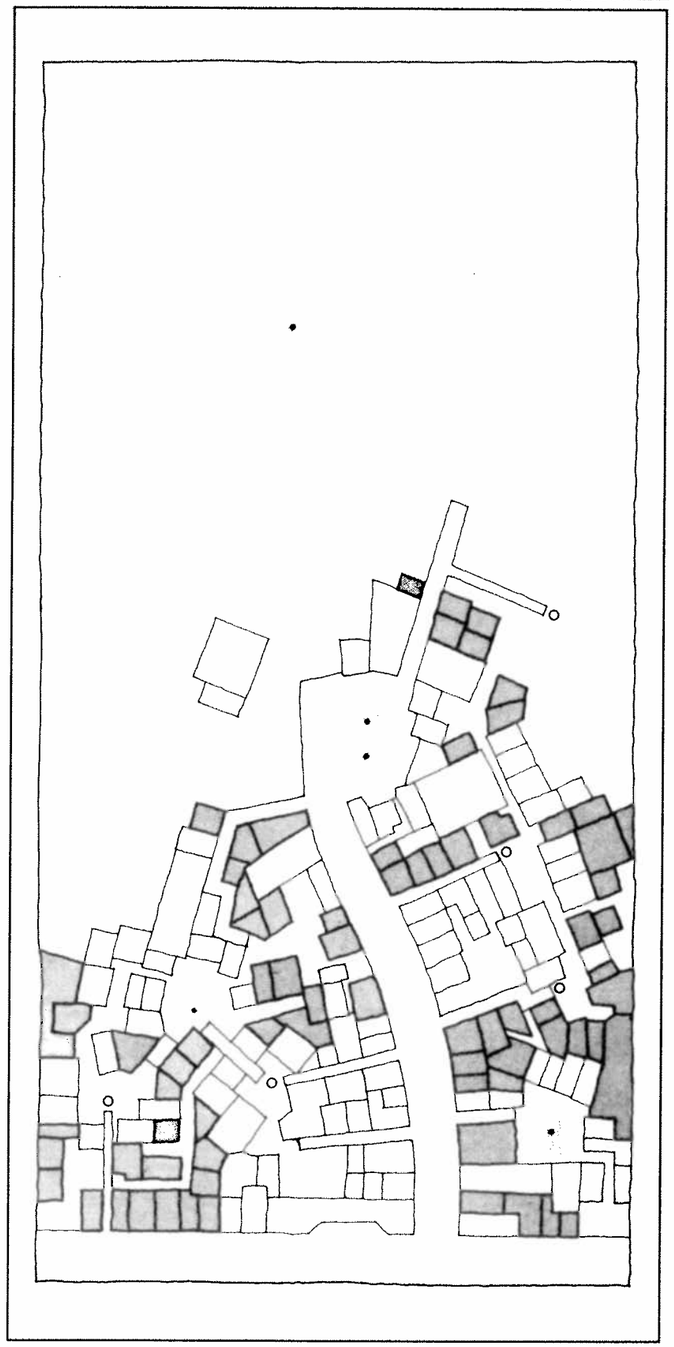
Infrastructure Additions:

Paved Main Streets	152.40 M2
Length of Street Addition	38.10 M
Paved Narrow Lanes	297.10 M2
Public Open Spaces	107.30 M2
Public Water Taps	2

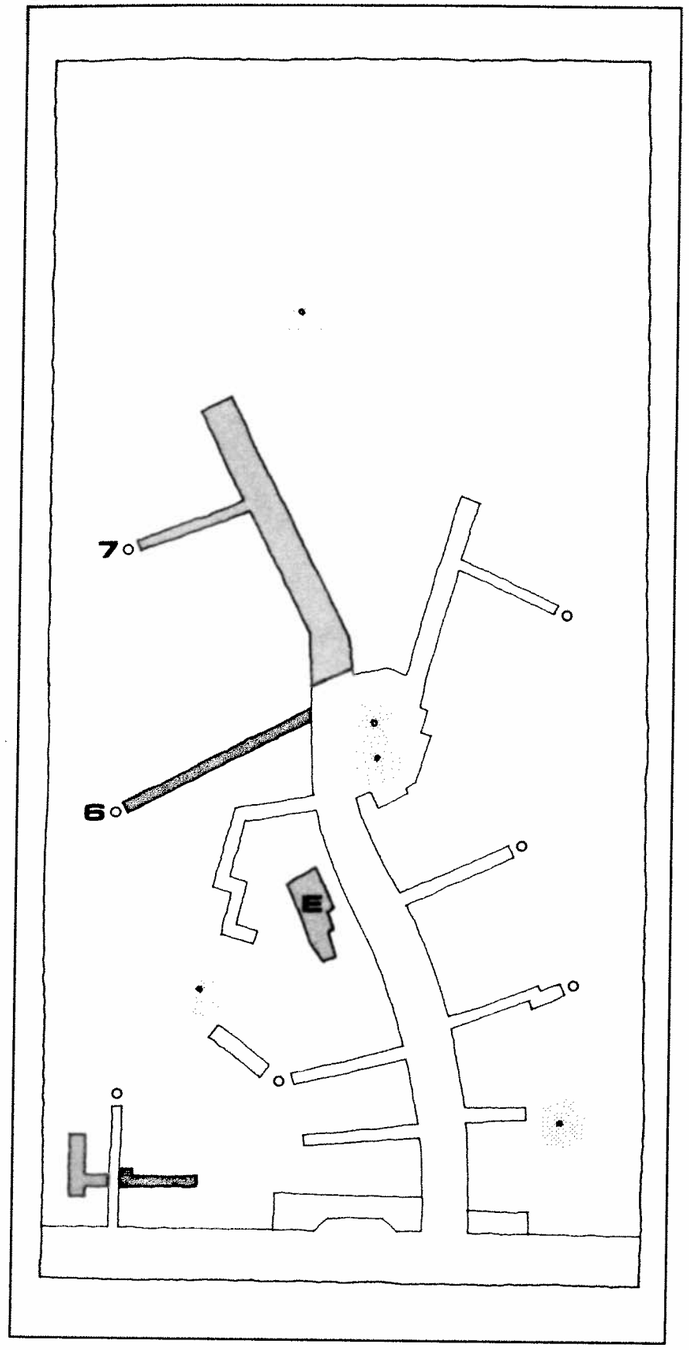
STAGE THREE

Self-selection of Plots:

The main road and the access road started to consolidate. Plots at street intersections were occupied first, because of the advantageous business location. The southern part of the project got filled with plots. Good clustering took place around trees, public water taps and paths leading to the public amenities. Several irregular paths emerged as a result of the allocation process in areas where the access to new plots was blocked by existing ones. Some family groups had to leap-frog to other locations as the areas surrounding their kinsmen were saturated. There was no clustering around stand-pipe number 5, which could be because of its northern most location and relative isolation from other amenities. The residents preferred to be close to the main city road to ensure easy access to their place of employment. Two plots, however, did break away from the established pattern and located in the north-west corner, but not too far from the market square.



STAGE FOUR



Infrastructure:

The access road was extended towards the north-west corner of the site from the market square. Public water taps number 6 and a path were added to the west of the market square. Another public water tap, number 7, was introduced to the west of the new section of the access road. A kindergarten (E), was inserted just off of the access road between public water taps numbers 6 and 1. The kindergarten was carefully fitted within the open space left by the surrounding plots. Finally, a small square and a path were added to the street leading from the main city road to public water tap number 3.

Infrastructure Additions:

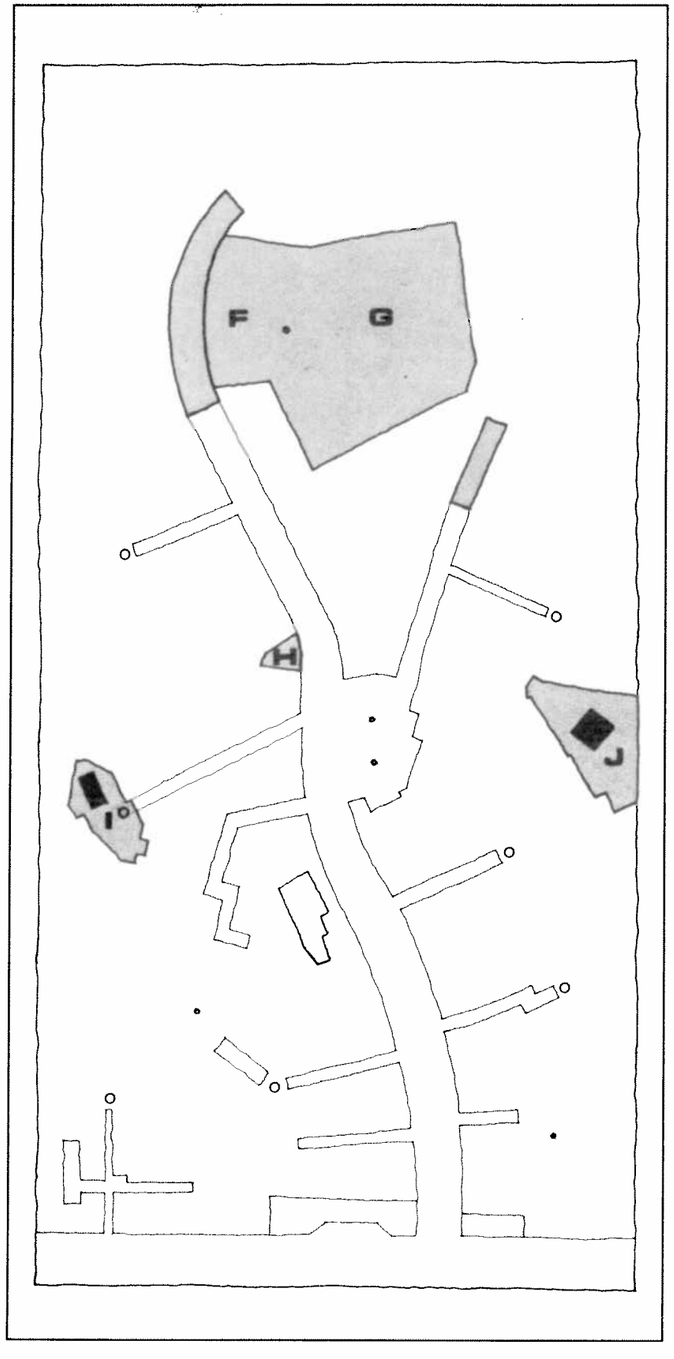
Paved Main Streets	464.50 M2
Length of Street Addition	61.00 M
Paved Narrow Lanes	182.90 M2
Public Open Spaces	None added
Public Water Taps	2

STAGE FOUR

Self-selection of Plots:

Good clustering occurred around the new extension of the access road and public water tap number 7. This was largely due to the arrival of a large number of families of the same background, a mere coincidence. The southern edge of the settlement was already saturated, so the new group had to stake out plots to the north. The area between the two new public water taps numbers 6 and 7, also begun to fill up. New families got linked with the two isolated plots described in the third stage. The southern quarter of the settlement was now saturated with plots, and the spaces around trees and public water taps had acquired a distinct character.

STAGE FIVE



Infrastructure:

A large school (F), was added to the northern section of the settlement incorporating an existing tree. The school also incorporated a large play area (G), to the east. A clinic (H), was added just beyond the market square along the west side of the access road. A new section of road was added to the western fork of the access road, and the eastern flange of the access road was also extended. Two large squares, (I and J), added for religious purposes, were developed around public water tap number 6, across the market square, and around public water tap number 5. Small religious shrines were integrated in these two squares.

Infrastructure Additions:

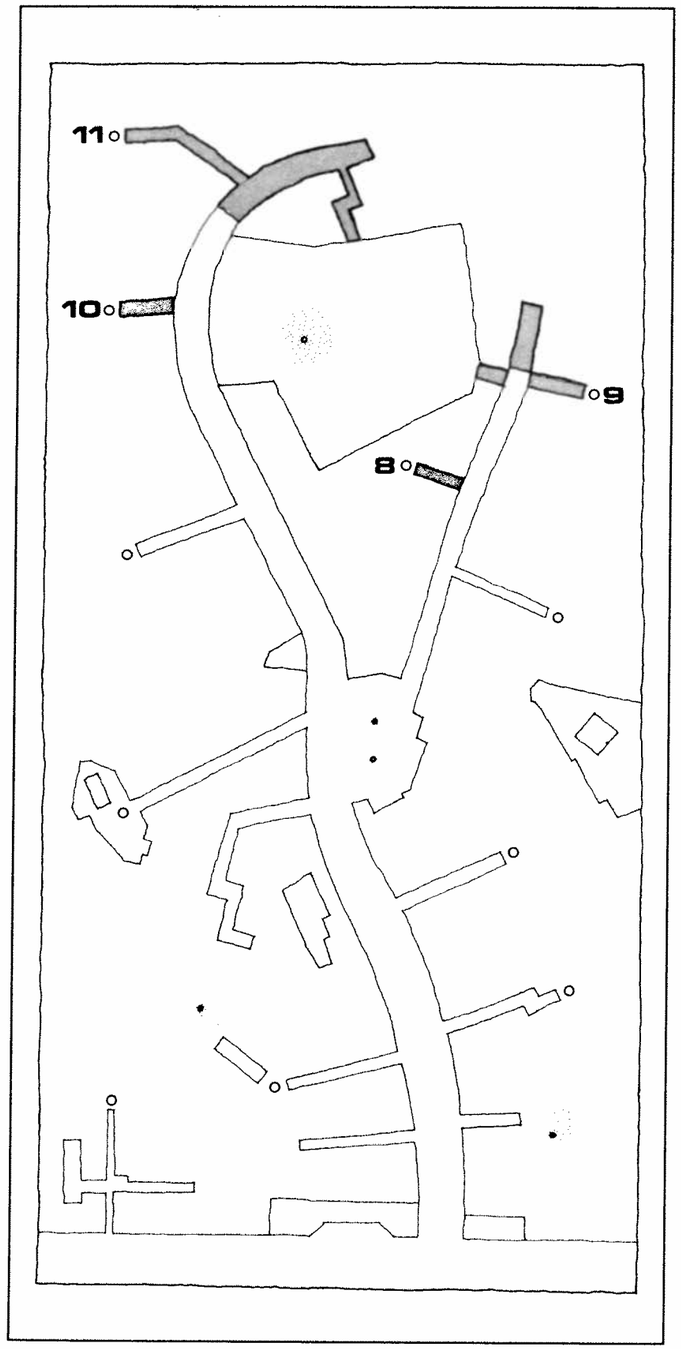
Paved Main Streets	450.00 M2
Length of Street Addition	72.40 M
Paved Narrow Lanes	57.20 M2
Paved Public Open Space	580.70 M2
Public Water Taps	None added

STAGE FIVE

Self-selection of Plots:

Plot allocation in the southern 2/3 of the settlement was completed and the space between the fork of the access road started to fill up. Clustering around public water tap number 5 was completed and plots started to expand to the north. The introduction of the religious structures consolidated the spaces surrounding the two squares described in the stage four. The standard shape of the plots remained square or rectangular, but plots with irregular shapes were used to fill the leftover spaces between others.

STAGE SIX



Infrastructure:

The western and the eastern forks of the access road were extended. Four public water taps, numbers 8, 9, 10 and 11, were added. Two small paths were also added to give the surrounding community access to the school yard.

Infrastructure Additions:

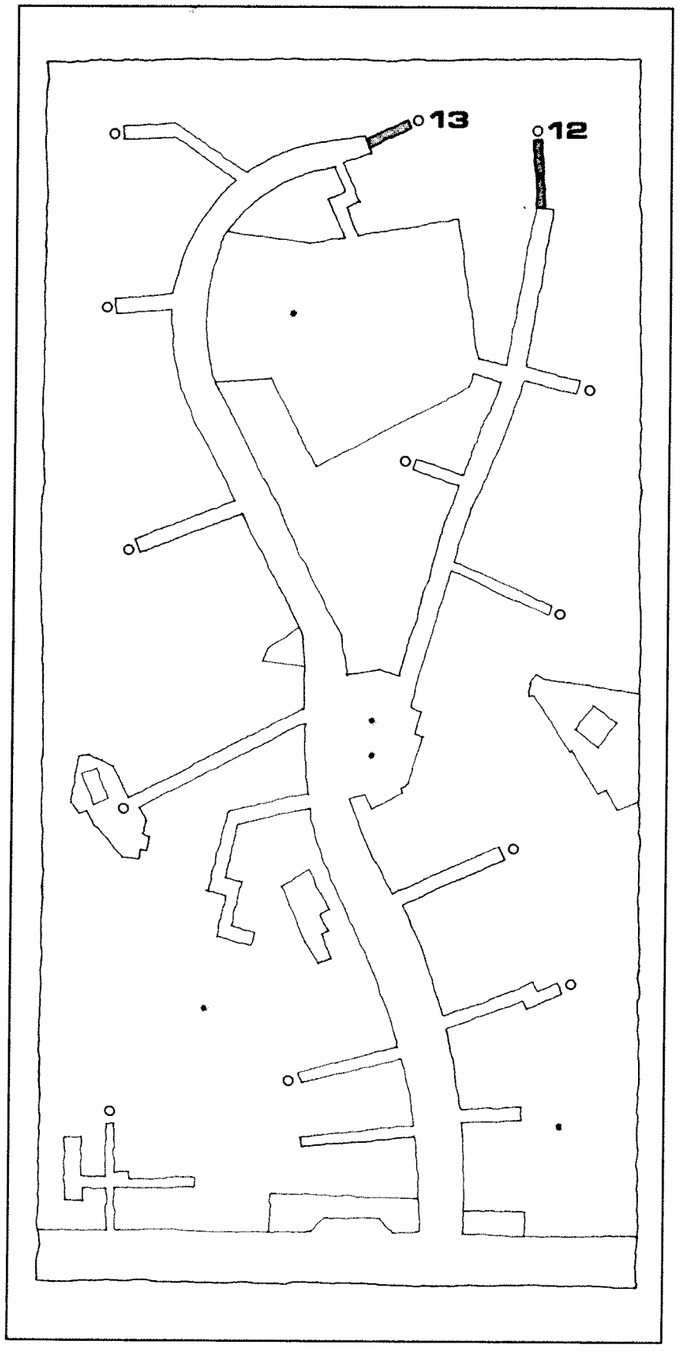
Paved Main Streets	261.30 M2
Length of Street Addition	41.90 M
Paved Narrow Lanes	137.20 M2
Public Open Spaces	None added
Public Water Taps	4

STAGE SIX

Self-selection of Plots:

The entire western side of the settlement was now saturated with good clustering around the new stand pipes. The area between the two forks of the access road to the south of the school got filled. Only about 1/8 of the settlement in the north-east corner remained vacant. This vacant area had only one isolated plot resulting from leapfrogging.

STAGE SEVEN



Infrastructure:

The last stage of the infrastructure implementation consisted of the addition of two public water taps, numbers 12 and 13, one at the western fork and another at the eastern fork of the access road.

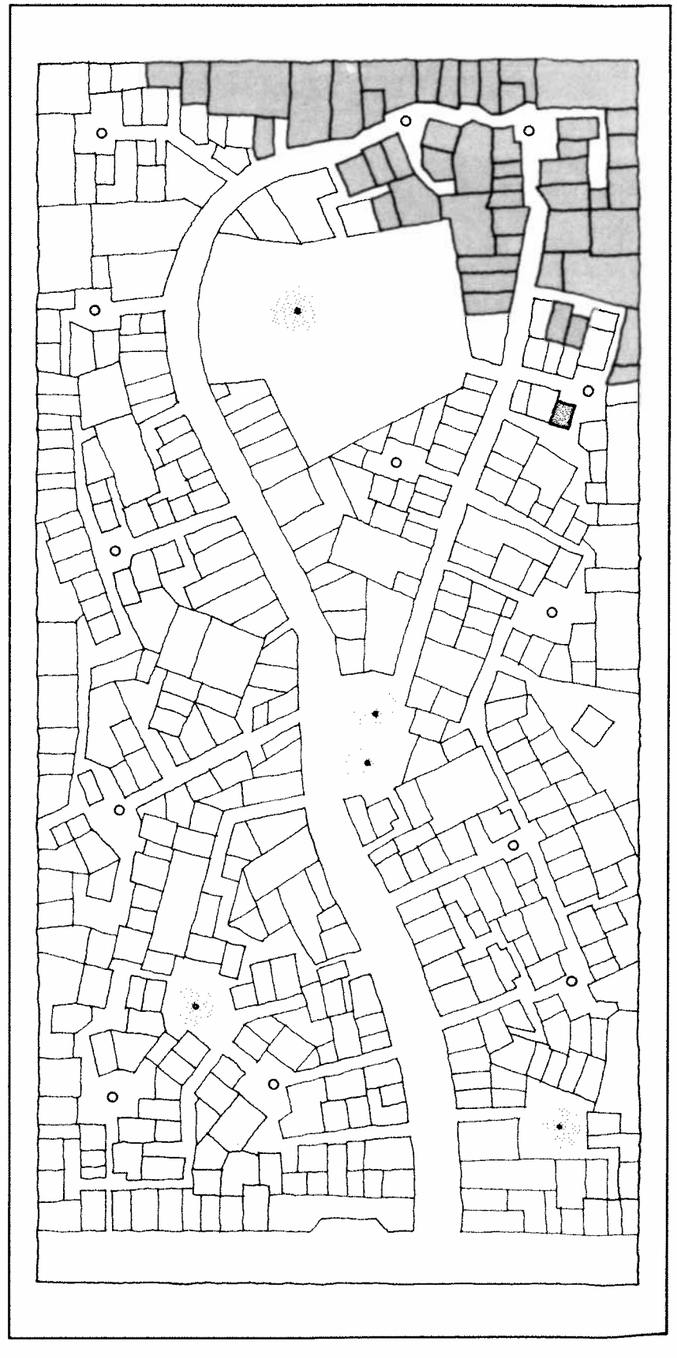
Infrastructure Additions:

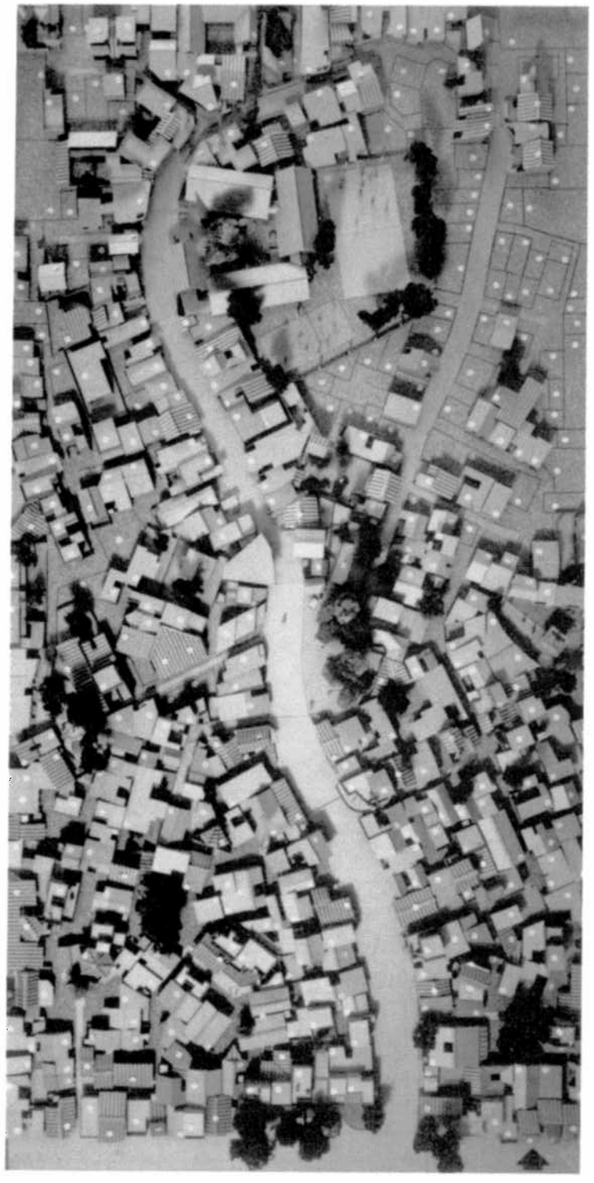
Paved Main Streets	87.10 M2
Length of Street Addition	22.90 M
Paved Narrow Lanes	38.10 M2
Public Open Space	None added
Public Water Taps	2

STAGE SEVEN

Self-selection of Plots:

The remaining space got utilized by plots. The leftover space, space not used by the formal infrastructure and plots, emerged as informally allocated unpaved paths and small squares. All circulation linkages not mentioned earlier, were formalized.





A photograph of the settlement once the self-selection process was completed; notice the dense and organic character of the layout.

5. THE DESIGN APPRAISAL

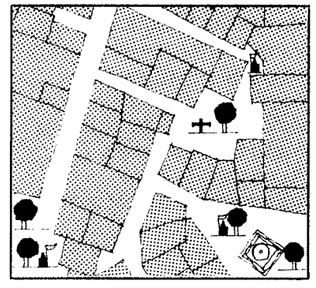
The self-selection design process represented a radical departure from the conventional planning method in which low-cost housing or sites and services projects are designed. The new approach emerged from observing the gradual and autonomous development of unplanned settlements. To replicate these development processes it was necessary for the self-selection design process to leave various design decisions in the hands of actual users.

To test the workability of the self-selection design process, a simulation exercise (the simulation) was conducted. The simulation produced a design which appeared very different from conventionally planned settlements, but similar to a traditional town with a dense and organic form. However, to judge a settlement plan only on its physical form would be a mistake. In order to gauge the overall success of the approach, the product of the simulation exercise was appraised from the following points of view:

-Social and cultural appropriateness of design
-Family Income and Plot sizes
-Provision of multi-family plots
-Variations in plot sizes
-Quality and variety of open spaces
-Planning and implementation time
-Plot allocation process
-Physical characteristics
-Land use efficiency.

Social and Cultural Appropriateness of Design:
Compared to conventional housing designs the simulation was able to respond better to the needs and background of the community. The simulation relied on ample participation of the families in the decision-making process at every stage of design which lead to the creation of a user responsive built environment. The active involvement of the community also produced an informal settlement with an organic layout, in which plots, open areas, and circulation network emerged gradually and in response to user needs. The efficient land use, discussed in detail later on in this chapter, contributed to the creation of a built environment that was true to the needs and aspirations of the users as well as planners.

Family Income and Plot Sizes:
The simulation did not make any particular assumption about income and plot sizes. The simulation also allowed families to choose the shape of their plots and locate themselves according to their particular interest, regardless of their income level. The plot areas were randomly generated. However, to produce a wide variety of plot sizes and shapes



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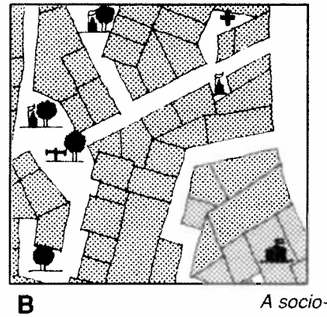


B

A socio-culturally appropriate built environment.

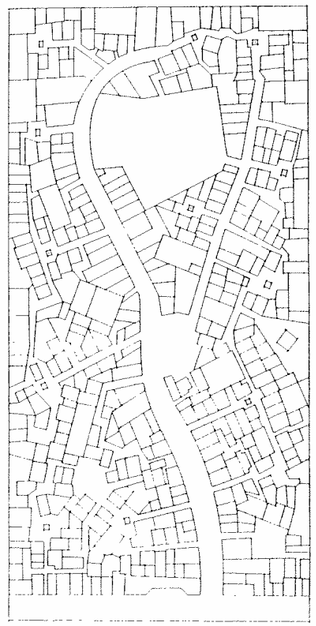
that would not be based solely on income, several factors such as family background (size and type of family), special needs (tenants, business or animals) and affordability were considered. This produced a settlement with a wide variety of plot sizes and shapes. In addition, the freedom to choose — self-select — offered a unique response in meeting users' housing needs in terms of the physical configuration of their own plots, and their location within the site.

Multi-family Plots:
The settlement had 421 residential plots of which 46 % were single-family and the rest 54 % multi-family. The proportion of family mix achieved in the simulation was very close to the informal settlements surveyed in Indore.

Provision of Multi-Family Plots.

Provision of Variety of Plots:
The simulation did not use a fixed plot size. The plot sizes (in the new settlement) were generated randomly along with different family profiles. The plots ranged from 15 M2 to 124 M2, and the settlement achieved a well proportioned mix of different plot sizes: small plots (15 to 20 M2) accounted for 18%, medium plots (21-30 M2) for 29%, large plots (31-40 M2) for 36%, and extra large plots (bigger than 40 M2) 17% of the total number of allocated plots. Family size, family type, whether the family had tenants or a business, and so on, were the aspects that users considered while defining the particular shape, proportion and exposure of their plots. Responding to these considerations did not pose any difficulty in generating an efficient settlement. On the contrary, the users were encouraged to work out the right trade-offs when choosing their plots, to support their different survival strategies.

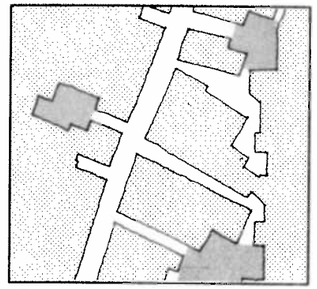
SIZES OF PLOTS	PERCENTAGE
15 - 20 M2	18%
21 - 30 M2	29%
31 - 40 M2	36%
41 M2 - over	17%



Varied sizes and shapes of plots.

Variety of Open Spaces:
The self-selection principles in the simulation have led to the creation of a wide variety of open spaces which are rich and varied, and are evenly spread through the site. The gradual and autonomous development of the community permitted the integration of housing with the surrounding areas, and gave the settlement an organic character. The location, scale, and particular configuration of open areas was such that they would be used and maintained by the surrounding community and stay free of illegal encroachments.

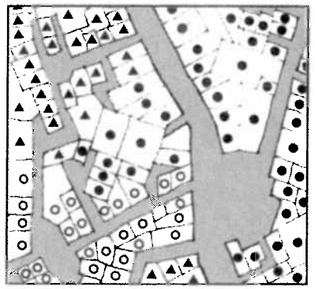
Project Duration:
The time required to implement either a self-selection design project or a conventional housing project would almost be the same, because activities such as the selection of beneficiaries, plot survey, plot allocation, and further administration would be constant in both design processes. At the design end, however, the self-selection design process, being a hands-on approach, would require less planning time. In a conventional design process considerable time and energy are required to develop an efficient and culturally appropriate layout. Since there is hardly any planning to be done throughout the development process, the self-selection design process would not involve so much planning time. Based on the simulation exercise it can be safely assumed that a self-selection design process would require less time than a conventional project, but the degree of difference would be difficult to judge.



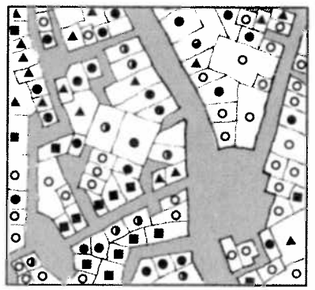
Wide variety of Open Spaces.

The Plot Allocation Process:
The open plot allocation system used in the simulation led to a cohesive spatial accommodation of all residents. The open system allowed users to choose the location of their plots and neighbors, and families with different language groups, clans, and extended family clusters, or those with a commercial interest were able to settle according to their particular preferences. In locating plots, responding to socio-cultural links or business preferences did not prove to be an impediment. Thus, the open system also brought a sense of order in accommodating various family and language groups while retaining an organic character in the layout.

A closer examination of the settlement pattern showed that the spatial accommodation of the families was better achieved in terms of maintaining links among language groups, but was less successful in accommodating families according to their clans and within extended family clusters. However, families with businesses were able to locate on good sites, mainly along the access road, and within closer proximity of their language group.



Language.



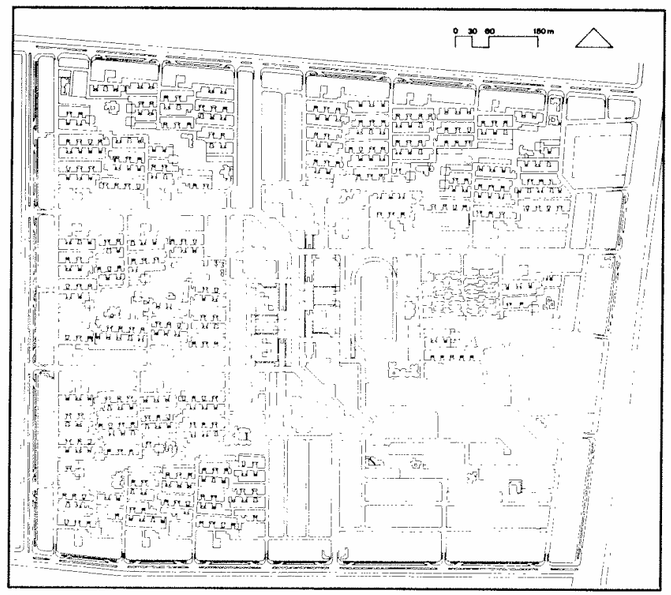
Clan.

Family Cluster.

The Physical Characteristics:
Conventionally planned sites and services projects have produced settlements efficient in their land use, but user alienating in terms of their environmental qualities. In contrast, the physical characteristics of the simulation project suggest that the self-selection design process has indeed overcome most drawbacks inherent in the conventional planning approach. The simulation produced an environment, responsive to the user needs with varied plots and open spaces and road network well integrated with housing. More significantly, the simulation also produced a settlement with a remarkable sense of community and belonging, since the urban fabric of the settlement provided a socio-culturally cohesive spatial accommodation for its residents.

However, this raises an immediate question. These physical features were achieved at what cost, especially in terms of land use efficiency of the project? To verify the economic merits of the simulation, a quantitative analysis based on the land use efficiency was undertaken.

Land Use Analysis:
In this analysis, the land use efficiency of the simulation was compared with a conventionally planned sites and services project. For the purpose of comparison, the Aranya sites and services project, designed by the Vastu-Shilpa Foundation, was chosen because of its land use and infrastructure efficiency. This project was recently completed by the Indore Development Authority. It is considered a model of effective planning by two experienced financing agencies, the World Bank and the Housing and Urban Development Corporation of India. To compare the efficiency of the two projects, the land use was divided in four categories: plots, circulation, open spaces, and community facilities.



The Aranya Project.

Plots.
The plot sizes in the new settlement varied greatly, ranging from 15 M2 to 124 M2, and occupied a total area of 17.3 hectares. Plots with rectangular shapes predominated; most families chose the rectangular shape for its functional and planning advantages. Rectangular plots also contributed to the efficiency of the land use. However, a few plots did acquire unusual shapes; this occurred in the cases where the area was almost saturated. The irregular shape plots fitted in the leftover areas preventing the creation of any dead spaces.

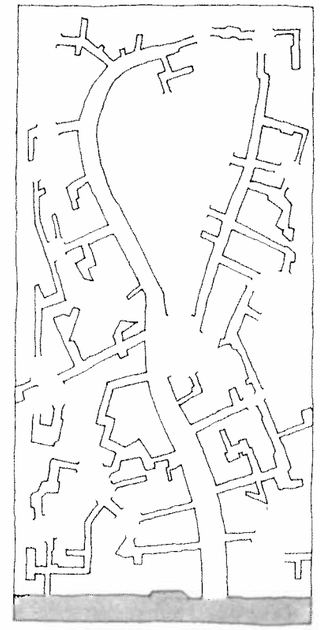
The plots accounted for 61% of the net planning area; a figure which compared very favorably to the 58% plot area achieved by the Aranya project. However, in the simulation exercise specific areas for shopping or industries were not defined. The shopping, working spaces within homes that will also include light industry, and plot areas were accounted under the one category. The Aranya project, on the other hand, considered individual percentages for different land uses. For an equitable comparison, the total marketable areas (shopping, industrial, and plots areas combined) of both projects were compared. The simulation exercise had 61% marketable land, exactly the same as achieved by the Aranya project.

Plots.

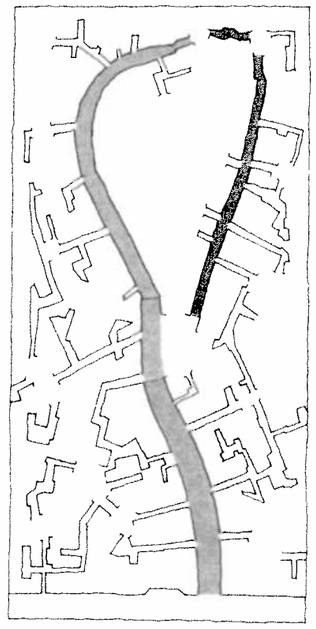
Circulation.
The road network of the simulation exercise closely resembled the network in traditional unplanned settlements, including its hierarchy. Based on their particular features, roads in the settlement could be divided into four categories: main road, access road, streets, and lanes.

Main road: The existing road lies along the southern boundary of the site, connecting it to the city centre. Only half of this road was included in calculating the percentage circulation; it accounted for 18% of the total road area. Being the main traffic artery linking the site to the city centre, it attracted business-oriented residents.

Access road: This was the principal road of the settlement, connected it with the main road linking the site with the city centre. The length of the



Main Road.



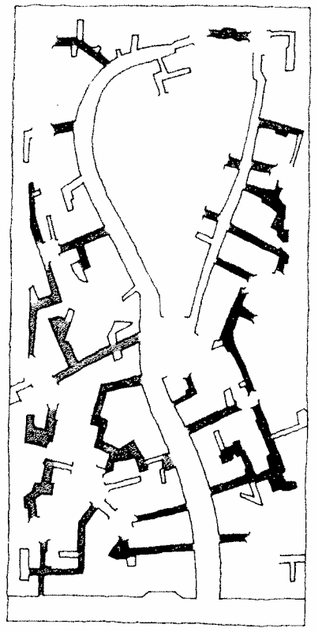
Access Road.

access road was 357.80 M, and accounted for 44% of the total road area. The access road functioned as the commercial spine of the settlement, and attracted many business-oriented residents. The patterns of plot-allocation during the different stages of the settlement growth showed that the access road and their adjoining areas were rapidly occupied by families with businesses. Considering the low vehicular ownership in the community, the access road was seen as the primary service road and was therefore made 10 M wide at its junction with the main road, and gradually reduced to 4 M.

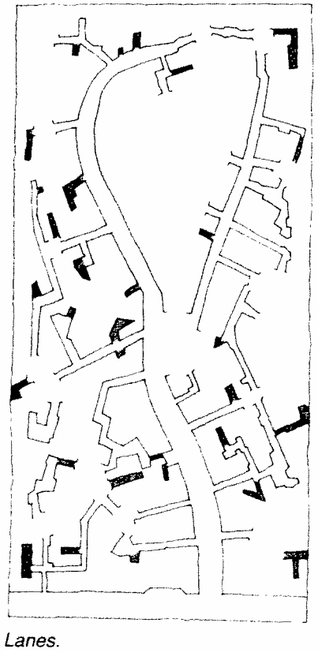
Streets: Streets connected the access road with public squares and narrow lanes. Streets within the settlement accounted for 28% of the circulation space, with a total length of 738.75 M. The width of streets varied from 2.00 to 4.00 M. Although most of the streets had regular alignment, it was not uncommon to find streets with irregular shapes, a result of the incremental settlement process.

Lanes: Streets narrower than 2 M and cul-de-sacs were defined as lanes; they accounted for 10% of the total road network and had a total length of 263.64 M. Most lanes were cul-de-sacs, and only a limited number of houses faced on to them, permitting their use as private areas.

The total road network added up to 22% of the total area in the simulation exercise. The roads in the Aranya project accounted for 24%, which suggests the simulation exercise is slightly more efficient.



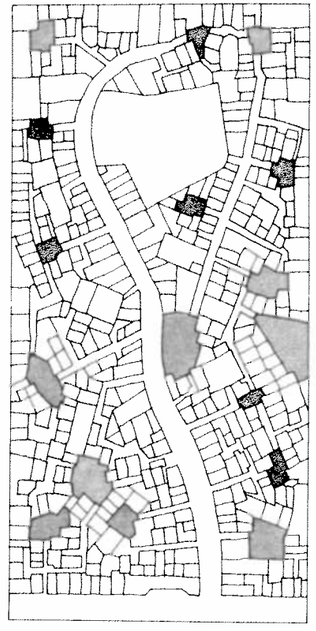
Streets.



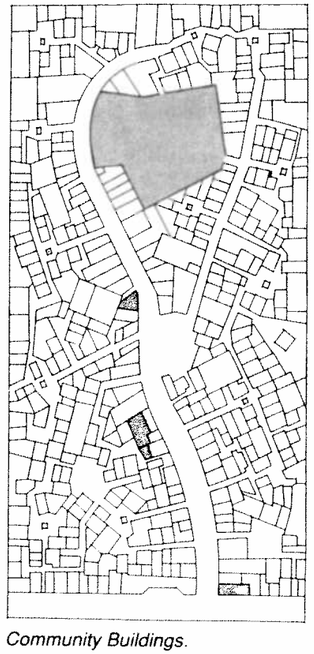
Lanes.

Open Spaces.
The open area within the simulation was made up of 17 clearly defined spaces spread evenly throughout the site, and added up to 2.6 hectares. But the open spaces in the settlement were diverse, in terms of sizes and shapes. Most open spaces in the settlement were small, averaging 100 to 150 M2 in area, and had irregular shapes. Open areas emerged automatically around trees and stand-pipes as a result of the setback regulations. However, some spaces were also developed by the design team to accommodate open markets and religious structures to satisfy the community needs. The open spaces accounted for 9% of the total planning area, one percent greater than the 8% achieved in the Aranya project.

Community Buildings.
The community buildings in the simulation exercise included two schools, a clinic, and an office for the planning team. The gradual introduction of the public facilities permitted good integration of these buildings within the community, and with the likely result that they would be better maintained by their users. The community structures were also designed to encourage multiple use of the buildings and their surrounding space; the open spaces in the school compound are to be combined with gardens, play areas and other recreational facilities to be used by the community; the school buildings for community meetings, and so on. The community buildings represented 8% of the net planning area. This is also



Open Spaces.



Community Buildings.

CHART OF LAND DISTRIBUTION

AREAS	ARANYA	SELF-SELECTION
Marketable Area:		
Plots	58%	61%
Commercial & Industrial	3%	*
Sub-total	61%	61%
Non-Marketable Area:		
Circulation	24%	22%
Open Spaces	8%	9%
Community Buildings	7%	8%
Sub-total	39%	39%
TOTAL	100%	100%

*Included within Plot Area

slightly more than the 7% in the Aranya project.

The land use analysis of the simulation suggests that a socio-culturally appropriate built environment can also be efficient. The land use of the simulation compares very favorably with other conventionally developed projects which consider the high efficiency of land use to be their main achievement.

CLOSING REMARKS

The simulation has demonstrated that the **self-selection** design process represents a viable alternative for providing appropriate living environments for the urban poor in developing countries. The self-selection process has demonstrated that it can produce a lively and user responsive built environment which can also be cost effective. It can therefore offer appealing features to both parties involved in the formal production of low-cost housing in developing countries - the users and the formal sector.

For the users, the self-selection design process offers a general control over the creation of their own living environments. Through an ample control over the location, size and shape of their plots, and the configuration of surrounding public spaces and circulations, the self-selection process encourages the users to develope a built environment that matches their most particular needs, and supports a stronger community integration. More importantly, through an incremental upgrading of houses, infrastructure, and public amenities, the self-selection process offers the users the development of such a built environment according to their economic means.

For the formal sector, the self-selection design process offers a lower initial investment on infrastructure, and a minimum involvement in the design, development, and maintenance of new residential projects. With such a lower investment, in both time and financial resources, the self-selection process offers the formal sector the possibility of developing a greater number of new residential projects. The self-selection design process, then, represents a viable and economic approach for coping with the growing housing demand in developing countries.

The principles behind the self-selection design process make it suitable for the development of new residential areas within the current formal housing context of developing countries. The self-selection process can be ideally suited for relocation projects where upgrading may not be possible, because of poor or dangerous location. Equally, the self-selection process can be used to develop new sites and services projects to accommodate the increase demand for low-cost housing. The flexibility inherent in the self-selection design process makes it also an effective planning method that can be easily applied to different contexts, since its basic rules may be modified to suit different cultural and regional needs.

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