Urban Housing

The Aga Khan Program for Islamic Architecture
at Harvard University and the
Massachusetts Institute of Technology
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Foreword

“Designing in Islamic Cultures” is an annual event offered under the auspices of the joint Harvard-M.I.T. Continuing Education program and planned and sponsored by the Aga Khan Program for Islamic Architecture at Harvard and M.I.T. “Housing Design in Islamic Cultures” was the second of that series; the first, held in August 1980, dealt with higher-education facilities. This series is in turn part of a larger effort of the Aga Khan Program to introduce the Islamic world into the mainstream of professional and scholarly education in architecture and to reach out to professional and academic communities all across the world. Courses in the series will also be held in Islamic countries, and material and subject matter are selected with that in mind. Faculty members are drawn from the Far East, Middle East, Africa, Europe, and the United States, and have extensive professional experience in those and other areas.

The background papers for the case studies around which the housing seminar recorded here was centered were prepared by graduate students under Mona Serageldin’s direction. François Vigier played a central role in the conception and execution of the course, and assumed responsibility for the direction of the workshop sessions. Enrollment for the course doubled that in the first year, and the participants came from many more countries, including Malaysia, Saudi Arabia, Kuwait, England, Libya, Morocco, India, West Germany, Iraq, and Egypt. They also represented a broader cross section of the profession, coming from architectural and engineering firms, universities, and both public and private agencies and organizations, and ranging from student to full professor and from senior manager to program director. Some from the first seminar elected to attend the second as well, reinforcing our sense that what we are trying to do in them—and that is to search for ways to provide environments appropriate to people in Islamic cultures—responds to a genuine need.

Those of us from the West belong to communities that are said to be part of the problem rather than a source for its solution, because as members of both private and public agencies somehow we are thought to have been endorsed and facilitated the exploitation of other cultures. Universities are said to have taught culturally insensitive and inappropriate form making, and professionals are said to have wittingly or unwittingly exported their own cultural predilections, artifacts, products, businesses, and even their politics to those distant parts of the world. While it is undeniable that some insensitive, careless, or even dishonest and evil people must from time to time have been associated with the building of environments, I am not convinced that we are all necessarily part of the problem. Environmental problems are intrinsically extremely difficult to solve, but they are not intractable. Nor is it sloth, lack of ability, or illegal behavior that has hindered us from addressing them adequately. Ultimately the problem is that society does not pay enough attention to the task of finding appropriate solutions. Nor has it mobilized sufficient manpower and other resources to do so, although the effort has at least begun.

Three examples of new organizational efforts to attend to the problems specifically of the built environment in the Islamic world are, in addition to the Aga Khan Program for Islamic Architecture, the Aga Khan Awards for Architecture, and the new Arab Towns Organization based in Saudi Arabia, which has already sponsored conferences and is soon to sponsor many other worthwhile activities. Deserving mention as well are the many firms, universities, research institutes, funding agencies, publications programs, and individuals whose activities and talents are being redirected to that end. Yet much more is needed, especially at the official level.

Though the presence of so many at the seminar already signaled a high level of interest in the problems of providing housing, interest alone will not suffice. We need to open our minds to new possibilities, to redefine and revise our principles even in those areas of housing of which we seem to be most certain. The problems involved in providing adequate housing for the poor in particular have not been well understood, and as a result architects and agencies often respond with wholly inappropriate solutions. We have sometimes also been blind to issues of process, as we become absorbed in and distracted by designing the product. Process-sensitive design is no less demanding of insight, however, and even housing for the not-quite-so-poor may deserve some thought. Housing for government employees, for example, sometimes reveals an artful manipulation of elements within systems that should themselves be challenged. The concepts to which designs are linked—the list might include traditionalism, preferences of occupants, and housing priorities—could also bear a closer look. Newly revised, these concepts, in league with our architectural, bureaucratic, and other skills, might then point to innovations that would breathe new life into housing design in Islamic cultures.

Through the organization of this course as well as its content, we want to stress the importance of building on what we know and of adapting what has already been invented to serve contemporary needs. We are attempting to exemplify a strategy for arriving at culturally sensitive adaptations of existing models as a way of improving architectural design. We believe this strategy will help to bridge the gap that is so often manifest in Islamic societies between traditional modes of living and contemporary needs.

William L. Porter

Cambridge, Mass.
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Islamic Housing to the Present
1. Traditional Housing Design in the Arab Countries

Samir Abdulac

Before embarking on the subject of traditional housing design in the Arab countries, I should perhaps reveal the source of my interest in it. I grew up believing that the traditional and historic houses to be seen in my native Syria were typical of old Arab houses everywhere. Since the architectural-history books of my student days were silent on the subject, it was not until I first had an opportunity to travel some distance—Morocco as it happened—that I realized how similar and at the same time how different houses in other Arab lands could be. Since then I have traveled to many Arab countries and have gathered material on all kinds of traditional housing. That work has convinced me that analytical and comparative studies can reveal not only the characteristics of each local tradition in architecture, but also how local ecological constraints helped determine them. Once both have been identified they can perhaps suggest some appropriate solutions to contemporary urban and architectural problems.

The material I am about to present is based on some elementary analytical and comparative approaches dealing successively with (1) an ecological analysis of human settlements, (2) an analysis of the structure of traditional cities, (3) an analysis of traditional courtyard-house designs, (4) an analysis of traditional courtyard housing models, and (5) some examples of contemporary development and disruptions.

A glance at a bioclimatic map of the Arab countries will show that not all of them are alike and that neighboring areas not included in the Arab world—Iran, for example—have some characteristics in common with many Arab lands. Most of the Arab world, however, is typically desert with strips of cultivated and populated land adjacent to coastlines, following rivers, or surrounding scattered oases. These strips can be very different in their character and their configuration—some are very narrow, as along the Nile; some much broader, as the Fertile Crescent—and in their settlements. Beirut, on the western edge of the Fertile Crescent, is a seaport; Damascus, only a hundred kilometers to the east, is a desert haven for caravans. The pattern of rainfall in Yemen is very different from its neighbors, and explains the historic prosperity of that country. Morocco and Algeria both show a broad range of ecological patterns. In short, conditions are not only different in different areas, but can vary considerably within the same general region.

Microclimatic conditions can also differ considerably from one town to the next (fig. 1). Rainfalls are much heavier in Algiers than in Cairo, and that is reflected in the architecture of Algiers which is better adapted to rain than is the architecture of Cairo, and in the layout of the houses. Temperature fluctuations can vary greatly as well. In Algiers the difference between the temperatures in winter and summer is relatively minor; in Damascus the contrast is comparatively sharp, and the architecture has consequently to compensate for extremes of both heat and cold.

When one contemplates in turn a kasr in south Morocco, a fishing village near Muscat, a farm house in Mount Lebanon, a village in the Syrian plain, and the city of Hama built along the Oronte River just a few kilometers away, it becomes perfectly clear that the architecture of the Arab countries can differ as greatly as its landscapes and climates can, and that those differences arise in part from the skillful use of locally available material. A house in Matmata in south Tunisia is dug into the earth for protection, while cloth provides the tents for desert nomads. A house on a coastal plain in the sultanate of Oman is made of palm fronds and fits into the hot, humid environment. In Syria rural houses with domes are built with mud partly in response to very different ventilation requirements.

A basic principle for adapting buildings to extremes of temperature is that the ratio of internal volume to external surface must be made as high as possible (fig. 2). It is well illustrated in the ksour of southern Morocco and in a variety of building types in Saudi Arabia and Yemen. Courtyard houses have similar climatic advantages, for they provide an open area protected from sun, wind, and sand (fig. 3). When they are clustered to share the same party walls, their exterior surfaces can be reduced significantly to provide further protection.
One striking characteristic of most Arab cities is their compactness, the result of two overlapping patterns of organization—islands or urban blocks and neighborhoods (fig. 4). Urban islands are units with open spaces either along their peripheral streets or in their internal courtyards. Their contours result from two contradictory constraints: on the one hand, protection from climate and from strangers; on the other, the need to provide access to every lot within the urban island.

Urban islands reflect not only the typological and topographical features of a city, but its historical evolution as well. For example, the city of Damascus once had a Greek gridiron plan upon which the less formal Arab pattern gradually encroached. In some cities houses were built along the edges of an urban island and its center filled in later, occasionally with even large structures. In Dubai, whose Gulf location adds humidity to the hot climate, the urban islands often contain only one house. In this one respect, at least, Damascus, Cairo, and Tunis differ more from Dubai than they do from a medieval European town. The reason behind that pattern is probably that the houses required so much outside ventilation that clustering them no longer represented a thermal advantage.

Urban islands are, however, a comparatively modern concept. In earlier times people thought in terms of neighborhoods based on communities differentiated along ethnic or religious lines. These neighborhoods were defined internally in terms of a street with a gate (sometimes two), and their contours were not strongly defined. They were very self-contained, however, with their own mosque, hamman, and shops. The inhabitants had only to go to the central mosque once a week.

The compactness of the plan of the traditional city, the physical continuity, the adaptation to the topography, the importance of gates where market areas were located are all immediately apparent from a map or aerial photograph. Public open spaces were usually not strictly defined, though there is quite a remarkable exception in the city of Ghardaia, Algeria, whose open-market area in the middle of a rectangular square is lined by arcades, behind which are a covered gallery and shops. Streets were narrow and winding, a configuration that was climatically useful because cold layers of air could gather in them during the night and remain throughout the morning before the wind would blow them away. They also provided shade, not only for passersby but for the house across the street, so the exposure of external walls to the sun's radiation would be limited. Streets often include cantilevered elements or galleries and rooms built across
them (pls. 1-2). Sometimes they are entirely covered by houses, with only some light wells interspersed between the houses, as in some Moroccan and Algerian towns.

Commercial, as opposed to residential, areas were shaded by temporary covers laid out over the street. When a permanent roof was built, the street became a suq with shops on the ground level, apartments or storage above, and a central passageway for pedestrians. They often had controlled entrances and were covered in various ways, often by vaults. The suq's galleries were sometimes laid out in parallel; in Aleppo, earth was placed between the vaults to increase thermal inertia. Suqs were often combined with caravanserais or mosques or other urban elements.

Public facilities had complicated contours just as houses did, with rigidly defined courtyards in the center. In traditional towns they did not have monumental facades on all sides as they tend to do today, though they all bore some identifying details sufficient to indicate to the passersby that the building was a mosque, bath, or caravanserai. Most of them also had central open areas which, just as in private houses, could include fountains, ponds, and plants. The mosque, incidentally, was used not only as a place to worship, but also for learning, for civic gatherings, and for other functions (in one case, a small building in the middle of a mosque courtyard originally served as the state treasury).

In Aleppo the original Greek plan provided for an agora, which was at the same time a commercial and a civic place and a religious center, with the major temple located along one side. In the Arab period the entire agora was transformed into a mosque. The shops were kept on the periphery, and the civic and religious life of the city was carried on in the mosque and in its courtyard, which came to function as a public square for the whole town. Styles and designs changed, but the principle remained the same.

Courtyards in the Arab world come in a variety of sizes and shapes and perform a variety of functions: they allow traffic to circulate to various parts of the house; they serve as a family gathering place; they also help cool the house. In hot climates cold layers of air gather there during the night and, with the help of water, vegetation, and shade, keep the courtyard cool during at least part of the day. If the courtyard is paved and water is available, washing down the pavement can also help cool it. Built-in elements such as basins or ponds are also used. They can vary considerably in shape and do not have to be deep; they need only provide a large surface area to facilitate a high evaporation rate. Since the rate of evaporation can be increased when water is moving, basins (e.g., silsabils) can also be arranged to keep the water flowing, a technique the Arabs have been using for a very long time. As early as the tenth century, houses in Fustat had an elevated basin from which water was channeled across the dwelling through a small canal and into a larger basin in the middle of the courtyard. There, too, vegetation was planted to provide shade and sometimes pieces of cloth were hung overhead, a system already used by the Romans who called these pieces of cloth vela.

The size and shape of the courtyard were determined in part by local building techniques and climatic conditions and in part by local cultural traditions. In a rainy climate, a covered corridor or gallery was needed to connect adjoining rooms, which is probably why galleries are found so much more frequently in western than in eastern Arab countries. The gallery can act both as a corridor and as an area for resting. In Damascus such galleries or loggias are located on the ground floor, but are used more often as sitting rooms than as corridors; they can also act as a sunbreaker for the rooms behind. In Cairo what might also be described as a loggia is locally called a
takhtabosh. It, too, is an area where people sit, and it is completely open to a courtyard on one of its sides. In Cairo houses, loggias will also be found on an upper floor, facing north where cool air blows in from the sea. They tend to have a more private character and are called *maqad*.

Iwans originated in Iran, where they are found used in combination with other transitional spaces. Iwans built to face north are used as summer rooms called *talar*. Iwans built to face south are provided with wooden-framed glass panels and, utilizing the principles of passive solar architecture, provide a warm wintertime sitting-room. In Damascus a small room called a *tayyara* performs a similar function in a similar way, with windows on all sides providing the source of solar energy. In winter Damascus is rarely overcast, so these rooms stay warm all day long.

The relation between the galleries and the facades behind them is much the same everywhere, at least in the houses of the wealthy. The rooms adjacent to the courtyard have two kinds of openings, a lower level that includes windows and doors and an upper level of small windows to encourage the circulation of air and allow warm air to escape. A similar system can be seen in areas as far-ranging as Syria, Algiers, and Granada. The style changes considerably as one moves westward, but the principles remain exactly the same. Across the Arab world these large houses can differ less in design than houses in the same town belonging to different socioeconomic classes, or between ordinary houses in the middle of a town, in its outskirts, and in the surrounding countryside.

Roofs perform a range of domestic functions. They can be used to hang out washing and, in the evenings, for social gatherings; they are usually surrounded by high walls to protect their privacy from neighbors, since Islamic law is rather strict on this point. If enough water is available, plants are grown there to provide shade in the summertime, cut down the sun's radiation, and make the area more pleasant at night.

Traditional Arab windows provide daylight, ventilation, and a view to the outside, but in such a way as to keep the inside of the house protected. They are kept small, compared to European fenestration, because less light is needed in a hot and bright climate. Where considerable ventilation is needed, it can be provided, as it is in Muscat, through gypsum panels above the windows or through open woodwork below so that the privacy of the interior is maintained (pls. 3-4). In other places—Cairo, for example—mashrabiyyahs perform that function (pls. 5-6). In many places porous water jars placed in front of the window cool the air as it flows inside by provoking the evaporation of the water. In Damascus people can sit in cantilevered elements called *mashrafiyya* to see what is happening in the street. In Cairo the facades of these houses—where there are facades, for external walls are often party walls—can be pierced by beautiful openings, but they are typically not symmetrically arranged (pl. 7). In Medina symmetry, or at least regularity, is more common, and as a result the character of exteriors there is totally different.
The internal arrangement of European houses is determined mainly by the necessity of protecting its inhabitants from cold. Chairs and beds were first introduced to provide protection from cold floors, and other pieces of furniture evolved from that requirement as well. Because the furniture required was often large and difficult to move, domestic spaces had to be specialized. In the Arab countries, in contrast, adapting to the heat of summer determined domestic habits, and people sat on the floor because it was usually cooler. They had little use for heavy or elaborate furniture, and therefore less specialization of space occurred. The same room could be used as living room, dining room, or bedroom as circumstance required.

Another side effect of the difference in furnishing was that windows were placed lower down in Arab than in Western countries, to be at eye level for people sitting on the floor. But that in turn required grillwork, both to prevent accidents—small children falling from the windows, for example—and to protect the house against intruders. Similarly ceilings were built much higher in these regions than they were in Europe since hot air tends to collect in the upper part of a room, and that is an advantage only in a warm climate.

Wind-catchers, called *batinj* in Syria and *malqaf* in Egypt, are another ancient device for cooling—in Egypt they date from Pharaonic times. In Baghdad a series of small wind-catchers is used; each one in the series faces in the same direction, but serves a different area of the building, often in combination with water jars to cool the air as it comes into each room. Their design and construction are adapted to the local winds. If there is a prevailing cool wind from one single direction (fig. 5), they will all be built to face that way; if—as in Bahrein, for example—the cool winds can come from any of several directions the wind towers will be constructed so as to catch them all (fig. 6). In many old cities on the Gulf, townscape show multitudes of them.

The courtyard house is not specifically Arab. It existed in the ancient civilizations of Sumer and Pharaonic Egypt and, later, in Western civilizations including Greece and Rome. There were differences, however: while we might say that all courtyard houses belong to the same type, we cannot say that they all follow the same
model. A Roman house in Pompeii differs from the model of an Arab house in Baghdad in form of access, axiality, in the proportions of the courtyard, and in the conception of the spaces adjacent to the courtyard.

Do all Arab houses belong, then, to the same design model? Plans and sections of houses taken from various cities and drawn to the same scale make it immediately apparent that they do not. A house in Aleppo shows a proportion of the courtyard and a design totally different from a house of comparable size in Cairo. In Cairo the main ceremonial room is rather far away from the courtyard. In Aleppo the main room opens directly on to it. In Baghdad a comparable house has three levels. The ground level is a summer room; on the upper floors the rooms are located away from the courtyard with transitional spaces in between. Courtyard houses in the Arab world vary from place to place; some models are particular to one city, others to a group of cities.

Ventilation systems can also differ, especially in relation to the ceremonial rooms. In Damascus the outside air passes through the courtyard where it is cooled by plants, pools, and fountains. The cooled air then pushes the warm air out through the upper openings. In Cairo, since the main ceremonial room does not open directly on to the courtyard and is surrounded by other rooms, outside air is brought in through a malqaf and cooled still further by passing it over water. This pushes the warm air out through a lantern over the water basin. In Algiers, where the humidity is very high, the main ceremonial room is open on all sides and built along the outside of the house to provide maximum ventilation through its many windows. A southern Moroccan house might have openings provided in the floors so that warm air will rise inside the house and escape through the top. The variety of these climatic adaptations suggests that their design was refined gradually over many generations to produce techniques unknown, for example, in Roman models, which, regardless of climate, were for the most part adopted almost unchanged across the empire.

A sun diagram of an Arab house can show us which sets of rooms were used in winter and which in summer. In Baghdad (fig. 7) winter quarters are usually on an upper floor; summer quarters are on the ground floor, or even below ground, during some hours of the day and, in the evening, on the rooftop. This internal accommodation to season is easy because the rooms are not specialized in function.

Although the design of houses in a city can vary in innumerable details, their basic model can easily be determined as a guide for the methods they used. Take, for example, three houses from tenth-century Fustat. They are all about the same size, but their polygonal contours are in sharp contrast to their rectangular courtyards. Some large T-shaped rooms are found in all three, sometimes on the north to avoid direct light, sometimes on the south with a sun breaker, sometimes on both sides of the courtyard. Their size and location tell us that they were the main living rooms. In Tunis the contours of the houses are more geometrical and the courtyards larger than in Fustat (fig. 8). Large houses were apt to have a gallery running along three or all four sides, smaller ones on two sides, and very small ones had no gallery at all. The main living rooms were usually located on the south side, looking toward the north, but their size and shape became more and more sophisticated as a house grew bigger and its inhabitants wealthier. The main room of an ordinary house differs little from an ordinary room in a mansion.

![Fig. 7 Diurnal changes in the use of space during the summer, Baghdad](image)

![Fig. 8 Similarity of plans in houses of different sizes, Tunis](image)
Where houses were clustered, some regularity in the orientation of elements of the house was retained. In Aleppo iwans were always oriented toward the north, but the main rooms faced west because the offshore winds blew in from that direction. Sometimes even the ceremonial rooms were oriented toward the south, presumably because they were set deeply enough to protect the interior from the sun’s rays.

A master builder designing a house in Damascus would probably begin by placing the various courtyards in his parcel of land: a large family courtyard, or a haramlik; a middle-sized, semiprivate courtyard, or salamlik, where guests could be entertained; and one or two small courts to use as service areas. Each courtyard should, if possible, have its own entrance. The local architectural vocabulary would then call for an iwan facing north, a ceremonial room looking out onto the main courtyard (fig. 9), and a second ceremonial room opening onto the salamlik. The rest of the rooms would fill in the empty spaces around the courtyard, and secondary spaces, such as staircases and storage, would be tucked into any leftover areas.

Today, housing designs are much changed. In Oman, a lively, imaginative contemporary vernacular architecture has been developing in some rural areas of the Sultanate (pl. 8, fig. 10). Traditional houses once built with palm are now generally constructed of cement block, but a similar internal layout has been maintained with the same orientation toward the north and toward the sea breeze, the same decoration, color, and proportion (fig 11). Women still sit on the floor of a gallery, protected from outside eyes by railings and from the sun by the decoration on the gallery’s upper part. The house is oriented toward the direction of air flow, and circulation of air is increased by a small opening in the back of the house. Even if cement blocks are not as well adapted climatically as palm is, they are at least more durable and provide better protection against sandstorms.
The evolution of contemporary vernacular architecture in those Arab countries where architectural and cultural traditions have been more profoundly disrupted and for a longer period of time has not been so successful. Traditional houses in the old cities are being abandoned by their owners and turned into multifamily dwellings for the rural poor by dividing up courtyards and the rooms around them. New climate-control technologies are competing with traditional ones, especially in the cities of the oil-producing countries. Cars are invading narrow pedestrian streets and can be found parked in every possible open space. New roads are cut across traditional urban fabrics. Old buildings are demolished to make way for new structures. Tall structures adjacent to traditional lower-rise courtyard houses threaten privacy and limit microclimatic qualities. New housing types are outward looking, so their inhabitants have to try to maintain their privacy in new ways. Although tall, blank peripheral walls often conflict with this housing type, new urban regulations forbid the building of anything other than detached houses or apartment buildings in a residential area. In these outward-looking plans for the wealthy, open-air spaces like the balcony and the veranda are located on the exterior and the functional and social role once fulfilled by the courtyard has to be taken over by an interior centrally located reception room where privacy is assured and the air can be kept cool on hot summer days (fig. 12).

Housing is a particular problem for the poor, and the suitability of most modern forms of public housing to Arab social traditions is particularly questionable. Their adaption to their natural physical environment as well as to prevailing climatical conditions is almost always unsuccessful, in contrast to the shantytowns whose inhabitants still try to keep some features of traditional housing they once knew. Public housing is sometimes presented as evidence that the Arabs are winning a victory over backwardness. We can all agree on that goal, but I have some doubts about the architecture it has so far inspired. It is our task to find a design for housing that will be successful in terms of Arab society.

Almost every Arab country is marked by the richness of its architectural diversity as well as by the common patterns that all countries of the Arab world share. That diversity represents, not a lack of unity, but an imaginative adaptation to all sorts of local conditions and constraints. While I do not believe that we should imitate the past or provide mere pastiches of traditional elements, I do believe that it would be worthwhile to try to find urban architectural solutions based on these qualities of traditional design that have evolved over the centuries. But we must also make contemporary design our reference and not ignore new techniques or contemporary constraints. That is, after all, exactly what the old master builders did for centuries, working in harmony with communal wisdom.

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**Fig 12** First-floor apartment of a four-story structure built in 1950 in Damascus
2. Traditional Housing Design in the Islamic Countries of Asia

Hasan-Uddin Khan

One of the difficulties with our current approaches to housing in the Third World stems from the way we look at traditional housing. We tend to think of houses in terms of city dwellings, and our chronological perspective tends to be from the past forward. I would prefer here to look at them retrospectively, from the framework of today. There are, of course, a great many ways of looking at housing: a theorist might look at it as a process; AID may look at it as a program; a government might look at it as a form of political action; the inhabitants as satisfying their requirements; economists in terms of total costs and the national economy. But I think our understanding of what Islamic or Muslim housing is about depends on first understanding housing in the rural areas, for it is from them that urban houses have evolved. My assignment requires that I do this in an Asian context.

One of the points almost everyone makes when talking about Third World housing is that what is being built there today has broken entirely with tradition. Housing is supposed to be for people. It is supposed to be alive and exciting and to incorporate all the ideas about form, color, shape, and texture that its inhabitants might have. If one glances from African Nigeria down to the barren deserts of the Middle East, to India, Pakistan, and Bangladesh, and then on to Indonesia and Malaysia (where water plays a very important part in what housing does), and finally, as a sort of periphery, to China, one quickly notes an interesting relationship between the way people dress, the way people build, the materials they use, and the environments they have to play with. Not surprisingly, then, at the various seminars sponsored by the Aga Khan Award for Architecture, a consensus soon formed that there was no such thing as an Islamic house, an Islamic architecture; there were only a number of regional architectures adapted and adopted by people to their own traditions and environments. Now we are faced, perhaps, with the task of creating identities in architecture. I say "perhaps" because I am not so sure that we can create either national identities or even regional identities for a Muslim architecture. There may be some subregional identities and subregional approaches to designing housing that have some common link, but it is not so clear that that common link is Islam. For the moment, at least, I would like to play down the role of Islam in housing, and think instead in terms of housing for Muslims, because that has a very different connotation.

Housing can be viewed in a number of ways, which is one reason we need to conceptualize what housing is about before we can produce new housing that is appropriate. So far this conceptual framework has been lacking. One theme it should consider is the role Western influence has played. To what extent is housing in the Third World, the Muslim world, looking toward a Western model? One can certainly find plenty of Western symbols of modernity—a television aerial that looks like the Eiffel Tower, for example (pl. 1). But whatever the influence, it has led to an interesting series of contradictions which the architect and planner will have to face.

The fall of colonialism and the sudden emergence of the entity, "sovereign nation," generated the great search for national identity and with it for a national architecture. Turkey, for one—and to some extent successfully—sought a Turkish style and in the process managed to establish an interesting house based on a fairly traditional architecture interpreted in a modern way: you will learn about it from Professor Pamir. Once the search tries to go beyond a fairly circumscribed form, however, a whole array of influences that governs people's ways of looking at housing and approaching housing programs comes into play, and when one tries to synthesize those influences—religion, ideology, culture—into an architecture, one runs into a host of almost insurmountable problems. Not surprisingly we have not come up with a synthesis, and, in fact, even the attempt may prove dangerous because it encourages the invention of laws about what housing must or must not look like. Once that happens, the interpretation of the Islamic house will soon become artificially constrained, if not by architects, then by decision makers.

In the Third World, from Pakistan eastward to Bangladesh, India, and Southeast Asia, the notion that one has to look toward Arabia for inspiration when building an Islamic architecture has produced something of that result. When Indian or Asian Muslims want an Islamic symbol, they build a dome that has nothing to do with their culture or climate and is inappropriate for the materials they have traditionally used. This is a common phenomenon in the current search for an Islamic identity, but all it really amounts to is the Arabization of non-Arab architectures. True, Arabia is the home of all Muslims, but in today's context this kind of transposition is essentially no different from what occurred under colonialism and it can also lead to the sort of chauvinism that seeks to prove that Islam is superior to all other religions.
by creating monuments that are supposed to remind people of their roots. Nonetheless there is a place for some kind of synthesis. It has yet to be reached, but that is no reason not to look at housing in those terms.

One might begin with two commonplaces that everyone mentions. One is that Islam is unity. But there is great diversity in Islam, and we all know this. The other is that there is something called tradition and that continuity of tradition must be maintained, though there are in fact a whole range of traditions. These two points may, or may not, have much meaning in practice.

But that still leaves us with the questions: what is Islamic architecture, what is the Muslim heritage, what is Muslim housing? Historians, much more often than contemporary scholars, have tried to answer these questions, usually by coming up with five or six other commonplaces: it is an urban architecture that developed over the centuries as part of an urban fabric; it emphasizes interior spaces; it places importance on pattern and color; it has a defined separation of spaces and a defined sequence of spaces; and it has the ability to assimilate other architectures into its own. These points are useful enough for trying to think in terms of historical development, but when they are used as design tools they quickly lead to stereotypes. One ends up with courtyards and Islamic tile patterns and forgets about the principles that lay behind them, or that those principles were regional or subregional and not pan-Islamic. There may be a few principles that can be considered Islamic insofar as Islam prescribes certain ways of praying, certain places for ablution, and the like, but those are very few compared to the whole gamut of principles that go into the production of housing, especially mass housing for low-income groups.

In Asia there have been two influences on housing, and they have produced two distinct types. One developed from looking toward the west, and is exemplified in the architecture of Turkey, Iran, and Afghanistan (though the last is actually looking north at the moment), Pakistan, India, and the Muslim areas in the USSR; the other looked to the east, and is exemplified in the architecture of Malaysia, the Philippines, Indonesia, and, to some extent, Bangladesh and China. The two cultural approaches are very different, and those differences are particularly reflected in the inwardness of the western and outwardness of the eastern architecture. We think of Islamic housing as inward-looking and of its inhabitants as people who value privacy, but the half of the Muslim world that looks eastward in fact has a different attitude. It might now be turning to an Arabized, inward-looking model, but that is a very recent phenomenon. Traditionally it has had its own very different framework.

An idea of the range of architecture found in the eastern part of the Islamic world can be derived from looking very briefly at housing types from three different traditions—the Indian-Pakistani, Malaysian-Indonesian, and the Islamic Chinese—in terms of their physical environment, including climate and topography, and the sociocultural environment, including the economy and family structure. Then one ought to look at the influences that were absorbed into those cultures, and the similarities and differences in the houses themselves that resulted from them.

In west Pakistan and the west-northwest of India the countryside varies enormously from hills to plains and then down to desert in the south. The climate ranges from a fair rainfall to semi-dry or arid; the economy, as in most of the north, is rather feudal and based chiefly on animal husbandry, farming in the plains, and in the south some fishing—though that is fairly small-scale and recent. The people have been influenced by the Mongol invaders, the Aryans, and by the west to the extent that all the invasions of India and Pakistan have come through the Khyber Pass from the west; the Mongols, the Turks, the Persians, and, later on in history, of course, the British—for we should not underestimate the impact colonialism has had on this architecture. The influence of the Victorian era on Indian architecture is particularly striking. A whole new vocabulary was brought into the culture which cannot be disregarded, especially if you believe in the assimilative qualities of Islamic housing and architecture, because it is as much a part of the Islamic heritage of that country as any other. It was absorbed in the same way as the Muslims absorbed other cultures.

In the north, buildings are sometimes of wood, but more often of stone or earth. The availability of sand encourages the use of cement or concrete, producing a style very different from Malaysian and Indonesian architecture, which is based essentially on wood. Families in this part of the world number five, six, seven people. They live in settlements that are isolated and require mutual protection, and that, too, leads to a certain kind of cultural pattern.

The traditional elements mentioned in Mr. Abdulac's paper—the private entrances, courtyards, and so forth—also appear in this part of the country, but you find odd interpretations and aberrations of them today, especially from the models chosen by the rich, and some very weird mixtures. They are still using stone, which is fine if you like to think of stone as traditional in that area. But one often wonders where some of the forms it takes come from. I would caution, however, against disparaging them. These people like this kind of architecture, and their attraction to it is based on their feeling for a certain form and color and brightness (pl. 2). Architects may
look down upon the result, but it has added a new dimension to the lives of the people who are actually building and living in these houses. We might sneer at some of them, but we should think about it before we do.

In the Punjab, which is further south in the Pakistan plains, there is a tradition of wooden buildings (pl. 3). All these buildings are low—one or two stories—partly because of their nature, partly because of the materials and technology available to them. One does not find the four-, five-, or six-story mud architecture one sees in Yemen, for example. These buildings spread themselves; they are able to, if you like, act in isolation. That is why when this rural architecture is brought into the city centers, it cannot survive. When we think in terms of housing, which today essentially means urban housing, this tradition is an unrealistic model.

In Baluchistan people are poor, and for their houses they use whatever material is at hand, including bits and pieces of timber, but essentially they use earth: mud plaster and the traditional bricks that are manufactured on site, sun-dried, and reinforced with whatever grass or straw is around. But it works. The only trouble is that, while it can fit climatically and aesthetically, and in all sorts of ways, it no longer fits the aspirations of the culture. That is something that one has to consider when designing housing. Traditional architecture can be very beautiful, very simple, extremely elegant (pl. 4). But it is competing with the whole gamut of things we call modernization, including the kinds of buildings governments feel they have to build for their people.

A simple technique, which many of you will be familiar with, that is still used in Pakistan, is called a cinva ram (pl. 5); it compresses earth to create blocks, and allows one to go from the sun-dried brick from which a single-story building can be produced very easily to a degree of compression that provides a sturdier kind of material. It is a labor-intensive method, which is not necessarily a drawback because one of the resources this part of the world does have is labor. There is no reason why it should not be put to work on mass housing schemes, and using the local technologies is vital for the development of this architectural region. Everyone and anyone can work at it. Even very young children are involved in the process of building, working, earning a living. Nor do you find any specialization or different degrees of expertise in the building trades in this area; people can all do the same things. Given present conditions, neither is there much alternative.

But we should also be looking for alternative methods to create a truly traditional contemporary housing for these countries, and I do not think we can do it by importing totally new techniques and totally new images. When contractors are brought in from the big city there is no turning back to local resources, and ultimately there is no development.

The narrow streets, the shade, the ornamentation, the use of color, the quiet, the life in the streets are all an important part of the housing environment. So are the exterior and interior of the houses and their relationships. Ornamentation is as typical of the middle-class or lower-middle-class dwelling as it is of the wealthy man's house. People need to embellish themselves and their possessions in their own way, so it is not surprising to find a richness of color, of clothing, a veritable tapestry everywhere. The desert is plain; one needs to define oneself. One may look at the results and say, "My God, it's in awful taste," but it is a perfectly legitimate expression of what that culture is about, and not to be looked down upon.

When a rural architecture is transferred into the city and the people who inhabit it still try to live a rural existence in population densities beyond anything most of us have experienced, tradition must break down. To assimilate into an urban culture is a very slow process, but the migrants from the countryside continue to flood
into the towns of Pakistan at a phenomenal rate. When one thinks in terms of urban housing one has to consider the whole problem of integrating a rural population into the city and the breakdown of tradition that this entails. The traditional courtyard houses assume a very different character in a city. We might look at the medina, the narrow streets, the wonderful little alleyways, and think, “how picturesque,” but the people there are saying, “I wish we had more room; I wish we could get out of here.” There is a difference in perception between what we as planners think is Islamic architecture and what we should do about it, and what those people want to live in. A lot of planners have talked to them and know what their model is. Whether it is the right one or the wrong one I am not prepared to say.

The house is a continually evolving unit. There is an old Arab saying that a man’s house is not finished until he is dead, and it is true. The house has to change as the family changes; it has to grow as the family grows. In cities where plots are nicely demarcated and come with land titles, the single-unit or core house can grow to some extent, but at some point either that man has to die prematurely because the house can no longer grow with him or he is going to be stifled. Because governments set very strict space standards the only sort of growth that can occur is upward.

Compare this to the man living in the village. I am not by any means advocating that village housing is the answer, or that any particular kind of rural housing is the answer, because it certainly is not for an urban situation. Even in the village it could use some improvement in water supply, in eliminating insects, in maintenance—the poor man has to repair his mud wall every few weeks and clean out his house when it rains. There have to be improvements, but one might still use some traditional ways of arranging things.

Now let us turn from India and its inward-looking courtyard to Malaysia and Indonesia which is an outward-looking architecture and an architecture no longer based on earth, but on wood. It is an architecture that is no longer of desert, or highland, or plains; it is an architecture of lowlands, where people build upward because it is hot and humid and wet all the year around. Roofs are sloped, and no one sleeps on them (pl. 6). Walls are wood shingles, though these are now being replaced by metal sheeting—which is used all over Asia, because it is simple and it does actually keep the rain out (pl. 7). It is a trade-off between what is beautiful and what is practical, and this is a new, if horribly unaesthetic, solution that is economical and can compete on the market with wood shingles—or will when production can keep up with demand. I do not think one can simply say, “That’s not traditional; it has nothing to do with our architecture or our culture.” It has to be assimilated; how that should be done is the only question.

The manifold use of space occurs in many cultures, but in Southeast Asia it is probably even more pronounced than it is in Arabia, if only because in Arabia or Pakistan the differentiation between male and female spaces is much more rigidly maintained than it is in this part of the world. Reception spaces and ceremonial spaces are common to all architectures, not just Muslim architecture, and I wonder how many of the distinctions made can be actually identified as Muslim or as regional. Traditional houses in this part of the world can be expanded. One begins with a central core and then adds on to either side. There is a fairly strict ritualistic aspect to this Asian architecture, too; buildings are expanded on auspicious occasions or at certain times, a practice more typical of Asian than of Arab lands. Islam in Southeast Asia is nothing like Islam in the Middle East or Pakistan (pl. 8). I once went to a mosque opening in Indonesia which featured a Balinese dancer: in the Middle East a dancer opening a sacred place would be totally unheard of. Islam has a very assimilative and mixed-up face in this part of
the world, and to apply rigid ways of looking at housing in the terms that other cultures use would be a mistake.

Experiments in redesigning the earlier traditional house in more modern terms have produced interpretations of wood houses and local architectures, some taking the old architecture much more literally (pl. 9), others using a very Western approach. But at least in Indonesia no city government has allowed new houses of that sort to be built, simply because wooden houses are a fire risk. A traditional housing type—a whole culture if you like—is being killed there by modern planning. In dealing with practical considerations, legislation is completely disrupting the old traditions.

The Indonesians look eastward for their inspiration. If you were to suggest to them that the results do not look very Islamic they would be terribly offended—and rightfully so. This is their culture and their architecture, and they are Muslims. So their housing will have beautiful wood carvings, a number of roof structures, and other elements that are common to their architecture and unknown further west. There is, for example, always an open pavilion in traditional Indonesian houses, which is known as a pendopo. It is a place to meet friends outside the house, like the divans of the Moghul emperors, or the pavilions of inner harmony or peace of the Chinese. The design of the pendopo often reflects very strongly the belief in Islam and tradition—their four pillars and pointed roof represent the five pillars of Islam, for instance—but it is ultimately based in Javanese ritual. To separate Javanese from Muslim beliefs and ritual is difficult. The more one looks at these architectures, the more one realizes that, however Muslim and Islamic they are considered to be, they have melded two cultures together, and today's architecture must provide the same kind of meeting ground. At the moment, unfortunately, their architecture is either rejecting everything or accepting everything, but there is no meeting point between them. This is why we need a theory of architecture.

In the urban kampongs—kampung means village, if one can call these villages, considering Java's very high urban density (pl. 10)—the people are used to living much closer together than are the people of India or Pakistan. Even so, the traditional forms and ways of building still remain, though in considerably altered form. Giving people totally new units, improving sites and services, or building a road that is floodproof can provide incentives for people to produce housing for themselves. When this is done they build houses they are comfortable with insofar as they can, even though the environment has completely changed. They use local building materials along with new materials that are now becoming available, and add little symbols to show that they are progressive.

Housing there shows various influences: the Dutch had a very strong influence, and the British influence is as evident in Malaysia as it is in Pakistan and India. But the people also interpreted traditional housing in their own ways and produced their own variations on it. We tend to react against this, and the reaction can produce unfortunate results.

The conditions the poor live in are often miserable. Houses are under six inches of water a good part of the time, and people go on living in them: clearly the dwelling itself is not necessarily the basic problem. Government schemes provide housing for the people. Core houses supposedly allow a family to expand, and give the feeling of letting the house grow with the family, and to some extent it works. But building housing projects is really a political act; somebody says, "We must provide a certain number of services which people cannot get for themselves," so certain kinds of housing units are built. I think that kind of intervention has its very important place, but the kind of housing provided must have possibilities for future development.

Malaysia and Indonesia absorbed other cultures, but the Muslim culture of China absorbed very little. It kept the Chinese architecture, though it adapted it a little bit. In Sinkiang and toward the Russian border there is a very strong Iranian influence and Turkic influence, but the mosque in Xian—which is one of the great mosques of all time—has its own image that says, "This is Muslim architecture for us."

In contrast, the new housing produced by the Chinese could have been built anywhere; it may or may not have any character at all. It is the sort of housing that is built by governments who have large numbers of people to house. It has little reference to how people live. The housing produced under housing-authority schemes in China
consists entirely of flats, and space is at a premium. The mostly rural people who live in those flats have found their own ingenious ways of making do; they store their belongings outside the windows, for instance. Luckily no one steals anything in China; one could not resort to that in Pakistan, or anywhere else for that matter. But it raises the problem of what one does for space in a city, and it demonstrates that people often come up with far better solutions than architects do.

The entrance is always bent in an Arab house; in a Chinese Muslim house one comes straight in. But there is a thread, if you like, between the two definitions of space. Whether that thread is Islamic or not, I do not know, but it certainly seems to turn up all around the Islamic world. In the west of China—that is, in the Muslim regions—the underground house appears (pl. 11). Like other forms, that form repeats itself again and again in different cultures, though not for obviously Islamic or Muslim architectural reasons. Houses built into hillsides might be called Islamic, but they are not. Their raison d'être is purely practical; they are built to take care of extremes of climate. The people are poor, and they are very practical: in summer it is cool; in winter it is warm. The techniques of building with earth—mud plaster and straw—also produce results that are strikingly similar all around the world, and very nice results they can be. Housing could be designed from these techniques very, very beautifully. They can be used.

![Pl. 11 Underground house, Xi'an region, Shaanxi Province. People's Republic of China](image)

China can serve to remind us how diverse Muslim cultures are. The Islamic architecture that has been defined by scholars in terms of a certain period and a certain limited area really does not exist. Houses are born from the real or perceived needs or aspirations of the people in a particular society. If we are going to produce new housing using new technology and materials it must not only be suitable for the climate, but must accommodate in a sensitive way the religious aspirations of Muslims, whether it is the burial of the dead, whether it is birth, whether it is the ceremonial aspects of life, whether it is the religious aspects of life. But there are a number of interpretations even as to what that faith is about, and for us to decide how housing should be developed or should not be developed is presumptuous. What we can do is look at the good housing that already exists in these
3. Recent Design Trends in Turkey

Mehmet Doruk Pamir

As Hasan Khan stated earlier, Turkey's architectural inspiration has come mainly from the West—a source that appears quite natural when you recall that for about two hundred and fifty years the Austrian empire was one of its nearest neighbors. To make my presentation manageable, therefore, I decided to restrict my analysis of those influences to one particular type of housing, and since my assignment specified "recent," I decided to use as my starting point the establishment of the Republic of Turkey as a political entity. Because I am neither a professional critic nor an architectural historian—I am basically a practicing architect—and because few extensive studies are available on recent urban history in Turkey, what follows will be, at least in part, my own interpretations. I freely admit that they might be wrong.

Perhaps I should begin by taking a quick inventory of building types found in the urban housing stock of Turkey today. In order to be consistent and make things a bit easier for me, I will use Ankara as my primary source, though occasionally adding supplementary material from other places. The Ankara housing stock can be sorted into three main categories. One is our glorious gecelkondus, with which I am sure you are all acquainted. They constitute a kind of indigenous urban vernacular, and are a phenomenon all their own. Many studies have been done of them. (By the way, they are not slums; they are a particular urban housing solution for low-income groups, and exist in most large Turkish cities.) They once made up about 60 percent of the housing stock in Ankara, and at the moment are estimated to comprise around 40 percent of the total urban housing stock of Turkey.

Another type is the large housing project. Turkish projects are very like any mass-housing stock found anywhere in the world: some are high rise, some are low rise. Ankara's are for the most part high rise and built for middle-income, or sometimes for high income, occupants. "Middle income" in Ankara, by the way, means an income of roughly $5,500 per year. Compared to most third-world countries, therefore, Ankara is a fairly wealthy city.

The third type is what we call an apartman. By apartman a Turk means a single building on a single lot, collectively owned and with more than one living unit. About 50 percent to 55 percent of Ankara's stock and that of most other Turkish urban settlements are composed of them. They are not very exciting buildings, but they fulfill a need and even do a good job of housing people. This is the type I have chosen to illustrate certain European or Western influences.

The process behind the apartman's development is interesting. Until the 1950s the process of construction in Turkey, as anywhere in the world, simply involved somebody's acquiring a piece of land, hiring an architect to produce a design, and then engaging a contractor or builder to have it built. But in the mid-fifties, a new system or process of building came into vogue. It was called kat karsiligi, which means "in return for a flat." The principle was that the individual or group who owned a plot of land would trade that land to a contractor in return for an apartment—or two, depending on the value of the land, its location, etc.—in the building that would be constructed on the plot. Contractors who built this kind of building were generally not large-scale operators and were always short of cash. By the time they had built the first floor, they had to start selling flats to finance the rest. Eventually such a building could become a collaborative venture involving five, six, or seven owners, plus builder and architect. The results were often interesting, and readily affordable housing was produced, if on a very small scale. The operation was small enough for everybody to have a say in the process, and the results tended to reflect a certain collectivity.

These apartmans came in all sizes. Though the small ones are rare nowadays, medium-sized, fairly large, and quite large ones are very common. Even those built for low-income groups can sometimes look quite imposing from the outside, though the people who live in them often have incomes that are lower than those of the people who live in the squatter settlements of Ankara. But in most cases they are rather simple, humble buildings; architecturally there is nothing very sophisticated about them.

In Ankara the three types of housing we have described are often found together. A mass housing project, gecelkondus, and apartmans can all be found side by side, even right next to the president's palace.

Before we consider what influence European or Western models may have had on Turkish housing, we should try to describe what a traditional Turkish house is—or at least was, since single-family dwellings have been more or less priced out of existence by now, especially in the cities. The Turkish urban house was a simple building with three typical elements: a prominent roof; an identifiable base; and a living section of one or two stories, the piana nobile or whatever one wants to call it (pl. 1). Roofs in Turkey are almost sacrosanct: when roof construction begins, for example, a flag is raised as a token of respect. I do not know where the attitude comes from—perhaps the tents of our nomadic ancestors, but the roof was never utilized as an extension of living space in Turkish tradition, and that practice still does not come naturally in spite of occasional pathetic attempts to adopt it.

The base section of the traditional house was essentially a service and storage area for the kitchen and larder and, at times, included the stables. It also provided an impenetrable barrier separating the house from the street. That ensured privacy, but it also left the streets—at least in the Ottoman Turkish urban landscape—as something of a leftover domain. Although Turkish cities have always been quite advanced—with good water and sewerage systems—the streets, we read, were always terribly
neglected; not much love and affection were expended on them. In the Ottoman teaching of the Koran what the Turks call sevap, from the Arabic word, sawab, or "good deed," is divided into two categories. The first are the good deeds one does for people: helping them, lending them money, and the like. The second are the good deeds one does for God: extra prayers, extra fasting, and such. Surprisingly keeping the streets clean was considered among the second—a deed for God—so apparently indifference to streets has been around for a long time. Even that impetus was unavailing, however; the streets remain neglected to this day. The most that a Turkish city does is to send someone along to pour some asphalt, and that is the end of it.

A third element of the traditional house is the living section. There we find some effort to verify an individual existence through the manipulation of a large variety of elements—geometric volumes, craftsmanship, fenestration, and color. The result is not very coherent; with the exception of the consistent order—roof, base, and middle level—everyone does his own thing. Hasan Khan claimed in his presentation that the desert inspired the effort to use color and assert one's existence; in Turkey, I suspect the reason was, and remains, social. Ottoman society was fairly rigid, and to a certain extent Turkish society still is. People do not proclaim their individuality as openly as they do, say, in western Europe, but it is nonetheless a human need to want to prove one's existence, and perhaps our domestic flamboyance manifests that need within the restrictive bounds of social convention. It is a way of showing self-awareness, knowledge, and sensitiv-

ity. I suppose people all want to express themselves, and cultures provide them with all sorts of different ways of doing so.

Since Turkey is not included in our detailed seminar case studies, I will not discuss floor plans and other interior details, but restrict myself solely to the external expressions of the buildings. In Dean Porter's introduction to this seminar, he remarked that Islamic countries are in a sense thought to have been tricked into being influenced by Western civilizations or Western countries. In the case of Turkey, however, that is not the case. Turkey helped itself to those influences. We are solely responsible for whatever Western influences we display, and whatever we have taken we have taken for a purpose, whether social, political, or economic.

To begin our chronological survey, the 1920s was a time when the battle was won, the Ottoman empire had crumbled, and Young Turkey was politically established. But, although external affairs had been settled and a new government formed, the country was still in turmoil. Rebellions were endemic, the economy was in a shambles. Some unification mechanism had to be found to pull the country together. Nothing Ottoman could be used for that purpose because we had just kicked the Ottomans out, so the regime decided it would base the new country on the concept of being a "Turk." Suddenly a tremendous campaign was launched to promote "Turkness." To help it along, architects were expected to design "Turkish" buildings. Then, of course, the architects who were called in to build in a Turkish style had no very good idea of what that Turkish style might be. I have a hunch that what they did was to look to Europe, and, sure enough, there they found a stock on which to draw. Since Central Asia was the cradle of Turkish culture, the models they found to use, I think, were drawn from the illusionary architecture of the great nineteenth-century international expositions and certain "exotic" buildings, such as Nash's Royal Pavilion in Brighton. They assumed that these must represent what Asian or Turkish architecture did, or should, look like, and that was what they built (pl. 2). Their version came in two distinct styles, one rather simpler than the other. Of course neither was Turkish: both were carbon copies of a carbon copy. Ironically our first import from Europe was in fact itself an import.
In this period few housing projects or houses were built because of the weak economy, but some examples remain, all of them reflecting the same inspiration. The movement continued for about a decade, by which time Turkey was unified, the rebellions were over, the economy was stronger, and morale was high. Having taken care of its domestic problems, Turkey now faced the question of how to represent itself to the West or to the world.

It was then that Turkey decided it was not an Eastern nation but a Western one, so by choice again it decided to import whatever was then regarded in the West as most sophisticated. By that time, of course, the modern movement was flourishing in Europe, so we forgot about the Turkish style and started to build things in the modern fashion (pl. 3), using new materials and new techniques, though still retaining some germ of the Turkish house: the prominent roof and the separation of base from main living section. But essentially the International or Cubist style (or whatever you want to call it) was followed exactly, copying what was being done in Europe.

In this period, when Turkey turned to Europe for inspiration, it was usually to Germany. We had had good relations with that country since the First World War, so whenever some kind of modernization was to be imported, Germany was our first shopping place. But things were also changing in Germany, and the German architects who came were men like Holzmeister, Taut, and Bonatz, who imported with them the first inklings of Fascist architecture. By the time the Third Reich was in its glory in the early forties Holzmeister had designed our parliament building, and Turkish architects had picked up the style and started to build buildings like it. This type of architecture was also promoted by the state, which needed the image of a very strong central government (pl. 4).

But what to do with housing? The Fascist style clearly did not lend itself to domestic architecture, so the architects returned once again to the German store. The Germans, it appeared, were indulging in a bit of historicism of their own to further their Aryan principles—that is, rather than designing modern houses they were searching for historic relics and improvising on them—so Turkish architects did the same thing. It was thus that they finally had their chance to study the real Turkish house, and they were far more successful in their handling of the motifs or canons of tradition than their predecessors in the Nationalist period had been. One can find quite successful improvisations on the traditional Turkish house dating from this period.

In the early postwar years we were once again in limbo, until the fifties when the Hilton Hotel was built (pl. 5).
That really impressed the Turkish architects; probably nothing had impressed us more since Hagia Sophia. It marked the beginning of an era. Turkey had imported Skidmore, Owings and Merrill, with Gordon Bunshaft, its designer, for this project. Their building was based on an improvisation of Corbusier's principles. These then became very popular in Turkey, first for public and commercial buildings, then for housing, large and small. Corbusian expression was satisfying in that one could divorce oneself from the ground and make a grand gesture, but people did not know how to handle the roof garden, and the ground level under the pilloti was considered a waste of space.

Other Western influences also filtered in—Frank Lloyd Wright, for example, but modified to suit the Turkish conditions. Lloyd Wright's houses usually hugged the ground; we Turkified that look by lifting the house up and adding the traditional roof. We also experimented with a bit of Oscar Niemeyer.

By this time Turkey was in NATO and intimately associated with the United States, and Turkish architects were diligently reading Architectural Forum. The "curtain wall" was the expression in vogue, so we used it. Turkey's first high-rise office building was built in Ankara around 1956. The fellow who built the second was fond of Lever House, but he must have looked at it in black-and-white pictures because he did it in yellow. Enamel panels were not available then, so he used corrugated aluminum. The Miesian facade was also taken up by some of the apartamens. Of course, again there were problems because we did not have the proper technology. We solved the problems by building the inside in the traditional way and hanging grids on the outside under the pretense that they would act as sunshades.

Then came the 1960s. There was a revolution in Turkey, and a new constitution was passed. It was a very liberal constitution, and for the first time Turkey was absorbed in socialism, which soon became very popular. Now how should one apply socialism to architecture? By industrializing it—at least that was Turkey's solution—so everything had to be industrialized. One of the ways of being industrialized was to use prefabrication, as it was considered to be the building technique of an industrialized nation. But we had no sources for prefabrication: studies had been made and producing prefabricated units found not to be feasible. It was for us much more expensive than conventional methods. But the yearning remained, so we started to build buildings that at least looked prefabricated. I do not know what to call the style that resulted—Constructionism, perhaps—since each constructional element tends to be given an identity of its own and some kind of aesthetic is explored through interrelating all those individual elements (pl. 6). Most of these buildings were made by pouring concrete with delineations made in the form; one can find the same idea in some of Sert's buildings, which look prefabricated, but actually are not. The style worked rather well; it gave designers a lot of room to express themselves, and it was welcomed by clients and architects alike.

Then a disaster struck Turkey: our skilled workers began migrating to Germany. About two million left, a good many of them construction workers. We then had to look for ways to cope with that situation, and the answer so far as architecture was concerned was found, I think, in Brutalism (pl. 7), which does not need much refined workmanship, as it depends on rough and massive components to achieve its aesthetic vocabulary. (By the way, one example of that style, the Historical Society building in Ankara, received an Aga Khan Award.) Of course, our apartamens also picked up improvisations on Brutalism, using the prominent roof, the living section in the center, and the recessed base.

That is roughly where we are in Turkey at the moment, aside from some Post-modernism found mainly in commercial establishments: a baroque music hall, an OPEC rococco embassy, a rather brutal building with a Japanese touch (pl. 8). An amusing example of Post-modernism with which I was intimately involved was a building composed of six apartments which we had treated as a single unit. That turned out to be a mistake, since it provided no individual identity for the units. To
remedy that, the chap who bought one unit asked the contractor to put in a stained-glass window for self-expression, but the carpenter misunderstood and allowed for a window in the adjoining unit as well—he thought, you know, that the two sides should match. Of course the owner was terribly annoyed since he wanted the added touch to be solely his own. Fortunately, the man who bought the other apartment did not want a stained-glass window, so he was left with a hole, which he can use as he sees fit.

The Post-modernist attitude will probably continue to be exploited in Turkey because, by its very nature, anything goes. And I suppose we will use it because of our yearning to proclaim our identity in some form or other, and in Turkey everyone wants to do that, so I think Post-modernism will have its day.

As for the apartmans, they may be intellectually looked down upon, but they do a rather efficient job of housing people, and perform a useful function. Good or bad, they combine the ideas of user, architect, and builder, and, if the times outlive them or there are other pressures, unlike massive projects they fade away humbly and without much ado.
Unplanned Solutions: Informal Housing
4. El-Mounira Informal Settlement, Cairo

Mohamed M. el-Sioufi

The term "informal settlement" has come to be used to refer to those communities in Egypt built around Cairo in violation of the rules and regulations that have been promulgated by the government in a vain effort to control urban expansion. The regulations they violate include prohibitions against using agricultural land for commercial or residential use and buying or selling that land when it is so used. Anything constructed on agricultural land is also by definition illegal since it has to be constructed without a building permit. Zoning regulations also prohibit the mixed commercial, industrial, and residential uses that are typical of these informal settlements. Land-subdivision laws require that 33 percent of any subdivision be left for various public services. In informal settlements 18 percent public use is about the maximum, and the remaining land is entirely covered with private construction. Lot-coverage laws permit only 60 percent of a lot to be built on; informal settlements build on 100 percent, providing only shafts for air and light. Construction and building maintenance standards are reasonable, but the illegality of these settlements deprives their inhabitants of basic services such as water, sewerage, power, and public transportation.

The loss of agricultural land which these settlements entail is also in itself a serious problem. Although Egypt has a total area of about 1.2 million square kilometers, only 4 percent of that is arable land, and all of that arable land is confined to the narrow strip on either side of the Nile where the majority of Egyptians live and into which Cairo is expanding. The ratio of arable land per capita has recently decreased from .5 acre to .2 acre per person, and since that shrinkage is attributable to the encroachment of the city on agricultural land as the population grows, it will inevitably continue. Employment per acre of agricultural land is already the highest in the world, and in fact reached its saturation point several decades ago. Consequently any increase in the rural population means an automatic increase in migration to the city and in the city's population, which eats again into the surrounding agricultural land and continues the vicious circle.

Considering the lack of services in these settlements and the tenuous hold on property ownership their illegality implies, the question arises why they continue to grow and thrive. The answer is to be found in the socioeconomic conditions that now prevail in Egypt. First of all come the pressures of population growth: Egypt's total population has doubled in 30 years, from 18.9 million in 1947 to 36.6 million in 1976, and an estimated 42 million in 1980. If the annual rate of natural increase in those years of about 2.3 percent continues, the nation will have 560 million people by the year 2000. So far family planning has met with only partial success in reversing that trend: the birth rate fell from 45/1000 in 1960 to 37/1000 in 1980. Any additional population, however, will end up in the cities, most of it in Cairo.

Migrants turn to Cairo mainly because, although on a global scale the standard of living is not especially high there, it is clearly much higher than it is in most of the rest of the country. Not surprisingly, the problems of rapid urbanization are greatest and most apparent there as well. The rate of growth is 4 percent, of which 2.1 is natural growth; the remaining 1.9 is made up of migrants from the countryside, 150,000 of whom enter Cairo every year. The city's population in 1907 was .6 million and in 1960, 3.3 million; in 1973 it doubled to 6.6 million; by 1976 it was 8 million, and it is expected to double that number by the year 2000. By comparison, the next largest Egyptian city, Alexandria, has 2 million people, and all the rest range in the half-million-or-less category.

When the growth began, housing was already a problem, but one that was fairly well controlled until the early 1950s. Acute shortages began to develop in the late fifties and early sixties, however, when attempts at regulation left the private sector unwilling to keep up with demand any longer. Those regulations included stringent rent controls and the prohibition of eviction, both of which made private investment in housing stock unprofitable. The expropriation of property in the early sixties in an effort to redistribute the nation's wealth exacerbated the situation. Builders turned from constructing rental property to building condominiums or collecting illegal key money from prospective renters in their efforts to keep up with the increasing prices that were being ignored by government appraisers. As a result, investment in all but luxury housing decreased, while the population increased, and the central city became excessively crowded as the new population squeezed into the existing stock. In 1947 population density in Cairo was 2.2 persons per room; by 1972 it was 3.1 persons per room. Single houses were converted into tenements; extra stories were built onto the roofs of existing buildings, and migrants, instead of spending one or two months with relatives when they first arrived, settled in for long periods.

Officially the shortage of dwelling units was placed at 1.5 million in all Egypt; most of that number was accounted for in Cairo. True, that number was somewhat exaggerated by the high standards the government set: anything below that standard was not counted as an existing unit. Nonetheless, whatever the exact number, the shortage was, and remains, very great. To meet it, the government sponsored public housing projects, but could not meet its target because it could not afford the major investment with no economic return that financing them involved. Private enterprise continued to direct its attention exclusively to condominiums and other housing for the rich, leaving the middle- and low-income people to fend for themselves. The result was the informal settlement. Between 1973 and 1978 these settlements accounted for 76 percent of all new housing built in greater Cairo. Most of the expansion of Cairo to the north, west, and south consists entirely of illegal housing.
To describe how the system works, one of these settlements to the northwest of the city, called el-Mounira Imbaba, will be used as an example. While the description that follows is taken from that site, in general outline it holds for the rest of these settlements as well.

The small village of Imbaba is an old settlement, dating from pre-Islamic times, but it remained an isolated hamlet until a bridge constructed in the 1940s brought it closer to Cairo. Then it began to grow: in 1957 two public housing projects and several industries were built there, and especially the latter made the area attractive to more people than the projects could house. To the west some 47 hectares of informal settlement sprang up not long after the housing projects had been built. By 1966 that informal settlement had increased by 90 hectares, by 1976 by another 70 hectares. The smallest lots, of less than 60 square meters, comprised less than 30 percent of the total in its early stages, but had increased to 48 percent as the land value increased; the largest lots decreased correspondingly in number, and the number of middle-sized lots of 60 to 100 square meters also shrank. The second settlement is much larger in area than the newest, but the number of buildings constructed in the two time spans is equal. Infill, with its accompanying increase in density, accounts for the difference in size.

Today Imbaba comprises only the northern part of the settlement; the rest of el-Mounira is built on farm land, and is therefore entirely illegal. All this land has been bought and sold, for these are not squatter settlements. The farmers who used to cultivate the land sold out for a variety of reasons. First, there is no primogeniture in Egypt so farms shrink through subdivision from inheritance; they are also uneconomically narrow because of the requirement that everyone have access both to the nearest road and to water. When the plot becomes too small to earn a livelihood and landowners refuse to rent to tenant farmers, the only choice is to sell. Then, as farmers sell out and an area begins to be built up, it becomes difficult for the remaining farmers to maintain a proper farm because people trespass and destroy the crops. Not surprisingly, then, farm land is disappearing at a rapid rate (pl. 1).

The settlers who buy the farm land are in the lowest income groups. About 30 percent are from nearby vil-

ages; the rest come either from crowded central Cairo or from rural areas further away. The average family size of this population is about 6.4 persons, for a housing density of about 2 persons per room—an improvement over conditions in the central city. Financing is usually by savings, and shops are often built into the dwelling, enabling the owners to add to their income (pl. 2). The wife and children take care of the shop while the husband works elsewhere. Consequently there is a lively economic life.

The width of the original agricultural plot dictates the form of the streets and houses; the settlement grows through the duplication of narrow streets of four or five meters lined with rows of houses built to fit onto the original agricultural plot, with culs-de-sac added if the house rows become too thick; occasionally a short perpendicular road cuts through (pl. 3). Because the land is bought and sold by poor people, public land is rare; neither the buyer nor the seller can afford to sacrifice an inch of property to a public facility. El-Mounira’s single school was built in the earliest stages, and it has to serve 150,000 inhabitants—a population that would normally expect to have 20 or 30 schools. Parents solve the problem by sending their children to overcrowded schools in the nearby public projects. Of community buildings, only mosques are abundant because the people are willing to pay for them. They are built either on the ground floor of
someone's building or on a separate lot through the pooled labor and resources of the people in a neighborhood. But social centers, community centers, health facilities, police and fire departments are all nonexistent. On the other hand, one finds a conglomeration of commercial activities—a cafe alongside a cannery, a lumberyard, a wholesale market, a furniture store next to a recreation area—built and run by the inhabitants. They supply not only jobs but an essential service, for there are very few vehicle owners and no public transportation in the area. Privately run microbuses provide the little transport available, and the fare is high compared to that on the subsidized public bus service, whose routes are inconveniently distant for a large part of the population.

There is no water system (pl. 4). Near the legal public-housing projects the inhabitants tap into the project water mains, but for most households water is hauled by the women and girls, who stand in line at the public well for drinking water and go to the more numerous pumps to do their laundry. Some people have water pumps at the entrance to the house—it is agricultural land and the water table is only two meters below ground—but even they have to carry water upstairs to the family tank every day.

Since there is no water-borne sewerage system, the inhabitants have to dig trenches in the piece of land that fronts each building, line it with bricks and plaster, and cover it with a concrete slab, which is usually built up higher than the street level to prevent vehicles from running over and cracking it (pl. 5). The contents of these sewage tanks are removed every six months or so by pumping the waste into a tank truck which then redepósits it in the canal that surrounds the site. Sometimes the area is flooded with this sewage-filled water, but even contained it is a potential threat to the public health.

The blocks are very regular, reflecting the original boundaries of this carefully surveyed agricultural land, precision being important where inheritance is involved. Within the blocks the aspect can be haphazard, however;
the depth is fixed, but facade width is very flexible, and building height is not restricted except by the owner's available funds. Density in el-Mounira is about 1,700 persons per hectare (fig. 1).

Generally speaking two types of dwelling are found in the settlements. The first to appear are the small load-bearing wall structures built by the family who has bought the lot from the farmer. After the sale, water is located and a pump installed to mix the concrete from which the house will be built. It will usually be constructed in three stages (pl. 6a-b): First, an ordinary concrete foundation and two or three rooms on top of it are roofed with palm fronds as a temporary shelter to be used for family bedrooms and a kitchen. Next, when the owner has saved some more money he hires a contractor to pour a concrete roof over these rooms, and he begins to build his second story, room by room. The rooms the family does not need are rented out. The third stage simply repeats the second, with the rental money used to pay the bill. Construction standards are high, certainly comparable to those observed in legal housing. These people are investing their own hard-earned funds and want to build the best house they can for themselves and for their children after them (fig. 2).

The second type of structure to appear is built by a contractor. As the area becomes more and more popular and land values increase, outside contractors begin to build rental units, often on land they have already bought cheaply and set aside until the rental market becomes propitious. When demand is sufficient to ensure a project's success, the contractors produce five-to-seven-story buildings as rapidly as possible and rent them out (pl. 7).

Informal settlements obviously have their advantages. They require no subsidy from the government—the financing system works more or less automatically—and can therefore keep up with demand, in contrast to the public housing the government provides which lags far behind. The quality of both construction and maintenance is high, because the people who live in the building are in 98 percent of the cases its owners. Building costs and rents are geared to what the market can pay. Both construction and building maintenance are at a very high level compared with public housing, even though these buildings are officially substandard.
Informal housing also has its obvious disadvantages. Aside from the loss of the agricultural land itself, using agricultural-land subdivision has its own built-in problems. Some of the lots are so shallow that it is uneconomical to build on them, and many blocks are so long as to cause traffic circulation problems. The high value of the land means that streets are made too narrow, space for public facilities is absent, and sanitation services nonexistent; because there is no municipal structure, there is no garbage or refuse collection, no police or fire protection, public-area maintenance is minimal, and sewage is a constant threat to public health. But whatever the drawbacks, these settlements are sheltering people in a way that seems to satisfy them and at a cost they can afford at a time when government and business are failing at both, and that is no small achievement.
5. Two Core Housing Schemes in Dacca: Mohammedpur and Mirpur

Aminul Haq Khan

In 1958 the Pakistan government, as part of a more general scheme to rehabilitate people displaced by the partition of India in 1947, planned housing projects for nineteen sites in fourteen districts of what was then East Pakistan. The scheme had been inspired by political pressure generated by the refugee issue, especially the illegal squatting of displaced people on city land and the unsanitary slum conditions that had resulted. The solution the government came up with was to “rehabilitate the displaced families in planned townships on the outskirts of towns, with modern community facilities,” according to a Housing and Settlement Directorate publication. After a careful study of what was needed and of the resources available to meet those needs the target was set at 32,130 core houses, 1,599 shops, and 442 acres of industrial and commercial land, accompanied by appropriate community facilities and sanitation infrastructure. Of that number, 10,392 core houses and 9,500 plots were earmarked for development on two sites in Dacca: Mohammedpur, then on the outskirts of the city, and Mirpur, a satellite town ten miles from the city center (fig. 1).

The general program the government came up with was quite reasonable in its basic planning principles, and they were used in the subsequent development of the projects. The projects were to be distributed widely over the country, and some were planned for small, district towns. Though the aim was to rehabilitate the refugees wherever they happened to be, the approach also had the advantage of promoting balanced urban growth in the country and relieving the pressure on already overburdened major urban centers (fig. 2).

A mixture of housing types and sizes was to be provided in each of the projects to cater to the varying needs of different income groups. Multistory apartment buildings with units ranging from 200 to 600 square feet, serviced plots varying in size from 144 to 1,000 square yards, and two different types of core house were to be provided. The idea was to encourage the development of a heterogeneous community, to avoid having a project turn into a slum, to yield a high population density, and to help distribute costs over a large number of buyers. To promote better social and political integration of the refugees into local populations, the initial plan was to allot the serviced plots at a ratio of 40 percent locals to 60 percent refugees, but in practice, for various reasons, this failed to work.

A cross-subsidization scheme was worked out to make the program self-financing; it included selling the larger plots to the high- and middle-income groups at high rates and selling commercial and industrial plots at auction. The funds raised would then defray the cost of land needed for the core houses.

A variety of prototypes were designed to minimize overhead costs and avoid excessive standardization. Some essential utility buildings such as primary schools, health centers, and shopping centers were provided by
the government. Plots were set aside for mosques, high schools, colleges, and some administrative and commercial buildings to be developed in the future, since the limited available resources of the government could not be expected to provide them all at once.

To improve local economic conditions, the new towns were sited at convenient distances from sources of employment. Commercial and industrial plots were also set aside on the sites to generate jobs.

Project Plans
Mohammedpur

The Mohammedpur housing estate in northwestern Dacca is five miles from the central business district. The project area is bounded on the east by the Capital Complex and on the south by Lalmatia, a high- and middle-income residential area developed along with Mohammedpur. To the north and west are low-lying agricultural lands which private entrepreneurs are now filling in with developments (fig. 3).

The Dacca-Aricha Road connects Mohammedpur to the central city in the south and to Mirpur and Savar to the north. It is also the main road linking the capital city with the northern districts of the country. The site is accessible from the Mymensingh Road to the east, bypassing the Capital Complex. On the southwestern side, the Satmasjid Road and Sarai Jafрабad Road connect the site to the traditional business districts, the Rayar bazaar industrial area, and the shopping districts of New Elephant Road and New Market. The northwestern part of the site is bordered by a 100-foot-wide ring road which connects this area to the Dacca-Aricha Road. The ring road also serves as an embankment, and is equipped with sluice gates to protect the area—which is a little lower than the rest of the site—from monsoon flooding.

A total of 2,292 core houses were built in Mohammedpur between 1959 and 1964 to resettle destitute refugees; 288 one-room flats, 90 two-room flats, and 24 three-room flats, ranging in size from 200 to 600 square feet, were also built for the low- and low-middle-income population. In addition, 1,600 serviced plots intended for all income groups and ranging in size from 144 to 1,000 square yards were provided (pl. 1).

The two types of core units varied according to the size of the plot, the built-up area, and the financing. All units had access to basic services: paved streets, piped water supply, sewage and waste-water disposal systems, electricity, and garbage disposal. Subsequently they were also provided with gas connections for cooking.

The core for the Type A units was detached, in the expectation that those units would be expanded both vertically and horizontally by the tenant, though vertical expansion would be limited because of the size of the foundations and the thickness of the walls. These units would cost TK 2,600 to construct and were allotted on a hire-purchase basis, with a down payment of TK 200 and monthly installments of TK 20 for ten years. The Type B unit was semidetached (adjacent units shared a common wall) restricting independent expansion. These were also distributed on a hire-purchase basis, with a down payment of TK 200 and monthly installments of TK 14 for fifteen years. Full ownership rights were given to dwellers when the full price had been paid.

The core units had reinforced concrete ribbed slab roofs, supported by a combination of 5-inch walls and 10-inch footings, and perforated reinforced concrete windows. They were designed to make the units both economical and easy to build, since they used familiar construction technology.

The community facilities consisted of two primary schools, a health center, two markets with a total of one hundred shops, a town hall, and a community center, all constructed by the government. They had brick walls and concrete roofs and followed high-quality specifications. Spaces were set aside for future development through the initiative of public or other agencies for the construction of four high schools, one primary school, a post office, a gasoline pump, a police outpost, a bus terminal, fourteen mosques, a cinema, and one madrasa (eedgah). The small number of larger plots earmarked for industrial uses (mainly cottage industry) were left in the western periphery of the project. Some low-lying areas were left
Rows of plots and core units laid back-to-back and bounded by public roads form blocks of from ten to forty units each. These units have a service alley four feet wide between plots to carry sewerage, water supply, gas, and storm drainage networks. Most of the core units are located in Blocks C, D, E, and F, with a few at the back of Section B.

Mirpur

Mirpur now has a population of well over 60,000, and is administered as a separate municipality. Although it is by now within the city of Dacca, it was originally planned as a satellite town, with some industrial and commercial uses, a town hall, and other government areas. Although part of the plan to resettle a large number of people displaced by the partition of India, it also allocated land to provide housing for some local people and for buildings developed by a private contractor. The growth of community life in Mirpur has been very slow. Few job opportunities have opened up there, and the majority of its workforce has to find employment in central Dacca.

Mirpur lies in the northeastern periphery of the city, ten miles by road from the city center. It is separated from the main city by a wide band of low-lying agricultural land which remains flooded during the rainy season. Low areas lie all along its south and west sides, except for a narrow strip to the southwest along which runs the main road link to the city. To the east is a military cantonment which cuts Mirpur off from the new high-income developments of Banani and Gulsham. The main access and

![Mirpur housing estate](image)
public transportation linkage with the city is by the Darus Salaam Road, which joins the Dacca-Aricha Road. Another road through the cantonment, though shorter, is not open to civilian traffic.

Mirpur was developed at a distance from Dacca because, although in 1958 the demand for urban land was not yet great, a plot on high land of sufficient size to house the project envisaged was not available closer to the city. The Housing and Settlement Directorate, a then newly formed body entrusted with the job of rehabilitating the refugees at a minimum cost and as speedily as possible, encountered administrative difficulties in acquiring land closer to the city from a network of government organizations that held the municipal lands in trust. Satellite towns were also in vogue at the time as a solution to urban congestion; several other satellite towns were built around major cities of what was then West Pakistan. Mirpur and some other schemes were East Pakistan’s share.

The initial program called for the development of 1,751 acres of land divided into 12 sections. Its 8,245 core houses were built in two phases: 4,245 units between 1959 and 1964, and 4,000 units in 1967 and 1968. All the core housing units in Mirpur were of Type B, in which two adjacent units share a party wall. More than 8,000 of them and about 7,900 plots of varying sizes were set aside for displaced persons and the local low-income population. About 4,000 flats were also planned for construction, along with a good number of industrial and commercial facilities.

Space was allocated for community facilities—12 primary schools, 7 secondary schools, 2 trade schools, 4 markets, 9 mosques, and 4 health centers—in the initial eight sections of Mirpur that were developed. Of these the government provided 3 primary schools, 1 dispensary, 3 health centers, and 294 shops, as well as the core houses.

The housing estate of Mirpur is Y-shaped, following the configuration of the available high land. Its 120-foot-wide main roads run along the Y connected by a grid pattern of subsidiary roads for local traffic. Large avenues 60 to 100 feet wide surround each section; the minimum street width is 30 feet. A narrow belt of government facilities and lots for middle-income groups are located along the main spine roads, with low-income core houses pushed toward the back. Crossroads were avoided along small streets, probably in the interests of traffic safety, although in fact there is very little traffic. That practice resulted in innumerable small open spaces for which no one takes responsibility. Other neglected, unused spaces are the narrow strips of land that separate the various types of plots.

The blocks of units for the various income levels are grouped in sections separated by wide roads or wide belts of open space. The core units are laid out in rows of 15 to 20 units per block, with 30-foot-wide access roads in front and 4-foot service alleys at the back carrying all utilities. Some of the community facilities are located along main roads, together with commercial and government buildings, but schools, health centers, mosques, and an occasional market are located within the large areas devoted to housing. Very little provision was made for formal open spaces or parks, but some land was left for large-scale industrial use and for cottage industries.

Project Developments
Mohammedpur

Of the two core housing schemes, only Mohammedpur has undergone major physical transformation, not only in the core houses but throughout the project area. There the development has included large numbers of commercial, shopping, and service facilities on private land legally and on public land illegally. To understand why Mohammedpur has changed so much, one must first look at the social, political, and economic changes undergone by the whole country, particularly Dacca’s shift in status from a provincial to a national capital. The population of the city has increased by 500 percent over the last two decades, and has expanded in area by at least 250 percent. Mohammedpur was on the outskirts of the city in 1958, but the city has by now grown far beyond it, increasing land values and the desirability of the area as a place to live.

The most significant development for Mohammedpur was the building of the Capital Complex on its eastern periphery. This alone raised land values in Mohammedpur considerably, and the gradual transfer of government offices to the capital will continue to increase the desirability of rental housing in Mohammedpur for government employees. In addition, the presence of the Capital Complex has improved public services for Mohammedpur as well.

To the south of Mohammedpur a high-income residential area has grown up, and to the southwest a large industrial area specializing in tanneries and small-scale manufacturing of all sorts has developed. These have greatly improved the job opportunities for residents. To the north and west the low-lying areas are gradually being filled in by cooperative housing societies and private developers who, inspired by Mohammedpur’s success and its available services and infrastructure, are putting in land fill and building on it.

With the passage of time, service-oriented commercial activities and small-scale manufacturing industries have appeared all over the project, although originally each block was planned with a specific residential, commercial, or public use in mind. General stores, grocery stores, cafes, stationery, confectionery, tailor and embroidery shops, barbershops, shoemakers, motor workshops, electrical and refrigerator repair shops have sprung up along the major streets, and traffic along those streets is heavy (fig. 5).

Shopping facilities, both constructed and open-air, have proliferated far beyond what was originally provided by government, and are flourishing. Their success can be attributed to accessibility, growth in population, and the low initial investment made on structure (one of the markets in the northern part built by the government failed through the combined effects of inaccessibility and high costs; it is at present occupied by refugees awaiting repatriation to Pakistan). Because of their placement and length, some of the residential streets are so filled with commercial activities that they appear to
have been designed for that purpose. They carry a large volume of traffic that seems not to have been anticipated in the original plan, since street widths are not always adequate for it. On the other hand, the access streets in front of the core units, where hardly anyone owns a motorized vehicle, were made thirty feet wide and, as a consequence, have been encroached upon in places by residents for gardening and other such uses (p. 2).

The odd-shaped open spaces intended as parks have been put to better use by developing (illegally, of course) shops, motor workshops, rudimentary restaurants for low-cost food, a bus terminal, and, in commercially less strategic locations, for squatting by rural migrants, who render household services to the surrounding residents and support the transportation system by plying rickshaws (pl. 3).

One of the reasons why Mohammedpur has become so desirable as a residential area is the presence of a viable transportation network catering to the needs and income levels of all kinds of people and effectively connecting Mohammedpur to the rest of the city. The services that link Mohammedpur to the city center include two bus routes, one government-run and the other private, both originating at Mohammedpur, and two others, one government-run and originating at Mirpur and the other privately operated and originating at Savar, which run along the Dacca-Aricha Road. A system of auto-tempos (scooters) and auto-rickshaws also connects Mohammedpur and important points in the city, but the rickshaw (a human-powered tricycle) remains the most dependable, if time-consuming, means of transportation. It is versatile, carrying not only people but small parcels and the like, and it reaches all doorsteps. It is available most of the time at every street corner. Mohammedpur is within a manageable distance for rickshaws to carry people to and from the center city. The human-powered thela gari, a two-wheeled cart resembling a bullock cart, can carry heavy goods. The public-transportation routes originate on Asad Avenue, with makeshift stations located along the road or in vacant lots. These have contributed to the growth of commercial activity along the route and have also promoted the success of at least one of the government markets. Since a symbiotic relationship exists between transportation terminals and commercial activity, bus, taxi, scooter and thela gari terminals now cluster around the government market and the major shopping areas.

Community facilities in Mohammedpur have increased as well. At present, Mohammedpur has 5 kindergartens, most of them housed in residential units, 8 primary schools, 7 secondary schools, 12 mosques, 2 clinics, a cinema, and a market—a wholesale vegetable market built recently by the government along the bus route and supplied by adjacent rural areas (the other, unsuccessful, market structure is now occupied by refugees). Even the more successful market provided by the government is at a disadvantage compared to the informal shops which have grown up around it, however (pl. 4). It is not easily accessible, since it occupies a single large area, and it is more expensive since it cost more to build than the informal markets, which are either open-air or made of low-cost materials. Across the boundary, three large hospitals have been set up by the government in the Capital Complex to provide general, as well as specialized, health services.

All the units in Mohammedpur have undergone at least some minor changes through additions, alterations, or both; 60 percent of them have undergone major additions and alterations, and some have been entirely demolished and replaced. The houses at present can be classified into three groups according to the degree and nature of their transformation. (1) Slightly improved units are mainly in Blocks B and F, where 60 percent and
40 percent respectively are in that category. The improvements take the form of additions in semi-permanent materials to be used as living space, shops, or both. (2) Substantially improved units comprise about 32 percent of the total. Houses have been improved by changing the original structure, using permanent or semi-permanent materials. Structural additions include both living and commercial space, and in most cases are rented out to give additional income to the owner. (3) Totally new structures comprise 27 percent of the total. The original unit has been demolished and a new building, usually multistoried, built in its place. Most of these new structures are in blocks D and E. They are mainly residential, but in some cases the ground floor is rented out for shops (figs. 6-9; pl. 5).

The first two categories represent incremental change; the third comprises the so-called instant developments. The incremental changes are usually financed privately; the instant developments are usually subsidized by public funds. In the two case studies outlined here it was evident that the incremental developments, especially among the low-income population, are seldom a result of an increase in family size or some other family requirement for additional space. They are undertaken as an investment, whenever finances permit, to obtain extra rental income, whether as apartments or, preferably, shops. Once rented out, the dwelling becomes a multi-family unit, sharing with the owning family its courtyard and toilet facilities, but not its kitchen. Privacy is maintained by a combination of customary behavior and, where necessary, physical barriers. Community enforcement of the social code at home and in the neighborhood is quite strong.

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**Fig. 6** Mohammedpur core housing: typical units.

**Fig. 7** Mohammedpur core housing, improved house 1. This one-story house is owned by a self-employed tailor, who earns TK 300 per month from his work and TK 700 per month from rental income. He lives with his wife and six children in the shop and one adjacent room. Three other families rent the rest of the house, for a total of 23 people. The kitchen, bath, and courtyard are shared. The owner developed his house incrementally, saving his money to hire masons who worked under his supervision.

**Fig. 8** Mohammedpur core housing: improved house 2. This one-story house is shared by a large extended family: a father, his five married children and their spouses, two single adult sons, and twenty grandchildren. All the facilities are shared. The occupations of the wage earners range from business to mechanics to government service; the total household income is about TK 3,500 per month.

**Fig. 9** Mohammedpur core housing: improved house 3. This four-story house is on the site of a one-story core unit which was demolished. The new house was built with a government loan which took one year and considerable effort to obtain, but good contacts and credit rating combined with good relations with labor ensured its completion in seven months. The owner receives TK 1,700 per floor per month in rental income.
There are now about 10,000 households in the area, with an average household size of about 7 persons. Many households consist of extended families, which makes the occupancy rate very high. In one core house surveyed for this report, the number of occupants was 32: the inhabitants included 5 married couples living in as many rooms along with 20 of their children, ranging in age from 6 months to 20 years. The “safety valve” in this unit was an adjacent automobile-repair shop run by the family, where the older sons slept at night. Shops, verandas, kitchens and, in fair weather, even the open courtyards are similarly used by other families to accommodate overflow population. The average density in the core-house areas was 300 persons per acre according to one survey made (by Abdullah Salam) in September 1978; the figure is high considering that the majority of units are only one-story structures.

The population has always shown a wide range of occupations and income levels, but it has become more marked since the independence of Bangladesh caused many of the people who had settled there to emigrate to Pakistan. The languages spoken and the cultural background of the inhabitants also vary considerably. Incomes range from lower middle to upper middle, with some very low-income people. Many of the residents have some education, and a number are professionals such as doctors, engineers, and lawyers. Some are employed in government or semigovernment organizations, but a majority are engaged in small-scale trading, business, and manufacturing. Rentals provide additional income which, in the case of some low-income earners, can more than triple the regular income of the household head. The members of the household are often also involved in a variety of other income-producing activities. Vegetable gardens, chickens, pigeons, goats, and cows can all be found in the yards around the houses. Even people with regular jobs are apt to have second part-time occupations, such as managing a shop. Housewives take in sewing, and often even very young children can be seen selling sugarcane or cookies or helping to run the family shop (pl. 6-8).
Mirpur

With the demand for land growing over the past few years and land speculation increasing from investment financed by remittances sent home to Dacca by expatriate workers in the Middle East, buyers have had to seek land as far away as Savar, the next tract of usable high land, which is fifteen miles northwest of Dacca and five to eight miles away from Mirpur along the Dacca-Aricha highway. All areas adjacent to Mirpur are also rapidly being developed by government as well as private investment. As a result, the one road to Dacca is very heavily traveled during rush hours and has had to be widened. The fastest-developing areas in Mirpur are along this road because of its strategic commercial importance and ease of access. Even in low-lying areas along the road, government developments and some private high-income speculations are being constructed on land fill.

Government and semigovernment investment in Mirpur has financed the construction of about two thousand flats for government employees, two new squatter resettlement areas, a cantonment, police lines, a road-research laboratory, a building research institute, a telephone exchange, town hall, two trade schools, a large insulator and sanitary-ware factory, an electrical-goods factory, and others. Private funds have financed a brickyard, a dairy, a rolling mill for structural steel, a pharmaceutical plant, a glass-blowing establishment, and shops for cottage industries such as weaving, joinery, domestic-utensil making, and bamboo-mat manufacturing. Despite all these enterprises, however, the majority of the working population of Mirpur still has to commute to Dacca for its livelihood.

Compared to Mohammedpur the core housing in Mirpur shows insignificant development. One reason might be that a great number—up to 75 percent in some areas—of the houses were abandoned by their original occupants owing to migration or because they chose to move to Pakistan after the liberation war of 1971. These houses are now occupied illegally, or extra-legally, by people awaiting confirmation of their allotment. Where ownership of a unit is not certain, development will not occur since the occupants will not invest their money until their claim is secure. Even in units occupied by original owners, however, development has been minimal because the returns on investment are not sufficient to encourage it (figs. 10-11).

Many units have been partially or totally converted into small workshops for the weaving of a special type of sari. In most of these, the owner works part-time or full-time with help from friends and family, doing everything from dyeing the threads to pressing the finished cloth. Some other small-scale industries have also grown up in the area.

Renting out parts of the family dwelling is not so common in Mirpur as it is in Mohammedpur, mainly because there is little demand for rental in the area, and consequently rents are low and not worth the extra investment or effort. Commercial use of plots is beginning, but only along the larger avenues and roads that carry a substantial traffic load. There is a very old mazar, or tomb, at the southwest corner of Mirpur which attracts followers from all over the city, and is the main reason for a flourishing market in Section 1. The market has in fact extended far beyond the space allotted to it by the government, reaching the main road and spilling along both sides of it.

Comparison of the Two Projects

The factors affecting the development of Mohammedpur and Mirpur were partly external, partly built into the design decisions. Taken together they guaranteed a very different development for those two areas, mainly to the benefit of the former and the detriment of the latter.

Mohammedpur stood to benefit far more than Mirpur from the expansion of the city and the consequent increase in the commercial potential of land and units because of its proximity to the center and links to the other areas of the city. It was able to take advantage of several available modes of transport, and in particular was within a feasible distance for rickshaws. Mirpur, on the other hand, is too far out for regular rickshaw service, and has to depend on the rather erratic government bus service to Dacca. Despite consistent efforts, administrative and technical difficulties have hampered improve-
ments of the government bus service over the last fifteen years. In Mohammedpur, jobs were supplied by the numerous tanneries and small manufacturing industries at Rayer Bazaar nearby; in Mirpur, jobs fell far short of the available labor force.

The proportion of high- to low-income groups significantly influenced the development of service-oriented trade and commerce within the two areas. Mohammedpur had a good number of high- and middle-income people, a population later reinforced by the moving of higher income groups into the core houses. Mirpur had very few middle-income and a minimal number of high-income inhabitants, and was unable to attract more.

In many cases, core units were bought from the original tenants by people who had available funds and therefore access to institutional financial assistance. After the independence of Bangladesh, when the non-Bengalis among the original occupants migrated en masse to Pakistan (about 39 percent from Mohammedpur and 78 percent from Mirpur), the people who moved into Mohammedpur seem to have been able to legalize their tenancy or ownership. The status of the majority of new Mirpur occupants, on the other hand, remained unclear. This insecurity has discouraged Mirpur residents from investing money in units even when they can afford it. Mohammedpur, adjacent to the Capital Complex, also benefited by the rise in land values in general and the increased demand for rental units, as well as the ready availability of additional services.

In his case study of Mohammedpur in 1978, Salam listed several factors encouraging development there. The availability of public financing was one: units assisted by public finance tend to be built all at once, those without, to be built incrementally. He also found a direct correlation between the level of improvement and the advantages in location, such as available public transportation, main roads, markets, community facilities, and open spaces (corner lots are invariably among the first to develop). Finally, it attracted a prosperous population: occupation and the amount of education many household heads had not only influenced income but provided the skills needed to surmount legal and financial hurdles and gain the confidence of loan agencies, suppliers, and subcontractors.

The transformation the core housing in Mohammedpur has undergone demonstrates the effects that yet another factor can have on such a project. Mohammedpur was successful in many ways, but it was not successful in preventing low-income residents from being displaced by people with higher incomes. It may not be within the power of the designer or planner to control this phenomenon except by the manipulation of plot size, but it can be controlled by other mechanisms if administration and legal machinery are effective. This kind of displacement is an unavoidable result of a market economy, though in the case of Mohammedpur it was exacerbated by political disturbances. Market mechanisms give the profits that result from increased land values to the original allottee, making the temptation to sell to high-income people very great, and frustrating efforts to ease the housing problems of the very poor.
6. First Panel Discussion

Note: The questions and comments from the floor are summarized and identified here by the word "Speaker." The panelists are identified by name, and their comments recorded in full.

SPEAKER: Mr. Khan, you repeatedly referred to architectural "tradition" in your presentation. What precisely do you mean when you use that term?

HASAN-UDDIN KHAN: Traditional architecture, I suppose, has to be defined as any form of architecture that has developed over a period of time and has had a chance to build upon itself. The length of time may vary—two or three generations might do for one country; another might as easily take hundreds of years—but my guess is that the longer it takes a tradition to develop, the stronger and more persistent that particular tradition will be. Contemporary architecture is always spoken of as representing a break with tradition, but that need not be the case so long as continuity is maintained: where there is continuity in architecture, there is tradition in architecture; the moment continuity disappears, tradition is broken. Influences must be assimilated over a period of time, so that the culture that preceded it is not totally erased. Mere acceptance of a particular form probably would not constitute its having entered the tradition. In the case of Turkey, where many new influences seem to have been brought in over a short span of time, I am not sure whether a tradition in architecture was modified or broken.

MEHMET DORUK PAMIR: I don’t know whether we can call the development in Turkey a tradition—I suppose we can—but it certainly was a fact. If something makes sense, whether it is theoretical sense or practical sense, and if it keeps on reappearing we might be justified in calling it a tradition.

SAMIR ABDULAC: I am interested in discovering the essence of a tradition: what it is, what its origins might have been, and how it evolved. Perhaps that would be useful. Tradition is not something that is formed once and for all and then remains static for centuries. It is always changing and, in the case of architecture, adding new refinements. Sometimes climatic factors influence it, sometimes topographic, sometimes geological, sometimes cultural factors. For example, the traditional architecture of Damascus has been able to incorporate glass windows in a way that equips traditional homes with contemporary passive solar techniques. Tradition can still be a starting point for new directions in design, and one that avoids the total disruptions that might perhaps lead to its loss. Tradition, when carefully analyzed, can perhaps give us some clues to a better understanding of the constraints of the environment and to ways of dealing with them. We might then decide to introduce improvements that correspond to new ways of life and to newly available techniques, or we can decide to choose totally new models or types of architecture that might be better adapted to those local constraints.

H.-U. KHAN: Perhaps I might just add that tradition does not necessarily have to be all good or totally applicable. One assumes it is reasonably good because it has withstood the test of time, but that does not mean that all traditions are necessarily worth keeping. They have to be reevaluated as time goes on.

WILLIAM L. PORTER: If you are asking about the literal meaning of the word “tradition,” that is a question for the dictionaries, but I do not think you are. Tradition comprises understood, well-established ways of doing things, but tradition as a way of approaching how to build may have been more at the root of your question. There are two different points of view that one might apply to that notion of tradition. One derives from the profession itself; the other is a byproduct of the rapidity of social change. We have to come to grips with these two different perspectives: the rapidity of change gives rise to the requirements of building; these include increasingly rapid urbanization, dramatic shifts in life patterns, employment patterns, and so forth. The other is the set of attitudes harbored by the people responsible for carrying out programs of building, formed through their education and their experience. Are they habitually oriented toward looking at the past and toward trying to pick up what is good and appropriate about the past and adapting those lessons to modern circumstances? The education of the architect, of the business manager, of many people in contemporary society has favored an ahistorical orientation that puts us in a very interesting predicament now, and that is one of the reasons I feel that this particular course is a very significant event. Now as professionals we are ready to turn back, to incorporate much more of what has gone before, and perhaps to be somewhat more modest about what we believe to be our creative role and more respectful of the accomplishments of the past than we have hitherto been.

SPEAKER: I would like to ask Professor Pamir whether transfers of Western design were typical just in northern
Turkey or in southern Turkey as well.
PAMIR: My examples were from central Turkey, or, more precisely, the Ankara region, because that area is rich in its range of responses to various European influences. I chose Ankara because it provided a broader spectrum than some smaller town would have done, and because it is the place where decisions are made. Some of those decisions I mentioned were taken at the level of the national government, and so, not surprisingly, some of the first and the most colorful results are found in the capital as well.

SPEAKER: Is not the influence of the West greater in Istanbul than it is in Ankara?
PAMIR: Istanbul of course shows all these influences; you could do the same study, taking your examples from Istanbul.

SPEAKER: Ankara is in the center of Turkey. It is much farther from Western influences than Istanbul is.
PAMIR: No. It is about seven hours by train or forty minutes by plane. Turkey is not a large country. But I do not think that distance affected the situation in any case, because Ankara was the policy-making center. I do not think Edirne, let us say, which is on the European border, would show more influence—I'm sure, in fact, it would show much less—because it is a less important urban area than Ankara is. Although it is much nearer to Europe, it is not exposed to the same variety of influences. Decisions and influences are not necessarily a function of distance, and in Turkey during this period policy-making determined the architecture; it was not the result of, let us say, adaptations of what people saw elsewhere and imported.

SPEAKER: Mr. Abdulac, I wonder if you would comment on what role the courtyard house might play in the modern context.

ABDULAC: The better-known courtyard houses are the large ones, in part because they are the most accessible to foreign visitors. But, in fact, courtyard houses come in all sizes. They can be collective or communal, as they are in some parts of Cairo where flats are built around courtyards. They can be small versions of the large houses, though they can also be quite different. The small ones accommodate present needs much better, of course, if only because families are no longer able to afford a whole palace to live in. But courtyard houses of any size have some advantages: they can provide room for growth later on, they can provide a private open-air space for the family, and they can provide natural climate control.

SPEAKER: Where there is a communal courtyard, what happens to the basic concept of Islamic privacy? In the example shown from Bangladesh, ten families were living in and around a small courtyard—where was the privacy there?

ABDULAC: Islamic concepts of privacy can be interpreted in various ways. Even in Arab countries privacy is not necessarily embodied in private courtyards.

SPEAKER: You agree, then, that privacy does not exist in the common-courtyard concept?

PORTER: No. I don't think that is what he said: He is saying that in that situation privacy can take a very different physical or even social form.
PAMIR: By privacy do you refer to the private life of the family, or to the segregation of men and women?
SAME I SPEAKER: Both. I suppose—one family's being exposed to another family.

NEW II SPEAKER: That has more to do with poverty than with Islam.

ABDULAC: We might distinguish between the privacy of indoor areas and the privacy of outdoor areas. The privacy of indoor areas is always maintained somehow, even in Western architectural models.

PORTER: But are we willing to stand by the proposition that what we saw in Dacca was not Islamic housing? And that what dictated the spatial arrangements were solely poverty and family situation? If I understood the point you are making, you are trying to argue that the circumstances in which those people live are entirely attributable to economics and that under more ideal circumstances they would choose the single-family-around-the-courtyard scheme with the appropriate segregations and privacies, as we see them expressed in some of the wealthier Islamic cultures.

SPEAKER: Yes.

PORTER: Is that a proposition the panel is willing to live with?

A. KHAN: There certainly is a difference between what lower-income groups and upper-income groups regard as privacy. As we go higher up the scale, the matter of physical privacy assumes greater and greater importance. As we go down the scale, economic considerations override social and cultural ones, and privacy ceases to be thought of in terms of physical barriers: it can be provided by a code of conduct that people observe, whatever the physical reality.

H.-U. KHAN: In Bangladesh, those courtyards were not designed for privacy, were they? Or were they? Were they designed to be private spaces, or were they designed to be internal common space? That would make an altogether different kind of courtyard.

A. KHAN: Initially they were made for one family, but the family expanded and other people moved in. Still, once people move in and live there for ten years or so, they comprise a sort of family as well. It is not as if total strangers were living together.

SPEAKER: Behind what we are saying is the assumption that in giving up the privacy of that courtyard the original owner gained something else. In the example you showed us, the owner had more than doubled his income by renting out most of his house. Is it fair to assume that what he acquired in doing that made giving up his privacy worthwhile?

A. KHAN: It is very difficult to live on the 300 taka that can be the basic income for a family of eight in that area, and some live on even less. Obviously there are circumstances that make giving up the privacy of a single home worthwhile.

SPEAKER: Is it a matter of survival? or does it allow him to better his social position? send his children to school?
or buy a television set?

A. KHAN: No television sets, of course, but generally, the latter. His children might all go to school. As is the case anywhere, how he spends his money will depend on his priorities and those of the group to which he belongs.

SPEAKER: I lived in Bangladesh for two or three years and am familiar with the Muhammadpur area. It is my impression that, because this area was settled by a very particular refugee group from India, a group that was socioeconomically mixed, included professional people, and had a very strong sense of community, it is totally atypical and that it would be very risky to generalize from that area about the dynamics of urban development elsewhere in Dacca or in Bangladesh as a whole.

A. KHAN: I have listed several factors that were involved in the successful development of the Muhammadpur area, of which the ethnic factor was certainly one. Ethnic origin initially kept the group together, and that was important. But I do not agree that is was the only refugee group that came from India which had a mixed socioeconomic composition. Many of those groups included both low- and comparatively high-income people. What made this area successful, I think, was not so much the ethnic composition of the people who lived there as it was the employment opportunities available to them. The central location allowed them to earn their living within walking distance; they did not have to depend upon expensive and time-consuming public transportation. But no single factor was responsible.

SAME SPEAKER: Am I alone in believing that other places in Bangladesh have not exhibited similar patterns of dynamic evolution?

A. KHAN: I would agree with that. But the reasons, I think, are primarily locational. Housing schemes for the poor are most often put on the outskirts of the city, where land is cheaper and plentiful; that cuts the people off from their means of livelihood. Muhammadpur was also originally on the outskirts, though within easier distance of the city than most, but Dacca subsequently expanded so much—a 500 percent increase in population in two decades—that it is now a part of it. That is in strong contrast to development schemes in other cities.

SPEAKER: In providing for privacy today there seems to be a gap between how society has evolved and what we as professionals are able to provide for that society. It seems to me that we have not been able to apply what has been learned over the last three centuries.

PORTER: I would urge very strongly that we remain sensitive to the difference between privacy as defined by architects and people related to architecture and privacy as a human and social response by an indigenous population to a particular situation. How big that difference is I am not prepared to say right now, but I suspect there is one. We should not assume that we understand what the ingredients of privacy are in a particular situation. The feeling of privacy on the part of families and the architectural judgment that one has achieved a scheme that has this quality of privacy intrinsically within it are not necessarily the same thing.

SPEAKER: The public-housing buildings that governments build do not fulfill the requirements of the people living in them—one has only to recall the lack, for example, of storage space. If they had had any other alternative I am sure their tenants would not be living in them. One supposes those projects were designed by architects, and that they could have been much better. So I am asking, how can architecture do a better job?

ABDULAC: It is not only a problem of design; it is an economic problem. One of the reasons why public housing is not a success is that it fails to accommodate the poor among the population. It is usually, at best, the low-middle income people who are able to afford this kind of housing, and they are in a way happy to be there, not because it fits their needs, but because they are happy to have any home at all. When we look for a kind of housing that suits the needs of the very poor we have to keep in mind that the ability for it to expand is essential, because poor people cannot afford to build their entire house all at once. If new models that accommodated that need for incremental building could be produced, that would indeed be progress. We architects ought to be able to design houses that would provide ideas for the people who will build them.

Now I would like to come back to the question of privacy. I saw two different limitations on privacy in the courtyard houses shown to us. One stemmed from the need to rent a room or two to outsiders, the other from the construction of several-storied buildings overlooking those courtyard houses. This second phenomenon surely did not result from a decision taken by the people living in those houses. They might not want to be peered down on by other people, but they cannot defend themselves. This brings us to the legal framework. Privacy was maintained until recently because the religious interpretation of the hadith forbade the invading of a neighbor's privacy. People were not allowed to cut windows into the wall next to a neighbor's home; if they used the roof they had to build a wall around it; and if they did not, they could be sued in court and obliged to close up the windows or build the walls. Now the legal context has completely changed—it no longer protects the privacy of people in that way.

H.-U. KHAN: May I go back to the question we started with. I am very touched by your faith in the ability of architects to intervene into this situation; there are a number of reasons why they do not. To begin with, it does not pay architects to design low-income housing because there is no money in it, so they do not get involved unless they happen to be the kind who believe in doing good for people. Besides, the solution to the problem has to begin on a political level, since we have to change laws before people will be allowed to build for themselves. The role of the architect as architect is, I think, very limited.

A. KHAN: It is certainly true that the loss of privacy is in part a problem of modern design—tall structures side by side with low structures—but people will have their privacy, and are quite active in enforcing it in their own ways. In Dacca if you were to stand in front of someone's balcony and stare, you would feel the censure of the community. We, as architects, have our middle-class con-
cerns with privacy, but it may not prove to be a central issue in designing low-income housing, because the people have developed their own mechanisms for ensuring it. It is a matter of social conduct and of enforcing sanctions by community action. We should also remember that the moving in of other families does not always violate privacy: the tenant is chosen very carefully, and is often a homeless relative. Even if tenants are not related, they often address each other as "brother" or "brother-in-law" or something like that, and in that way form a family relationship. Those mechanisms help them to make the social adjustments needed to live in such cramped quarters. It is like an extended family, even when outsiders are involved. If rents in the area go up, familiarity keeps the landlord from raising the rent on the tenant, and that lends stability to these neighborhoods.

PORTER: The question of what the architect does was certainly on our minds as we were designing this course, and in the workshop days we hope you will address that very question: what can the architect do in these situations? This is not the last time the question will come up.

SPEAKER: I think we have been concentrating too much on privacy and courtyards. They are in danger of becoming stereotypes if at all professional gatherings like this, every problem is going to be analyzed in terms of the use or non-use of courtyards, or the respect or non-respect of privacy. If those were the main obstacles, or the only obstacles, to solving our housing problems I am sure they would have been solved a long time ago. So I think that we have to look for other origins to our problems. And I have come to believe that the mass housing problem is far from being only a moral one; it is economic and political. Housing is not just a decision to build something. We ought to approach the problem with that in mind, and not just limit ourselves to form.

PORTER: Would the defenders of the formal and courtyard and privacy faith like to comment on that?

SPEAKER: Even the defenders of courtyards and privacy are having to change a lot because, given the changes in social structure, in economic structure, in family life, those things are beginning to appear rather backward. I do not even like courtyards and privacy!

M. EL-SIOUF: Privacy is a way of life. You can be private in one room, and you can have no privacy with ten courtyards. If people are peering at you, there is no privacy to be sure, but it still is not solely a question of physical form. The court is a function of climate at least as much as it is of privacy. In the informal housing I reported on—I did not go into the detail of the plans—the design centers on a room which the other rooms open into: this is a sort of variation on the courtyard theme, except that the space has a roof. Islam is a universal religion, and if Muslims lived in Iceland they would have no courtyards. Privacy implies an absence of interaction with other people, but that can be achieved in many ways and in any house, with or without a court. It is a question of attitude, not architecture.

SPEAKER: Mr. Hasan Khan, you differentiated between change that occurs abruptly and change that occurs over a long period of time. You accept change over a long period of time as part of the tradition, but want to reject changes that come abruptly even though they appear permanent.

H.-U. KHAN: I would define the abrupt change that cannot be assimilated and understood and absorbed into the system as a break in tradition. The longer the change takes, the easier the process of assimilation. Today we have to deal with many rapid changes, and unfortunately we have not learned how to handle change at so rapid a rate. Admittedly, though, it is not solely a matter of time; it is also a matter of how rapidly a culture can absorb change, and I think some are quicker at it than others.

SPEAKER: This is not a question, but a comment. I believe every city that has been discussed, in the presentations at least, is a capital city, and I am not sure that they are even representative capital cities, speaking globally, because at least some of them are overwhelmingly large, compared with the other cities in the nation, and have become so in the last thirty to forty years. So if we're talking about tradition . . .

H.-U. KHAN: This is what I referred to when I mentioned disruption, simply because the megalopolis is a very new phenomenon. To evaluate traditional architecture in that context is not really possible; one cannot even think in terms of continuity. One is almost forced to think in terms of new models. Think of all the big cities with master plans: Paris is an old example; Baghdad a new one. Someone draws a plan and says, "This is the way it's going to be." But that kind of intervention has nothing to do with its tradition. I am not prepared to say that a break in tradition or a change in tradition is necessarily a bad thing. I am quite prepared to accept sudden intervention from another culture. High rises are fine, if they work. But when you break with tradition, you have to be very careful about what you replace it with, because more often than not that break creates an architecture that is alien and very upsetting.

SPEAKER: I quite agree with you, but I think it's important for us to realize that we may be confusing two separate problems.

PORTER: The examples were chosen precisely because they challenge the notion of tradition, rather than because they illustrate tradition. In a well-formed tradition, professionals would be designing environments without discussion. They would not need outside architects, if a well-established building tradition were dealing with the problems of the day. The problems that we are looking at—and let's face it, we are an internationally globe-trotting crew, if there ever was one—are problems that have not been solved because a break with tradition has posed a serious challenge to the design profession, both local and international, and left it without a solution. Your distinction is a very helpful one for pointing out what is perhaps the legitimate area of our concern: to distinguish those areas where breaks are serious, and where international professionals can have some legitimacy, from those areas which are strongly bound and dictated by tradition, and where perhaps we have no business whatsoever.
SPEAKER: I wish Professor Pamir would comment on the internal organization of the Turkish houses he showed us, since most of his comments dealt with the exterior.

PAMIR: The answer is simple. Organization usually reflected the plan that you would expect from that style. Come to think of it, the organization of the Turkish house that we called prototypical changed constantly. The interior did not stick to a certain prototype, as did the facade, the roof, and the base. Its plan depended on the type of family, the location, where the view was, and so forth. There was no stereotypical plan. You do find them in some formal, large, and prestigious houses, but the rest were quite modern in that they had purely functional organizations. Up to the 1950s, rooms were sort of equipotential spaces. The size of a bedroom was not significantly different from that of the dining room or the living room. After the 1950s, we started to use the standard European plan type, with its large living area, big master bedroom, smaller rooms, and one-and-a-half baths, but before that there was not, I would say, a strong plan tradition which had to be followed. As for privacy, we still today try to keep the entrance vestibule separate; one should be able to reach the bedrooms without going through or exposing oneself to the living area. That is not because of the segregation of the sexes, however—especially in urban areas, that is no longer practiced in Turkey. It more likely descends from the tradition of entertainment, which requires that guests be left undisturbed by the normal life of the family and the children. Aside from that, I do not discern any obvious traditional plan for the Turkish house.
Planned Solutions: The Case-Study Presentations
François Vigier

I would like to take a few minutes to construct a bridge between what you heard yesterday and what you are about to hear today. In the first day, our intention was to provide you with some background information and to illustrate the broad range of housing issues that occur in the Islamic world. I think that both Samir Abdulac and Hasan Khan’s presentations illustrated the very wide variety of indigenous housing forms over the Islamic world as a function of ecological, social, and cultural factors. Clearly the diversity at both the regional and subregional level is strikingly apparent.

Doruk Pamir’s presentation, although centered on Turkey, is clearly applicable to all countries in the process of modernization. It illustrates the influence of Western models on architecture in general and housing in particular. Sometimes that influence simply modified traditional housing forms, but more commonly it led to solutions that are strikingly different from any that had occurred earlier.

Finally, the presentations by Mohamed el-Sioufi and Aminul Khan showed spontaneous developments that paralleled official solutions in housing and whose illegality reflects the inability of bureaucratic and professional solutions to provide adequate housing for the poor in these countries rather than a particular effort on the part of the developers to avoid legal solutions.

Today we are going to look at some solutions that represent a cross-section of urban housing problems. The first one is a sector of the new industrial city of Yanbu in Saudi Arabia and represents a solution where resources are unlimited. The second is made up of several middle-income housing projects in provincial towns in Algeria, where limited outside resources are available, and the third is a low-income resettlement project in Karachi where resources are virtually nil. The reason we chose these particular projects is that new towns, middle-income housing projects, and various forms of self-help housing are by now pretty much the stock-in-trade of policy makers, of planners and of architects working in the third world. Among them, these three approaches are supposed to provide shelter for urban populations that are currently growing at a rate of from 4 percent to 6 percent per annum, roughly twice the rate of natural increase of the countries in which they are located. But approximately half that population, and sometimes even more than half, is unable to afford the housing that results, or for that matter any housing which meets the standards that we as professionals take for granted, at least not without substantial public subsidy.

Whether the projects we are about to see do anything to solve this range of problems is something we will consider in the second panel discussion. Some of the themes we will develop then are the extent to which these schemes should be modified, the extent to which they can be used as they are, or even whether they are appropriate at all to the range of urban problems that await solution.

All projects are answers to specific problems, which have programmatic, economic, and environmental parameters. In our attempt to evaluate the solutions proposed today, we must be able to discern clearly between those elements that can be generalized and those that cannot be, those that are specific to the given of the problem and those that can be changed.

I think it might be useful as we look at these solutions to keep in mind a short list of factors that we can utilize in attempting to evaluate them. This is not an exhaustive list, but rather one which is intended to prompt you into developing your own evaluation criteria.

The first one, it seems to me, is obviously the responsiveness of the solution to ecological conditions. The presentations that we saw yesterday, particularly Samir Abdulac’s and Hasan Khan’s, showed us a very rich set of answers to a wide variety of ecological conditions from dry countries to very humid ones. In particular they reflected not only the climate but the technology and the natural resources of the places in their use of indigenous building materials simply assembled according to the skills of the people of each area. We also saw the abandonment of those solutions in favor of the clichés of modern architecture which were so wittily set before us by Doruk Pamir.

One issue that has obviously arisen is that perhaps the adaptation of modern solutions should be looked upon, not only from a stylistic point of view, but from the point of view of their economic consequences. Are they efficient in their use of energy, or do they require very large cooling loads? The curtain walls that we have seen in many buildings proposed for relatively hot climates are clearly not the best architecture from the point of view of energy conservation, not to mention the burdens they put on the local construction industry, whether in importation of building materials or in building skills not readily found in the country.

One of the dilemmas that we face in looking at the responsiveness of contemporary solutions to ecological conditions lies in advocating a return to some of these beautiful forms that Samir Abdulac showed us. They are forms conceived in a completely different demographic context, in a different economic one, and in a different cultural one. They were conceived at a time of relative isolation, when cross-cultural and cross-national influences were relatively insignificant. The magnitude and rate of urban growth that pertained at the time were also radically different from what they are today. Their appropriateness, therefore, can certainly be questioned. Besides, the people themselves are just as eager to live in what they deem to be modern buildings as their architects are to get into the swing of the international style and replicate in their own country what has been done elsewhere.

In view of that, perhaps the way to assess responsiveness to ecological conditions is not by returning to an
Introduction to the Case Studies

earlier form but by judging the extent to which the user’s or the architect’s version of a modern solution corresponds to the efficiencies required in constructing a large quantity of housing inexpensively and maintaining it efficiently.

A second broad category for judgment is obviously responsiveness to cultural conditions. Much was said yesterday about privacy and courtyards. I will not add to the debate at this stage, but will let you struggle on with your own version of that momentous philosophical issue. There are, however, other culturally related questions we should keep in mind as we look at the solutions proposed to us.

The first one, perhaps, is the composition of the households that will live in these housing units, and in particular, the continued presence of strong extended family ties and the extent to which this influences the design of housing. Second is the rural or semi-rural origin of the migrants who come to the cities, and its influence on the design, not only of the dwelling and the use of the dwelling, but on the use of other spaces in the city adjacent to the dwellings. Some of the slides that were shown to us of the Bangladesh project, I think, illustrate this quite dramatically: the necessity, for example, of keeping small animals in the dwelling as a source of protein. There are other issues of this type relevant for the housing of the migrants from rural areas.

Third is the determination of housing groups which are compatible with social groups, whether they be contemporary versions of the traditional quarters of the Islamic city, as illustrated in Samir Abdulac’s presentation, or a spontaneous, or even planned, regrouping of people by some common trait. The tendency of migrants from rural areas to regroup for self-support, for reassurance, to maintain social ties by village of origin or by province of origin comes to mind. This, too, is an important issue.

Finally, the whole issue of cultural change and changing values is particularly relevant. Very often we tend to freeze the cultural traits of a population that we are trying to house; the description that results may be a good description today, but in an age when mass communication is available to all, regardless of income or level of literacy, the extent to which these cultural traits that do indeed influence housing can be permanent is certainly worth questioning.

The third broad category of issues which we should keep in mind in evaluating these projects is the attitudes of the people themselves, of the users, toward their dwellings. Both Aminul Khan and Mohamed El-Sioufi’s presentations illustrated dramatically, I thought, the divergences in attitude toward housing between low- and moderate-income households. We, as professionals, think of housing as a finished good, as a product that we can buy or rent, as an entity with a very specialized purpose—shelter. This is essentially the attitude that has guided the designers of public housing in all countries of the world, and not merely the designers of upper-income housing. It may be quite appropriate to think of housing as a finished product for upper-income families; it is perhaps questionable to think of it as a finished product for the more moderate incomes that we house in public housing.

As far as the poorest segments of the population are concerned, however, the two presentations I just cited illustrated extraordinarily clearly that housing for the poor involves much more than simply providing a shelter. It is a symbol of security, obviously. Security of tenure, as was demonstrated in the two case studies, leads to the development and improvement of a house. It is, therefore, an avenue for investment; it is a place where one can put one’s savings in countries where the more Western forms of savings-and-loan institutions are simply absent. To invest in real estate in one’s own home, in its improvement and enlargement, is obviously a very good way to channel personal savings. It is also a way to increase household income; one can rent rooms, or transform them into shops or into workshops. That source of income can equal or even exceed the regular income of the head of the household, and this can be a crucial difference in what economists like to call “marginal occupations”—the storing of goods to be sold by members of the household on the street, the manufacture of handicrafts in the home for sale either directly or through a middleman. This key role in the economic survival of low-income groups is a characteristic that we should also keep in mind in evaluating the solutions presented to us.

Reflecting all these roles that shelter plays in the life of the poor, the house changes over time very dramatically. A small, marginal unit, if things go well, can become a rather comfortable and even rather sophisticated form of shelter. So it is not—and this I would like to underline—that there are differences in the attitudes people bring to shelter, it is where they are on the socioeconomic pyramid that makes the difference.
8. Residential Community Design for Area R-4, Madinat Yanbu al-Sinaiyah

Perry Neubauer

In the mid-1970s, the Saudi Arabian government embarked on an ambitious development program that involved numerous large-scale projects throughout the kingdom and created a great shortage of manpower. This in turn generated both rural migration to its cities and an influx of expatriate labor, and the housing shortage that resulted from them. To meet the demand, new centers are being built and the existing urban areas are being expanded, with extensive modernization programs in the older cities being carried out by both central and local authorities. Foremost among the new industrial towns are Jubail on the west coast and Yanbu on the Red Sea coast about 350 kilometers northwest of Jeddah, in the Yanbu emirate. Both cities are planned to diversify industry, to provide petrochemical, iron, and steel plants, and generally to use the energy resources that Saudi Arabia has for the development of an industrially based economy. The Architects Collaborative (TAC) had early become involved in the master plan for Jubail, so when it was time to turn to Yanbu both I and my colleagues had a fair idea of the overall approach expected of us, and we were able quite easily to design a scheme to fit into one of the residential communities.

The old town, Yanbu-al-Bahr, is near a coastal range of mountains that parallels the Red Sea. Mud-brick housing can still be found there, and it will provide quite a contrast to the new Yanbu. Some of it is a bit reminiscent of pueblo architecture in the southwestern United States, which serves to remind us that architecture is frequently inspired by available materials and climatic considerations as much as it is by stylistic ideas. The coastal architecture of Saudi Arabia is also much more decorated than the architecture of the interior; the old houses have wood mashrabiyyas and balconies from where the women can step out and view the urban scene. Many of these buildings are now being torn down to make way for modern housing, and many others are unoccupied and falling apart. The movement in Jeddah to restore some of this housing has not yet reached as far north as Yanbu.

The development of modern port facilities in Jeddah has up to now adversely affected Yanbu, but in the future prosperity may come from relieving the pressure on the Jeddah port. It is now being provided with modern facilities to handle bulk cargoes such as cement, steel, lumber, and grain, and its customers are offered exemption from port duties to encourage its expansion. Manufacturing is still a minor part of its economy, but it does produce construction materials like aluminum door and window frames and a variety of precast concrete items.

By 1977, the population in Yanbu-al-Bahr was 20 percent non-Saudi Arab single male migrants, and just under 5 percent European and American workers and their families. The proportion of foreigners is expected to increase as the new industrial city develops. Average household size is between five and ten persons, with non-Saudi households at the low end and Saudi households at the high end of the scale. The cumulative impact of the new town and industrial projects could attract another 5,000 to 10,000 people.

To provide adequate housing for the newcomers the government has been offering subsidies to both developers and homeowners. Financial aid for building contractors is available in the form of short- or medium-term, interest-free loans for capital, plant, materials, or other expenditures. Landowners and house purchasers have access to interest-free loans repayable over a twenty-five-year period. The housing itself is produced almost entirely by private industry, with government providing subdivision planning and land, along with subsidies and loans. So far housing stock is still in surplus, but building contractors will probably not be able to keep up with the demand. According to current population projections, about five hundred housing units will have to be constructed annually in the Yanbu area, and that will increase government involvement to clear and replace obsolete housing, enforce building standards, provide shelter for those displaced by clearance, and assist the local building industry, whose capacities are limited in a variety of ways.

The first construction for the new Yanbu were the camps the Royal Commission built in the area adjacent to the site for the builders to live in. They were dull, precast one-story units, originally unrelated by landscaping. Recently some plant material has been introduced, however, and it is quite an improvement, especially for those who live there. The site itself is right on the Gulf and has a harbor, around which the central business district will be built. The portion of the site that our office was assigned was an irregularly shaped parcel about twenty-five hectares in size. Part of the general layout that the master planners produced was a module of seven neighborhoods designated A-3 and defined by primary roadways. Our area, R-4, was one of these seven. All of them are small housing areas surrounding what will end up to be a major, high-density area. The community for the overall A-3 module will have somewhere between 25,000 and 30,000 people. We were to plan for about 2,500 of them, at a density of about 100 people per hectare.

Although we were originally somewhat taken aback by the shape of the site, irregular as it was, it turned out to be an advantage. It was one of our major design determinants—it had to be if we were going to fit all of the required units into it. In a flat area—and Yanbu is certainly flat—building so as to provide a constantly changing view as one moves through the site adds a variety that is lacking in a straight grid system.

The master plan that Skidmore, Owings and Merrill worked out for Yanbu, a departure from most of their work, called for densities for each residential area to be higher toward the middle and lower toward the perimeter. In the design for area R-4 we followed that pattern,
putting our villas and other low-density work around the perimeter, making a townhouse spine, and adding apartments in the center which related very nicely to the high-density apartments across the street (fig. 1). The townhouse spine provided good orientation; strangers could follow the spine and eventually come to one of the two centers. Since there would be many transients in Yanbu, orientation was a primary concern in our plans for the area.

We depended upon the Royal Commission for information about the future tenants. We did not conduct any systematic surveys ourselves, although we did talk to both Saudi Arabians and expatriates now living in the camps who would eventually live somewhere in Yanbu (pl. 1).

The constraints we had to work with were the irregularly shaped site and an expatriates' school that somebody had dropped in the middle of it at a time when the Royal Commission needed schools in a hurry. We had to provide access to and place building plots around that parcel, and it was not as easy as one might think. The master plan called for a controlled-access system that allowed us to enter the site from only three points, and none of the three was on either of the two major sides of the site which were bounded by primary roads. Access to a neighborhood was possible only from a secondary road. The master plan also required us to put our high-density housing close to the high-density housing in the neighboring module, called for a community shopping center, and sited the schools adjacent to the center. A smaller center more accessible to cars was planned further out to service the people living in the camps. These were our design determinants. We added a sports center, which we placed right in the middle of our site, within easy walking distance from all parts of the neighborhood.

Our next step was to develop a pedestrian walkway system to connect all of these major facilities, starting with the mosque, winding its way through to the smaller center, connecting to the recreation facility, and making ties for pedestrians to the main business center. The pedestrian walkway system was reinforced with row houses divided into clusters. Finally we added a loop-road system that supported the housing and connected it all together (fig. 2). So the site organization became:
high-density housing along the spine in the middle, lower-density housing (the villas) around the perimiter, a major access point at the commercial center, and a minor access point at a smaller shopping center.

The circulation system was designed to restrict most traffic to the loop road, while providing both privacy and limited access to the little culs-de-sac that were to lead up to each house. Space was left for luxury villas adjacent to the sports center, but they were to be designed by whoever owns or purchases that particular parcel and not by our firm. The rest of the housing, the schools, and the commercial facilities were all to be designed by our office and engineered by a firm in London called Conseco. The project began in Cambridge with our design movement, moved to London where the construction documents were done, and is only now about to enter the construction stage.

The orientation to the main mosque was one of our major design determinants (fig. 3). Anyone entering residential module A-3 was supposed to be able to see the main mosque right in the middle of his windshield, so to speak, along a corridor that was designated in the master plan to provide a clear view of its minaret. This was very deliberately arranged for in the master plan, and we did our best to see that it worked. We noted all the places in our own sector where we were sure one could get views to the mosque from inside the community.

The local mosque, the commercial center, and the two schools were to be shared with the neighboring area. Although the schools were virtually identical, it turned out that there was just enough variation between them to require a set of drawings for each. The boys' school was located to the north since it was a more public location; the girls' school to the south, where it could be more secluded since, as the site plan eventually worked out, no housing opened onto the access road to the girls' school. Because both mosque and schools were to be shared by the residential neighborhood adjacent to ours on the other side of a secondary road, the master plan called for the facilities to be on that side. If the commercial center and mosque had only been serving residential module R-4, we might have been tempted to put them somewhere in the middle.

Turning to the housing, although these industrial cities are planned for large numbers of people—Yanbu, I think, for around 150,000; Jubail, for 400,000—when one considers the population of Saudi Arabia, one wonders where all those people will come from. At least in the first stages of development—certainly within this century—we had to admit that our future tenants would most likely be people from Western or other Middle Eastern countries. We tried to accommodate this anticipated development in a variety of ways—by designing a bachelor villa that could easily be converted to take care of a family, for example. At the same time, our major design concerns were to express a Saudi Arabian way of life which emphasizes family privacy and to find an indigenous style of architecture so our community would look like something that grew there, and not something parachuted in from someplace else. We sought a compact urban design, not only because program requirements dictated a fairly dense development but because we felt that shade-producing compactness suited this hot, arid climate (fig. 4). The villas had some space around them: the vehicular entrances were in the culs-de-sac, and the rest of the space was originally designated for outdoor green space, but it ended up being used for guest parking. There was other outdoor space for the villas behind a wall. The townhouses had semi-public space in the walkways between them as well as in the entry courts leading to them. In the apartment units spaces were much tighter, private areas smaller. The only semi-public areas were the open corridors leading to the units. The whole community will be low rise with the minaret soaring above. The villas and townhouses are all one or two stories high; the apartments three or four.

![Fig 4](image)

The program called for a given number of townhouses. If we just lined them all up along the street, we would end up with something that looked like Baltimore, or New York, or Beacon Hill—long roadways, immediate access off of the roadway, but not much of a sense of place or visual interest. So we looked at some of the ways houses are arranged in the Middle East, and we found them built in clusters. That seemed a more appropriate alternative. Clusters of five appeared to work best on the site. Higher
numbers ran the risk that these little neighborhoods would be dominated by cars. The cul-de-sac would have to be deeper, would require turn-arounds at the end, and would need special conditions for fire trucks. They might even have had to be connected to some other road on the other side, and that would have eliminated the cul-de-sac idea altogether.

A typical townhouse cluster had a local street area on either side and a courtyard to provide parking for the residents of that cluster. From the cluster there was access to the main spine which led to the commercial center. This spine became a very important link and was treated to encourage pedestrian rather than vehicular movement. Wherever it turned we were able to create small play spaces and so forth. We developed two clusters: a standard one ("standard" referred to the level of finish or, basically, the cost of the unit), and a hammerhead cluster that got its name from a little turn-around, or hammerhead, in the middle. The distinctions made between the luxury and the standard units turned out to be determined mostly by floor finishes and other amenities; the same was true of the villas, and apartments. Making the distinction was a program requirement, so we had to look for ways to distinguish the standard from the luxury grade. It would have been much easier to build them all the same way.

In both clusters one entered a courtyard, parked the car, and walked underneath the building into the spine. Both also had pedestrian access to the spine. For some of the houses access was gained from the street; for others, from the cluster itself. Our general approach was to put the reception areas and guest rooms on the ground floor and family rooms on the first floor above grade (figs. 5-6). We had learned in Jubail that the family had to have a private, around-the-corner entrance so that women and children could come and go out of sight of any guest who might be entering from the more public major entrance. The major living room was adjacent to the entry hall, the dining room adjacent to that, and next to that the kitchen. We introduced an airlock to make sure that the odors from the kitchen would not penetrate into the living room. We also usually added double doors so that preparation and clean-up could take place out of earshot.

We used small openings at the upper level and covered them with wooden screens to protect the glass from the sun. On the lower level, the major spaces—the family room, guest room, dining areas—had large openings, but we tried to set the glass back off to the side to protect it from the sun.

That general approach was carried through in all our designs in one way or another. It was easier to apply in the villas because they were large; providing separation of
guest and family in the apartments was more difficult, especially in a one-bedroom unit. The townhouses included two-, three-, and four-bedroom units; the villas five- and six-bedroom units (fig. 7) and some bachelor units; and the apartments, efficiencies, one, two, and three bedrooms.

Space was otherwise always kept tight. I think 450 or 460 housing units were originally planned; we ended up with just under 400, probably because of the view-line problem, which cropped up again at intersections. All of them therefore had to be enlarged, and that reduced the amount of housing from what had originally been programmed. The Royal Commission accepted the change because I think they in any case preferred the slightly lower densities. We regretted, however, that we had not read the controls more closely to begin with, since we were now obliged to spread the design out more than we would have preferred. Clear vision also required eliminating the trees we had thought to plant at intersections; we could not plant a thing, though we suspect that as Yanbu develops somebody will plant something.

You might call our method of construction a modified traditional approach. We used concrete block for the walls, although we did not end up with a load-bearing system; generally, it is concrete frame. We used precast tiles on the roof, stucco finish on the facade. The openings on the facade were kept small or, if large, were provided with wooden screens.

The houses were designed with blank exterior walls and gates—no visual penetration into the courtyards or into the living areas. We thought this was entirely appropriate, since most of the cities we visited had walled villas and townhouses. However, the Royal Commission objected to the boring street facade that resulted, and encouraged us to open up the walls and introduce grillwork or some other opening to expose the greenery inside in addition to the trees planted along the roads. Occupants could ensure privacy by planting ivy along the grillwork. In Jeddah that had been done very successfully, and it does introduce more interest into the urban scene (pls. 2-6).

Each villa lot was kept to a width of 16.5 meters, so that as many villas as possible could be fit in. A typical design had a two-meter required setback on the side yard, another setback that created a small courtyard for a guest entrance and parking, and a relatively large back garden. A typical house had an entry way, a major living room for the guests, a dining room, kitchen, a family room back in the corner, stairs, the maid’s quarter, and other facilities down on the ground floor. The upper level of a six-bedroom unit had another small family area upstairs.

Fig. 7 Villas: Six bedrooms

Controls were set up in the early days of the master plan to ensure safety and health for the new community, and many of those regulations dealt with vehicular and pedestrian safety. When we built some models to test whether our designs conformed to the controls, and in particular to make sure that vehicles leaving the courtyards would have good visibility on each side as they came into the street, we discovered that our original design did not pass the test. It had a very narrow, seven-meter opening which, when a cone of vision was constructed, impaired the view on the street. We redesigned it for an opening of ten meters, and then tried a third approach we did not particularly like, which was to splay the walls of the units. We ended up with the ten-meter solution, on the grounds that the car would be going at a slow speed over driveover curbs, making the resulting degree of additional visibility sufficient. We would have preferred the narrower solution because it provided more shade and a tighter space, but once the decision was made we found we could work with the ten meters fairly well. The Royal Commission people also preferred the wider opening, as it was more closely in conformance with the master plan, although I think in the end they might have agreed with some of our arguments for the tighter cluster, had we insisted.

Pl. 2 View of town center
The governing principle was to place major public spaces on the ground floor, private spaces above.

We tried to introduce as much variation as we could—a two-story family room, for example—within the restrictions of the plan. In the five-bedroom unit we were able, by knocking out one bedroom, to get a stepped-back facade, although the front remained fairly plain. Generally speaking the housing is, so to speak, background architecture. Only the mosque, we felt, was a foreground building and certainly worth expressing, but these were private spaces, and they would all be behind walls anyway. In all the villas the two side walls are blank, with the major living spaces oriented either to the front or to the back and screened in an effort to ensure privacy.

The apartment and guest-house complex was to the left of the boys' school and adjacent to the high-density housing. The guest houses were, by program, three in number. This design underwent radical change during the design and construction—documents process. We originally had some bridges between the guest houses that connected them to the apartment complex. But because the guest houses would again be for people who would be coming to live in Yanbu on a short-term basis, and were most likely going to be bachelors, it was not thought proper to connect the two, so the bridges had to go.

There were not many design problems but enough to concern us: not all of the unit plans were ideal, and the proximity of cars to the buildings was bound to pose problems. Another design concern was that the apartment complex did not appear to fit in very well with the other housing in R-4. Eventually we combined the three guest-house buildings into one large building, put the one-bedroom units into another complex away from the more family-oriented areas, and then placed the two-, three-, and four-bedroom units along the street where they formed a fairly nice, staggered, irregular facade that fit much better with the high-density development in the adjoining area across the street.

Another problem with the original scheme was the lack of public open space, because the building program was so demanding. We finally compensated with a large public open space in the middle and a heavily planted pedestrian system that made a nice connection down into the townhouse areas. That compromise solution did not offer as much opportunity for architectural interest as the first, but it fit in better, I think, with the rest of the elements in our form. We also found some open space at intersections where the site required a change in direction. They gave us small play areas or sitting areas and allowed for additional plant material. At the major public space, the park, we placed a fountain with formal planting around the perimeter and a restaurant overlooking the public garden. In general, we were left with what seemed to be a manageable amount of open space, for we had to remind ourselves from time to time that the people living there, at least in the first few years, would probably not show much interest in watering plants and gardening, and open spaces could easily deteriorate. That is also why the entry courts were kept small and the largest open spaces around the housing left in the rear.

All the units are air-conditioned: central units for
townhouses and villas, and a central system for the apartment complexes. But although the housing is heavily dependent upon air conditioning, all the windows are at least operable, and every room has an outdoor exposure. If the system breaks down in mid-summer it will be hot, but not impossible to live in, and in the spring and fall air conditioning will not be required at all. Domestic hot water will be provided by solar panels, but the heating system for the complex—because it does get cool in the winter—is electric. The various mechanical systems are on the roofs, hidden by a parapet wall.

We made it possible to use the roofs for additional living space, providing tiles that can be walked on and stairs that go to the roof, but we doubt that they will be used very often, especially in the townhouses where anyone can leap over a parapet and down into his neighbor's house. Besides, that area is very humid, and duststorms are common. Neither is conducive to outdoor living.
9. Four Urban Housing Projects in Algeria

Abdelrahman el-Miniawy

The rapidity of social and economic change in Algeria, the growth of the population, and massive rural migration have led to a housing crisis which has produced slums and squatter settlements around the towns and deterioration of existing stock from overcrowding. The Ministry of Urban Planning, Construction, and Housing, created in 1977, is in charge of solving the problem. Its executive arm is the CADAT, the Algerian fund for regional development, which has authority to draft master plans for each town and to zone for new housing in the largest towns (zouns), and regulate their development.

At present the housing stock in Algeria totals 2.2 million units, with an average occupancy of 7.5 persons per 3-room unit. To reduce this overcrowding to 5 persons per 3-room unit in the cities, more than 300,000 new units will have to be constructed annually for the next ten years. Some action has already been taken: factories were built to produce prefabricated units sufficient for 100,000 dwellings per year, although those expected production levels have yet to be achieved.

The government has now decided to try decentralizing authority to encourage local solutions and local construction activity and to favor over high-technology methods traditional and simple systems of construction that are adaptable and easy to use. To control design, the housing ministry is preparing a catalog of prototypical house plans to be used for public housing projects as well as for individual private buildings.

The architectural projects described here are the result of a group effort initiated in 1974 to provide some models that would satisfy those requirements and to establish some specific architectural design criteria that would fit in with our contemporary Arab reality, produce an architecture capable of reflecting that reality, and represent a viable alternate to the foreign models that are now being introduced all over the world.

Until recently, development in the Arab countries only affected its urban centers. Traditional architecture in the rural areas where the majority of the population continued to live retained its capacity to accommodate to the environment and to economic, social, and human needs. While urban ways of occupying space tend to reflect socioeconomic and political conditions, the means of production, and the power structure, in areas where tribal life persists the organization of space is determined by relationships between neighboring villages and an economy based on barter. Between those two extremes is a third category represented by those areas of transition between rural and urban life which manifest some aspects of both and perform an intermediate role between them.

In addition to the differences in architecture that arise from a rural or urban location are others that result from geographical considerations—whether the site is mountainous, oasis, coastal, pre-Saharan, or Saharan. Whatever those differences might be, however, all these local architectures have a common denominator: they are all expressions of a local tradition executed in local materials and they represent cultural continuity and the indigenous way of life. The problem we face today is how to conserve that architectural patrimony and at the same time develop viable solutions to the housing problem that fulfill the requirements of contemporary socioeconomic realities. We hope that we have conceived an alternative architecture that fulfills those conditions.

To advance from theoretical considerations to practical solutions our group decided on the following procedure. We would conceive some projects that would respond to the needs of the population in terms of the economic and sociocultural givens of the locale. We would then construct those projects using local materials. From its conception the organization of the plan would be dictated by sociocultural considerations, although we recognized that while some of the data on which our decisions would be based were fairly secure, some were simply conjectural.

In our plan we felt that the common spaces must not detract from the living spaces, but they must encourage social and economic contacts and the establishing of relationships among the inhabitants. Stressing the socialization of certain spaces for common activities would encourage the development of social relations in many unforeseeable ways, so flexibility must also be built in to the program. Obviously the harmony of collective activities will depend on the cultural level of the inhabitants and the social relations that already exist, and the developing social life will pass through many transitional phases, because that is the way any tradition develops. One might imagine the plan as a grille made up of loose bars, creating unlimited possibilities for variation. The interior space of the living units would shelter the activities that are individual and private; the common spaces would enclose a dynamic and organic ensemble of activities that could be either individual or collective.

The designs we proposed will, we hope, satisfy the fundamental needs of families, while at the same time curbing the influence of foreign models that have produced an architecture completely out of keeping with both the customs and the economic realities of the nation. Our conception of architecture is not limited to the definition of kinds and forms of housing; it also considers building techniques and methods of finance, and utilizes local materials in its attempt to satisfy both the qualitative and the quantitative requirements involved in providing suitable housing and to eliminate the web of problems involved in relying on imported materials that always accompanies the invasion of foreign architectural models.

The urban areas where the projects described here are located have developed essentially from massive migrations of rural people into them. The people themselves are consequently going through their own period of transition—which the population by now represents in a
range of stages—and that increases the difficulty of determining a common basis on which to form a design. That problem was to some extent solved by talking directly with the future inhabitants of the community to elicit their ideas on the type of dwellings in which they would like to live. Those contacts were made at an early stage to avoid having to modify the project once it had begun. To provide the desired ambience within the living spaces, detailed studies of light and shade were undertaken to determine the best way to provide natural ventilation and to minimize the effects of sandstorms and heat. The design determinants then posed the challenge of evolving compact, shade-producing designs without raising the residential densities beyond acceptable limits.

**Fifty Urban Units at M'sila**

The project at M'sila is based on a detailed analysis of the spatial needs of the Arab family and demonstrates the merits of our alternative architecture. The solution provides urban housing that is perfectly adapted to local life (pls. 1-5; figs. 1-6).

Each unit is built on three levels. The entrance is on the intermediate level and the reception area is located there. The lower level is the family area and the area for domestic activities. The upper level contains the sleeping quarters. These three levels are organized around a large semicovered patio which favors the creation of a microclimate. The patio also forms an organic extension of the family quarters. Together the components comprise a well-proportioned ensemble.
Pl. 3  Multiunit housing at M'sila: view of typical 3-family block

Fig. 5  M'sila, longitudinal section

Fig. 6  M'sila, transverse section

Pl. 4  Multiunit housing at M'sila: view of second-level patio

Pl. 5  Multiunit housing at M'sila, view from ground floor living room, showing patio, door to dining room, and opening to adjoining room
Five Hundred Units at Biskra

At Biskra, too, the solution was to arrange the dwellings in clusters. On a community scale each basic module contained 80 dwelling units with the built-in possibility of expanding eventually to 120 or even 160 units. It is very compact so as to provide protection through mutual shading of walls and is arranged to ensure the interaction of closed and open spaces. Each cluster has its own integrated open space where some of the neighborhood facilities are located; instead of concentrating them all in one area, this spread them around and improved access for all the people they served. The scale of each neighborhood was kept small in deference to the difficulty of walking about in the severe heat of this Saharan site (pl. 6a-c).

Four Hundred Urban Units at el-Oued

The project at el-Oued also had to satisfy some stringent requirements. It was to respect the local architecture and the specific way of life found in the area; take into consideration a number of economic factors, including the available local skills and the social and cultural environment of the town; offer maximum protection from sandstorms; build for maximum shade to protect the inhabitants from the intense desert heat and low humidity of summer; and utilize the technical and material capacities of local industry.

We conducted studies to ensure that we would satisfy the needs of the population in a manner that would harmonize with their traditions and way of life. The results were translated into a conception of individual housing units that separated private from semi-private space; maintained the courtyard as the fundamental element for family activities; and preserved the cupolas and vaults that are typical of the city of el-Oued. We provided for economic life by setting aside commercial space in the ground floors of the buildings situated along the main street. Other community facilities were scattered around the total project. To protect the houses from windstorms, we designed massive facades of varying heights, and provided a green band of trees to act as a windbreak.

The shade essential to protect against the summer heat, especially along the streets and access roads and in public places, was provided, thanks to research into the dimensions, orientation, and variations in height of construction and to the utilization of cantilevered elements on the upper levels. The facades were related in such a way that each could constitute a screen protecting the others. Finally the courtyard in each unit would help alleviate outside climatic conditions by creating a microclimate. Vertically the units were also assembled in such a way as to create ventilation by the circulation of fresh air across the shaded areas. Staircases will also be partially covered for maximum air circulation. In short, every effort was made to keep the project in harmony with its environment.

In our preliminary studies we also took into consideration the ability of local enterprises to take over the program and carry it on to completion. That is why we opted for a row of repetitive units to form each block. To assemble the blocks we conceived a grid that would be easy to build and would avoid possibilities for error in implementation. We used local building materials in part; all the partitions were made of local stone.

Two Hundred Units at Ouled Jellal

Our project at Ouled Jellal constituted our first attempt at building urban units entirely out of local materials. The units were conceived as a transition between rural housing in the process of urbanization and urban housing. We limited the height of the buildings to two levels, partly so that it would be well integrated into the existing environment and partly so as not to shock its future inhabitants, who would not be used to living in high-rise structures.
Each unit is arranged around a court which provides access both to the reception area and to the family quarters, and also serves a space for domestic activities. The general organization of the plan encourages rapport with neighbors and integrates public and semi-public spaces in a harmonious fashion.

To develop our architectural design we superimposed three levels of analysis. The first dealt with the functional organization of the dwelling units themselves; the second with the orientation of the dwellings, particularly their northern exposure, the direction from which sandstorms would be likely to come; the third with the creation of the maximum amount of shade. The design was then modified to accommodate those findings.

Air conditioning and other forms of mechanized ventilation were out of the question because of their cost; we turned to traditional methods to form a basis for research into new solutions, experimenting with wind-catchers, or *malkaf*, the use of the double ceiling for insulation, and various systems of air circulation and cross ventilation through the placement of windows. We used a local gypsum stone for the load-bearing structure, and designed a roof of domes and vaults to provide some of the necessary thermal insulation. We kept costs low by using only locally available building material, which also had the advantage of lending a traditional character to the design. Finally the utilization of cantilevered construction on most of the upper floors provided covered shaded passages and added to the protection of otherwise exposed surfaces.

The courtyard is an integral part of the design, providing the desired ventilation to the family room, the guest quarters, and the kitchen. A garage was added, but if it is not needed it can easily become a usable extension to the dwelling unit. The guest room can also be integrated into the family area if residents wish, and the stairs are placed at the entrance to isolate the second floor as a second dwelling unit if that becomes useful. The design and conception of the dwelling units were given this flexibility to allow adaptation to the varied and changing population that would inhabit them.

The facade design was not dictated solely by aesthetic considerations, although an effort was made to provide it with some of the character of the local traditional buildings. As elsewhere, climatic requirements of shade and ventilation were the main considerations.

The entrance to each dwelling is designed as a gathering place, especially for the women, as well as a transition between private and public space. The balconies which overhang the street will serve a similar function and so were made rather large. They are a visual link between the private interior space and the public exterior space.

We used arcades along the major streets to permit use of the space and to provide shade, a practice typical of cities in that part of the world. They serve social as well as economic purposes as a gathering and shopping area. The garages were placed in the arcades so that they could be converted into shops by the owners if they so choose or converted into some other public function.
10. The Lines Area Resettlement Project, Karachi

Yasmeen Lari

Pakistan is a nation of almost 84 million people, and the population of its cities has been almost doubling every twenty years. The proportion of urban population increased from 23 percent in 1961 to over 26 percent in 1972, and, according to recent census figures, has now reached 28 percent. It is estimated that of a total population of 120 million in the year 2000, about 50 percent will be living in urban areas.

The monthly income level of a sizable part of this population does not exceed Rs 500 00 ($50) per month. The problem of housing therefore obviously emanates from the more general problem of poverty. This group cannot afford to own a genuine house, or even rent one. A modest house with a minimum covered area of, say, 36 square meters would cost approximately Rs 45,000, and, assuming a payback period of twenty years with no down payment and no interest charge, the monthly installments work out to Rs 190, or $19, per month. No household of the kind we are concerned with can afford to devote more than about $9 per month, or 18 percent of its income, to housing. It is not surprising, then, that there has been a general deterioration in household conditions, and that the number of persons per habitable room has risen to 4.7 in the lowest income groups. Shortages at the end of 1980 were approximately 764,000 dwelling units for the country as a whole. If the population increases as projected, an additional 520,000 will be needed. In the meantime the construction industry has been able to produce only 40,000 dwellings per year, and most of those are destined for the middle- and upper-income people. Since little funding is available for low-income housing, the backlog for low-income groups can only grow larger and larger.

According to a recent census, the metropolitan area of Karachi has a population of over 5 million people, or 22 percent of Pakistan's urban population. It plays a very vital role in the economic development of Pakistan, since it generates 35 percent of employment in large-scale manufacturing and, according to one estimate, provides approximately 25 percent of all federal revenues. It is the nation's only major port, and its transport role will be strengthened by the development of the new port of Bunder Qasim. Pakistan's first and only steel mill will start functioning this year, drawing even more people into the city (fig. 1).

Thousands of rural migrants move in every year. Even though most of them begin in marginal occupations—as domestic servants, hawkers, peons, or unskilled laborers—the metropolis probably does enable them to be more productive and more prosperous than they could be in the countryside. Approximately 200,000 people, or 35,000 households, are added to the metropolitan population every year, perhaps as many as 90,000 of them unskilled and illiterate. By the end of the century the city's population will be between 11 and 15 million (fig. 2).

Needless to say, the services and infrastructure of Karachi are totally inadequate for this fast-growing pop-
ulation. Average water availability to households is only 24 to 29 gallons per capita per day. Only 30 percent of households have an individual house connection. Installed sewage treatment capacity is only 40 million gallons per day, compared with a water intake of 100 to 120 million gallons per day. Only about 20 percent of the metropolitan areas' households have individual sewer connections.

Major employment centers are all concentrated in one place, while the people who work in them are scattered in the outlying districts. Commuting for low-income groups is time consuming and costly, absorbing as much as 10 percent of monthly incomes for thousands of workers in northern and eastern Karachi.

From 50 to 60 percent of Karachi's population lives under slum conditions: 20 percent in squatter settlements of katchi abadis, the rest in what might be called "planned slums." The latter are considered better only because they have straight roads planned by local development authorities; they are otherwise equally deficient in physical and social infrastructure. The squatter settlements play a particularly vital and useful role. They are usually associated with a well-developed social structure which provides security in times of need. They are frequently located near employment and can themselves be substantial generators of jobs. They also allow the low-income family to survive at prices it can afford.

In countries like ours the magnitude of the problem of housing is so great that the quality of the individual structures themselves is relatively unimportant. People manage to create livable shelters by using their ingenuity with tin cans, old metal sheets, Coca Cola crates, and discarded clay pitchers. To better conditions there the emphasis has to be on a minimum level of physical and social infrastructure, rather than on the house itself. With security of tenure and the increasing earning power of the family, the quality of shelter automatically improves. Therefore the important thing is to establish a framework for participatory design in which the basic infrastructure is provided by the state, and individuals do the rest. In this way, instead of building houses for the poor, the state uses its money for providing the physical and social infrastructure that will benefit a much larger number of families.

The Lines Area covers 7,660 acres and houses approximately 100,000 people. It is situated in the heart of the city of Karachi, within walking distance of Saddar, a center of offices, businesses, shops, and petty trading, and near middle-income housing areas. It is an important and valuable piece of land which was originally a military cantonment, whose barracks were constructed during the First and Second World wars. After independence in 1947, the barracks were given over to house central-government employees and defense personnel. After partition, between 1950 and 1960, many of the people who migrated from India found shelter in this part of Karachi. The spaces between the barracks gradually filled in with hutments and jhuggies, resulting in one of Karachi's worst slums. But in spite of severe overcrowding and a lack of basic amenities, very few of the residents ever leave (pls. I-2).
to rely on petrol lamps. Street lighting is restricted to a few main roads. Although there are eight primary schools and two secondary schools, the buildings are dilapidated. Two dispensaries adequately serve a population of 100,000 (pls. 2a-c).

The many shops and hawkers cater to the needs of the community. Small shops are tightly packed along the roads, and hawkers sell their wares along narrow streets and winding footpaths. Most shops deal in groceries, but there are also barbers, laundries, eating places, block makers, mechanics, and many small cottage industries.

Twenty-four percent of the families residing in the area have an income of up to Rs 400.00 ($40) per month, while 29 percent earn more than Rs 600.00 ($60). The rest (47 percent) have a total family income of between $40 and $60 per month.

The studies conducted in 1976 show that only 5 percent of the household heads were totally unemployed. Fifty-four percent earned wages, no less than 39 percent were self-employed, most of them as hawkers or shopkeepers. When interviewed, 56.5 percent of the families could not pay more than Rs 30.00, or $3 per month as installments toward a house, 25 percent approximately $5 per month. Only 12.5 percent could afford to pay $10 or more per month.

Because of the central location and proximity to their place of work, 40 percent of the people interviewed had no commuting expenses at all, in contrast to much of Karachi’s working population. Thirty percent paid only Rs 1 to 2, or 10 to 20 cents, per day.

Most of the dwellings (80.5 percent) in the survey sample were inhabited by only one household, though in a few cases (3.5 percent) more than six families lived in a single dwelling. The average number of households per dwelling worked out to 1.25. Seventy-five percent of the households had less than six members, which meant that relatively little living space was required by each family. The people have occupied plots ranging in size from 30, to 140, to 200 square yards, depending on need and opportunity. Average plot size worked out to 46 square yards for a family of six members, and 63 square yards for seven or more members.

In 1972, a directive by the then president was issued to the Karachi Development Authority to formulate a comprehensive scheme to rehabilitate the Lines Area. The guidelines that resulted included the following:

1. The people in the squatter settlements will be resettled in multistoried flats in the same neighborhood and will be given ownership at a nominal cost.

2. Special emphasis will be given to constructing buildings of from five to fourteen stories in order to provide housing for all income groups.

3. Densities will be increased by building fourteen-story towers and five-story walkups for squatters at a density of 125 to 200 dwelling units per acre.

Accordingly, in 1973 a ten-acre plot was cleared. People were moved out of the area, and construction began on 500-square-foot flats for them. When a study was conducted in 1976, it was found that although 475 flats had been constructed, no master plan for the area had
ever been put into effect, so that no further ground could be cleared and a continuous construction program had become impossible.

Only 800 flats had been completed by 1980, and none of them could be lived in by the squatters they had been intended for because of high cost. All were sold to outsiders, thus making the whole exercise futile from the point of view of relieving pressure on the Lines Area. The majority of the people who had been moved out simply came back again to squat in the streets outside. This happens again and again in this part of the world. The population is moved out while the housing is built but then cannot afford to live in the buildings and simply returns to squat again. Once again the housing constructed by the government had failed to reach the target income group.

In the meantime the housing constructed, although it was inhabited by a higher income group than originally envisaged, became another slum, with the areas in between the flats left unmaintained and uncared for. This turn of events, however, seems not to have been noticed, for in a meeting held in September 1976, the chairman of the Karachi Development Authority directed that, "because of the prohibitive [land] prices in the area, the possibility of building high-rise apartments should be considered," once again forgetting the results of combining the limited rent resources of the low-income groups with the prohibitively high cost of multistoried buildings. He also said that planners should not hesitate to use elevators: if it is feasible to build higher than five stories, there is no reason not to build higher. Because, in the last ten years, in Karachi particularly, apartment buildings have become synonymous with progress, the development authorities have done everything to encourage the construction of high-rise apartment buildings, which in many cases have then become nothing but vertical slums.

When people move to the city it is because they need jobs. The quality of shelter is very low on their list of priorities, and we should not impose upon them our ideas of what is suitable. The shelter we provide has to be affordable, and that means that the method of construction must be kept simple. If they cannot at first afford to build the whole house, it should be possible to design one that can be completed bit by bit as extra money is available. Simple construction also allows for self-help, so people do not have to rely on a government agency to build their house for them. The project should require minimal or, even better, no subsidy, since subsidies have a way of drying up after the first phase. Because the cost of construction is high and the size of families fairly large, it is important to leave as much courtyard space as possible. Enclosed space is free and gives extra livable room at no extra cost. Privacy within the house must be built into the plan; even when women do not observe purdah, they prefer to keep away from outsiders. In short, the solution must be appropriate for the tenants' social and cultural, as well as economic, requirements, and in this area that means ground-based dwellings.

Walkups and high-rise apartment buildings are unsuitable for the low-income groups for cultural reasons, but there are powerful economic arguments against them as well. Where a two-story, one-unit house covering an area of approximately 550 square feet can be built for Rs 45,000, or $4,500; an apartment in a five-story walk-up of 500 square feet costs at least Rs 70,000, or $7,000. This is because simpler methods of construction can be used for single- and two-story houses. A five-story walk-up requires a sturdier construction and at least 55 percent more investment than a one-story dwelling. Unless it is heavily subsidized it is totally out of the reach of low-income groups.

The minute government subsidy becomes essential, as I mentioned, construction soon halts from lack of funds. The initial investment has to be made for the whole building and is therefore high. Since an agency is constructing the building the tenants cannot contribute their labor, and since it is usually poorly constructed it cannot be properly maintained. Common staircases and halls are neglected. Maintenance and facilities costs are normally higher in walk-ups, and this, too, adds to the tenants' expense.

The failure of the proposals formulated by the Karachi Development Authority and of the eight hundred flats that they did manage to build in eight years led them to hire me as consultant. It was probably the first time in Pakistan that a consultant was appointed as much because the residents needed one as because the government did. So I started with the advantage of good will on both sides, instead of the more common antagonism between people and government.

A glance at previous efforts made it clear that a plan had to be devised to make the project self-financing and that confidence in the plan on the part of the residents would be difficult because many promises had already been made and broken. Nothing could be achieved unless the people agreed with the proposals. If they refused to cooperate, the government would not risk confrontation. So the task was fairly complex. There was no denying that the land was extremely valuable and was needed by the city itself; it also housed the government employees living in the barracks as well as the squatters.

From the outset I developed close contacts with the representatives of the area. I visited it frequently and encouraged people to visit my office. This rapport was important. Before recommending solutions, one needs to know what the problems are. It also gave me a tremendous advantage over the other planners, though it had the drawback of leading the residents to think of me as one of them and to expect me to disregard all other considerations. They saw me as "daughter of the Lines Area." I saw myself as part politician, part social worker, and only part architect and planner.

The trick was to plan a project that would fulfill the needs of the people and at the same time would not be violently opposed by the Development Authority. The strategy consisted of giving in just enough to the Development Authority to have my way on what I considered to be the most crucial issues. Because of the prestige associated with high-rise buildings and of course the higher densities that the authorities felt could be achieved by them, the problem was always to convince people even to consider other options. They were not swayed by
the argument that it meant the poor people would have to move away—I suspect that, although it was never said publicly, clearing the central city of these poor people was in fact what they were after.

The design had to ensure that the dwellings would be within reach of every pocket, and at the same time not reduce population density substantially. The present walk-ups built in the area have a density of 80 units per acre, and densities close to it would have to be worked out. One had first to determine the size of the plot to achieve that desired density. I had already warned the people living there that everybody would have to agree to the same plot size, even those who had a larger one at present.

The minimum lot size in Karachi is 60 square yards, which gives a density of 40 to 45 units per acre. The apartments constructed in the project had an area of 500 square feet and consisted of three rooms, kitchen, bath, and WC. Since they were acceptable to a higher income group than ours we could consider lots of 40, 45, and 50 square yards to be feasible. We found that in 45 square yards we could conveniently provide a built-up area on two floors of 560 square feet—even more than the existing apartments, not counting the added advantage of a 100-square-foot courtyard. By rationalizing the street system so that vehicles were kept at the periphery, we could achieve densities of up to 75 units per acre, fairly close to the 80 that exists there now. The units would be single-family houses, designed for incremental growth and the possibility of self-help (fig. 3).

The generation of funds was a most important step; without money the whole project would founder. We needed funds for laying down all the major infrastructure, since the little available there was unsalvageable, and for building new schools, health centers, and community centers. Although logically the latter should have been the responsibility of various government agencies, they have no money, and few facilities are actually ever built. The backlog of demand for them is immense. We therefore considered it essential to provide them as part of our program (fig. 4).

The property we were dealing with was in the center of town and therefore extremely valuable; we therefore decided that the best way to raise money was to sacrifice some of that land: we would auction off selected parcels of it, and in that way generate the funds needed to improve the rest. This promised to bring in quite a substantial sum—the nine-acre plot to be auctioned off first is expected to produce between nine and ten million dollars.

Organizing the development process was almost as crucial as financing it. First of all, it was clear that because of the failure of previous efforts the people would not agree to move and clear the area unless they were certain that they could eventually return. They suspected that in fact they were being cleared out so that the land could be sold to developers—they had seen it happen before. Then too, because we did not want to destroy the

Fig. 3 Lines Area proposed land use
social fabric, it was important to work out a strategy that would avoid mass dislocation and that would allow the people to resettle in a lot very close to the area they had originally lived in. We finally decided to move people out in shifts. The incentive was to provide them with plots in other residential areas that were larger than the plots they could expect to be given in the Lines Area if they returned. We also gave them the option of keeping those plots, or surrendering them and returning to the Lines Area when it was ready. We also hoped to allow each group a three-to-four-month period between the time the section was finished and the time they had to return, so that they could complete the work on the house itself before they had to move in. As it turned out, this did not prove to be possible in the first phase, but we hope that it will be done in later ones. Since the total number of dwellings we are contemplating will house about 13,000 families, timing is a particularly difficult task. The whole process will probably take about ten years, though we hope to do it faster (fig. 5).
The design of each sector was to be worked out so that the walking distance to services and a vehicular street would not exceed five minutes. This was not so easy, because we had to work with a number of constraints that inhibited the rational laying out of the streets. First among them were the mosques, schools, and other facilities scattered about the area. There were something like thirty mosques, and none could be demolished. If they had been, the project would have come to a standstill. Though in theory the fatwa says only that if a mosque is torn down it has to be replaced by a new one, in practice there is great resistance to destroying one. People become very attached to them. It was easier to realign the roads than it was to risk a dispute.

Yet another problem was presented by the Sunni mosque and the Shi'a imambarah that were next to each other on the main thoroughfare. We felt it was a good opportunity to separate them, because during Moharram there are always clashes between the two rival sects. Negotiations are under way to provide an alternative site for the imambarah so that the two institutions will be separated by a good distance. Because of the high value of land, however, the haggling that has taken place about how much should be given to them has been endless.

The schools, dispensaries, and so forth we had to preserve for a different reason. Although they are in a very poor state of repair, we have no money to invest at this stage, and they are better than nothing. As funds become available they can be replaced. Eventually the site will have four new primary schools, three new secondary schools, six new community centers, and a bazaar in each sector, and a number of playgrounds.

The sector layouts were prepared with the socio-economic and cultural aspects of the community in mind. I wanted to keep the narrow, pedestrian streets twelve feet wide with small open spaces to allow more human interaction, but the Development Authority insisted on fourteen.

The lot size of 45 square yards provided three rooms, a veranda, a kitchen, a bath and WC, on two floors, and additional space in the courtyard (lacking in a flat), which can also be used as a wind-catcher (fig. 6). The area is free of cars, so the streets can be used for all kinds of activity as well—for children to play in, for vendors to sell things, for elders to sit out in the evenings. Open spaces can also be used by the community as neighborhood playgrounds and for festivities and marriage ceremonies. When resources are scarce, all elements must be designed to have multiple uses.

As I mentioned, the project is near the most important commercial area of Karachi, the Emperor's Market. We have planned a main artery that will connect with the market at one end and another main road in the city at the other. This should relieve the traffic congestion somewhat. At the moment, traffic has to detour all the way around the area because the streets inside are in such poor condition. We are also planning a bus terminal. Altogether about fourteen acres are earmarked for public buildings and commercial use. The rest of the area will be devoted to the housing sectors, of which there will eventually be eight. Each of them will be laid out in the standard 45-square-yard plots, with some land being retained for the five-story walk-ups the government still insists on building. They feel they want to invest their

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Fig. 6 Townhouse plan
money in them, and so we have provided the space for them to do so.

Next we had to determine just which people were eligible for the 45-square-yard plots. As you can imagine, as soon as news of a development gets about, there is a danger that people will crowd into the area and squat. It was very important to avoid that here. Fortunately a 1973 survey was available to give us something to go on, though even in that survey people had been missed or some names had been entered of people who probably did not live there at all. This always happens; it is impossible to control. We made a list of the people living there now, compared it with the 1973 survey, and then tallied it with ration cards, which show how long people have been living in an area. The counsellors who had been elected in the area a year and a half earlier could also vouch for the people living there. In this way we eliminated people who had no right to plots, but again it is impossible to have a watertight scheme; some outsiders were included and some bona fide residents left out. To rectify that we posted the list we finally drew up for the people to check, and an appellate board, consisting of three government officials and two public representa-

tives, heard complaints. At least for the first subsector we feel that leases and allotments have been handed out to people with valid claims.

The organizational set-up for the project consists of a high-powered Lines Area Development Board, comprising the heads of all government agencies, with the governor of Sindh as its chairman. All decisions in principle are taken by the board, which meets every three to four months. Then there is the executive committee which deals with all day-to-day problems. It is made up of representatives of the development authority, the masterplan department, and the area. It negotiates with difficult owners, offering them alternative sites, again to avoid confrontation that would lead to delay and involve the authorities. There is also a coordination committee, which is a voluntary body of representatives from the area and plays a very active role in keeping the residents informed of all decisions.

While in theory I, too, think it is important to have tradition-inspired solutions, I must confess that when I wanted to draw on traditions for my designs I found I simply did not know enough about them. If in the sector layouts I have tried to create the feeling of a traditional
mohallah, which was basically a cluster of dwellings around semi-public open spaces. I did so purely intuitively, after walking in the old cities of Thatta, Lahore, and Peshawar. Very little work has been done on the old towns in Pakistan that could have been used as a source of inspiration. We felt the gap so acutely that recently we started some work of our own on the systematic documentation of old towns in Pakistan, especially Thatta.

Pakistan is full of great historic centers, but unless we can manage to compile sufficient information and develop a deeper knowledge of the historic urban fabric, the traditional house, and other building types, I do not believe that we can expect architects and planners to produce any work that embodies continuity. We need the information not only as a basic tool for design but also as the foundation for arguments to convince decision makers. Often the most difficult decision makers to convince are our fellow professionals, engineers, architects, and planners who were trained twenty-five to thirty years ago. They are still under the influence of modern planning concepts learned at that time and cannot believe that any good can come out of the disorderly tangle of streets that are so typical of our traditional towns and cities.

Three house types have been developed (figs. 7-9). They will not need further approval by the Development Authority, though if people want any changes, they are free to come to us so that we could incorporate them. The people are being encouraged to form cooperatives to which loans from the House Building Finance Corporation will be made available. But what they really need are interest-free loans, and we are exploring the possibility of funding for them. The HBFC loans are given at 9 percent interest, which is much too high for the lowest income groups.

The construction of the houses is fairly simple, so that the people can do it themselves (fig. 10). Load-bearing cement, concrete-block walls, and simple precast T-slab panels are being proposed. Although people are free to construct as they wish, we are arranging for precast panels to be available on site.

As you can see, the emphasis in this project is not so much on design as on rational and appropriate solutions to problems. Design is important, but if it is not provided in the proper framework of execution for a total project, constant revision is necessary, as various problems are discovered and have to be resolved. We keep redesigning the sector layouts—everything else for that matter—as new circumstances crop up. At one point, for instance, we felt that one of the schools on the site was in such a state of disrepair that it had to be demolished, and we decided to site it in a different place. We accordingly prepared the layout. Because of the delay in the auctioning of the prime commercial land, however, we could not start the construction of the new school in time to serve the population planned for it, so rather than delay further, we decided to retain the old school for the time being. That meant the sector layout had to be reworked yet again.

I must confess to you, finally, that I am under severe attack by the Development Authority and planners in Karachi for this project. They continue to be convinced that the land is too valuable to build anything but high-rise apartments and other prestigious buildings on it. But I feel the poor people who have lived there for twenty-five or thirty years have their rights, too—certainly more of a claim than some developer whose only interest is to make the most profit out of it. To me, it is a moral question.
11. Second Panel Discussion

Note: The questions and comments from the floor are summarized and identified here by the word "Speaker." The panelists are identified by name, and their comments recorded in full.

FRANÇOIS VIGIER: Important issues remain to be discussed having to do both with the actual design of housing and with considerations that go beyond the housing itself. I will first ask each panel member in turn to give a succinct statement of his or her reaction to the cases, and then call for discussion from the floor.

ISMAIL SERAGELDIN: Regarding a comment made earlier—that the resolution of the urban housing problem depends upon upgrading the rural areas—that notion is really a mirage, for two reasons. One is that no country in the world has been able to control the rural-urban migration that results from industrialization, except for the People's Republic of China, and they did it by using very extensive control techniques that are, I think, not easily generalizable. The other is that, even if we were to stop all rural migration to the large urban centers of the third-world countries, we can assure you that about 55 percent of the projected growth rate would still take place from natural increase in these cities themselves. We have to face up to the problem of housing the urban poor throughout the third world, and that is a joint responsibility of architects, planners, and decision makers.

The three case studies highlight different aspects of this peculiar set of responsibilities. In inverse order, the Karachi study brought home the difficulty of dealing with the problem of the urban poor, since affordability is always the major constraint. This is an important thing to keep in mind when we assess the second case we saw, which dealt with Algeria. There the cost per unit was on the order of 280,000 dinars, which good architectural techniques reduced by 20 percent. A quick back-of-the-envelope calculation tells me that if the Algerian government were to generalize this solution to the needs of Algeria as a whole it would absorb about 55 percent to 60 percent of all government revenues for the next twenty years. Therefore I really doubt the validity of presenting a case like that as being a solution for housing the urban poor, though it may be perfectly adequate for housing the upper middle class who can afford housing of that type.

This brings me to the first case where, of course, the cost problem does not exist. The government of Saudi Arabia is in the unique position of being able to provide the very best standards to anybody it would like to provide housing for. In that case, I have only two observations to make, and they may reflect the nature of the presentation, which emphasized its architectural rather than its planning aspects. The presentation had as a recurrent theme a fixed master plan into which everything had to fit. I feel that if we have learned anything in the last twenty to thirty years of urban-planning experience, it is precisely that fixed master plans of this type will inevitably lead to rigidities which are then rejected as we are overtaken by events. This should be particularly true in the case of Saudi Arabia, whose society is showing an unprecedented rate of change. I would think that emphasizing planning as a process, as opposed to a fixed ultimate vision, should be a principle that decision makers and planners in that country should follow. But I did not see any sign of it in Yanbu; I was left with little sense of who the people living in this town would be. Yanbu and Jubail are both towns that are going to have a very unusual pattern of population development: an early peak as people are brought in to build an infrastructure; then, as that settlement takes shape, a reduction in population; then an entirely different group of people who will begin to come in and take over the tenure of the city. I would expect to find some reflection of these changing and shifting populations in the discussions of what sort of housing would be supplied there, and I missed that.

This leads me to my final point: What responsibility ought architects to assume in the development process? Without going so far as to say that architects should relinquish all sense of responsibility to their client and become nothing but guns for hire, I certainly see a lot of middle ground between that extreme statement and the pretentious statements that are frequently heard in architectural magazines that architects are the custodians of culture and the changers and articulators of society's aspirations and beliefs. Somewhere between the two an adequate role for the architect in relation to the client, decision maker, and others can be defined. I would suggest that this role should be thought of in terms of a three-way relationship in which planners set the general framework of guiding principles; architects design the trend-setting, pace-setting monuments that articulate space and give us the landmarks by which we recognize a city; but that people at large be allowed the prerogative of shaping their own houses rather than simply being supplied with them from large-scale developments.

DORUK PAMIR: It is very hard for me to say anything about whether housing is suitable or not since I know neither the conditions nor the people of these places intimately. But I would like to make a few general comments on the attitudes toward design that they display at the urban design level. The Yanbu project is somehow a very specific, particular solution: it is a finished organism; it has a beginning and an end, and everything has its particular place; it is a machine made to function. Now, of course, this has its advantages if the decisions behind it are the correct ones, because it answers the needs properly and all at once. But the drawback of such a scheme is that if some of the decisions are wrong, there is little chance the errors can be remedied. Change is difficult to bring about in this kind of scheme. But it has the other advantage which we all know: at the planning level richness is provided.
The other two show a different attitude. Rather than providing one completed organism, they provide a pattern, which in itself is not very exciting—it has no beginning, no end—but which has the advantage of flexibility; it can much more easily be adjusted and renewed. It is not without monotony. It is hard to find one's way about, for instance.

Who knows which of these schemes will be successful? Only time will tell.

In terms of housing, there is again quite a distinction, not so much in the case of Karachi, as between Yanbu and especially the second Algerian project. Now in spite of the fact that the planning is based on a very simple and rigid pattern, the effort was made in the units to provide variety and expression. Yanbu took things very calmly; the units are rather nondescript and simple. I know from my experience in Turkey that people have a tendency to add their own touches, so it is always wise to keep things rather simple, and not try to express things for them. These buildings will be able to absorb the ornamentation and other things that people add. The others might simply become chaotic. They would be perfectly all right for a Western society, which takes buildings as they come, but in this society they will want to add things and that can become quite a problem.

H.-U. KHAN: Several things occur to me. All the approaches that have been taken show a merging of architecture and planning—the distinction is no longer made. I wonder if that is entirely a good thing. Perhaps we should define the roles of architect, planner, sociologist, economist. Yasmine Lari has been acting as developer, economist, and politician rolled into one; that is very nice as a sort of romantic thrust forward, but on a mass scale I wonder whether these roles should or can be blurred in this way.

I would also like to see a distinction made between two types of urban housing. One belongs in the totally new development of the Saudi Arabian sort—completely new housing, new infrastructure, in a place catapulted immediately from no population, no background, to an entirely new community. The other belongs in existing communities, where redeveloped areas are involved in upgrading, bringing in services, giving people land. The two have very different approaches and may require different sets of rules. They may even require a different set of building regulations and a different kind of financing.

This brings me to another point, which is the question of building rules and regulations. So far as I can see, building codes in most formerly colonial countries are based on old colonial laws—in the case of India, British laws of 1943 and 1946, updated to 1956 if you're lucky. In Saudi Arabia I am amazed to discover just how strong the constraints upon a designer are. Laws are set which obviously have not been developed for a particular context. I wonder whether one really can have very rigid regulations of this kind in rapidly developing societies. In the Saudi housing scheme, the creation of the individual plots is fine, but why are setbacks required?—and this is true of Karachi as well—twenty feet in front, thirty feet in back, and two feet on either side. If you look at the actual pattern of most Islamic townships, certainly those in the Middle East, you find that adjoining walls are common because private spaces are internal. The law allows party walls because walls are blank walls in any case. But these Western-inspired laws are applied time and again in Islamic cities, and they are precisely the kind of thing that encourages the international—or if not international then pan-Islamic—approach to architecture, which I just do not think should exist. It does not allow for the regionalization of solutions.

There is a great danger in trying to apply models developed for one situation to other cities or other places. However nice as examples, they cannot be accepted as principles for an architecture of a whole region. I do not think we know enough about the existing housing stock in most of these countries to be able to come up with generalizations yet, but unfortunately we are forced to, and that is probably why these kinds of general solutions are produced.

As to the role of the architect, I am of two minds about letting people build for themselves. A certain amount of intervention is necessary, and the architect or planner should take the responsibility for it, perhaps by setting ground rules or showing alternatives. I do not think he should just provide a plot, a few core units, and water taps and then say, "Build," because in the end that can create chaos. I am advocating that: the architect become involved with the people in the community, then help supply a variety of alternative solutions. Let them choose; let them adapt it; let them build on it; but don’t leave them floundering. People may once have known how to build, but on the way from village life to city life they lose some of the skills and ways of organizing space that they would have maintained in traditional habitats. In a village, perhaps, the architect can be less interventionist, but in the city I think he must provide solutions.

SAMIR ABDULAC: As the last to speak, I do not have many points left to make, so I will confine myself to one: how climatic adaptation was provided in the architecture of the various projects we have seen today.

The architects of the scheme in Yanbu were unfortunately working in too wealthy a country. The Saudis can use modern technologies; they do not have to provide the natural ventilation and other mechanisms of climatic adaptation in their architecture that are required of the rest of us.

The project in Algeria tried to use local ways of adapting architecture to the climate, but in doing so the architect used systems that do not exist in Algeria so far as I know—wind-catchers, for example. He also tried to invent new systems, like the space beneath the floors or the separation between roof slabs and floor slabs on higher levels. I look forward to finding out how the building will respond to climatic conditions. I will be very glad if these innovations work because they will help us generate other solutions for the same country.

This brings me to what the architect can do to improve the adaptation of buildings. Of course, when there are no economic problems, contemporary technological devices can suffice—at least if the power doesn’t fail. But for most of the third-world countries, adaptation must come
through the architecture. Architects will never be able to
design and build all the houses needed; they will work for
wealthy clients and sometimes for government programs,
but even added together those will be only a tiny part of
what needs to be produced. Nevertheless, I believe that
architects can have a positive role. First, they can survey
and understand traditional architecture and then see if it
can be modified or not. They can through programs,
which could be programs for the very poor, try to test
some solutions and see if they can be generalized. This is
the role tradition can play. Tradition relies on types and
models, and that in itself is very important because a type
or model can be modified and gradually improved year
after year, perhaps century after century. If we use new
models, we have first to develop them, then to have them
accepted, then to see if they are feasible and if they can be
modified. Traditional models have already been through
that process.

The architect's role is either to create new models or
modify old ones. That is how they can intervene directly.
But they should also intervene when regulations make it
impossible to build models, and that is a kind of indirect
intervention. Sometimes it is the legal framework that is
unsuitable; in most Mid-Eastern cities that I know, only
Western designs can now legally be built because of the
laws that are now enforced there—sometimes decision
makers should also be induced to change their minds.

About the courtyard: a courtyard has advantages that
are mainly climatic. Its relationship to a way of life is
quite a different issue. The courtyard itself does not react
to anything, nor is it progressive. Its presence or absence
depends on what kind of architecture people want to live
in. At the moment courtyard houses are very popular in
all sorts of countries, but you can not argue from that that
people all over the world—Americans, say, or Swedes—
are becoming Muslims or are being Easternized.

Architecture itself cannot really induce a way of life,
liberate women or keep them at home. Society does that.
On occasion, architecture can inhibit change, but it can-
not make people change their ways if they do not want to.

VIGIER: Before I throw the discussion open to the floor,
I think I should first give the authors of the schemes a
right of rebuttal, if they so wish.

PERRY NEUBAUER: First of all, I would like to
address the criticism regarding the rigidity of the master
plan and the lack of flexibility that apparently exists in
the scheme for R-4 at Yanbu. I do not want to defend
them so much as to explain why we did what we did. One
learns from walking around towns in Saudi Arabia that
unless use is made of every square inch of land, it fills up
with junk. If somebody does not belong to it, it becomes
useless land. Therefore we tried to utilize every bit of
space. We adhered strictly to the master plan because
there were a number of architects, urban designers, engi-
neers, and so forth, working on the project—five or six
firms in the A-3 area alone—and in order for us all to
perform in harmony to the same sheet of music we had to
play by its rules. We stuck by the controls that were given,
trusting that the urban designers who had come up with
the master plan had provided a coherent approach. We
simply did our part.

There is nothing wrong with flexibility, however, and
there is some in the project. The central open space might,
I suppose, in a generation or so end up as a suq. Other
mosques might be built. Nor does the architect ever know
how his buildings are actually going to be used: they will
be used the way people want to use them, and if the
structure does not lend itself to that use, it will be pulled
down and something else put in its place. People are
surprisingly ingenious when it comes to adapting build-
ings that an architect might have designed in terms that
he thought were very specific.

Skipping back to the climatic adaptation—natural sys-
tems for ventilation and so forth—especially in Saudi
Arabia we have to recognize that modern technology has
really taken root. These people have the money to spend,
and they want the best. The whole city of Yanbu (and
Jubail as well) was created around modern technology. It
would have been stupid to provide natural ventilation, if
people refuse to use it, simply for the sake of providing
natural ventilation. We in fact have provided some natu-
ral ventilation in the houses—windows are operable—but
we did not build windcatchers. I have studied how
they work with thick walls, and I know they are a really
good addition to the urban fabric. But they have them in
Dubai, and they are all blocked off. Nobody uses them
anymore because of the frequent dust storms. People
who have air conditioners should also have access to
natural ventilation so that, if all the electricity goes off in
Saudi Arabia, they can open the windows and depend on
natural light. But the notion of introducing what I con-
sider to be romantic solutions to modern problems is
expensive, and I am not even sure it is very applicable in
that particular country.

Discussion about the role of the architect: What con-
tact does the architect or the urban designer have with the
people who are eventually going to use whatever it is he is
building? In the case of a new city it is very difficult to
have contact with somebody who has not moved in yet.
In an existing situation, as in Karachi, it is very easy to
speak to the customer. Our office has also done projects
where contact with the neighborhood was possible. In the
case of Yanbu, however, the population is now nonexis-
tent, and it will remain for a time very transient. People
will come from western Europe, from other countries;
they will make some money, and then they will go back
home again. We created neutral, some might even say
bland, background architecture that could be easily
maintained and is not so specific that only one particular
kind of person would want to live there. We had to admit
that we did not know who the user would be. Even houses
that are built for specific users might have entirely differ-
ent users a generation or two from now.

Allowances for regionalization: somebody mentioned
party walls, and I admit that our villas might just as well
have been row houses. The fact is that the program called
for villas, so we took the number it gave, the minimum lot
width, and the minimum setback, and we designed
around that. Although it is easy to talk about what might
have been or what should be, what is is what we had to
work around. We had a very close relationship with our
client, the Royal Commission for Saudi Arabia, and their
designated representative Parsons, from the West Coast. We had to deal with the program we were given, or violate our contracts. That is a reality. We also had a penalty clause, just to remind us that we had a contract. Here at MIT or down the civilized road to Harvard, it is more fun to talk about the other things, but in practice they are not easy to apply. The points were good, and in a vacuum I would probably be asking the same questions. But considering the constraints and the client's very specific requirements, I think our solution is certainly reasonable and workable and probably does have at least some flexibility built into it. In any case, I would rather not build in too much flexibility because then the plan might begin to change, and a certain order and balance might begin to break down.

VIGIER: I might add that when we decided to use for this seminar a large-scale housing sector in a new town, at least a few new towns and any number of housing sectors—in Yanbu alone—could have been selected. We selected this one: I don't need to say anything more.

I. SERAGELDIN translating for Mr. MINIAWY: Our colleague [Miniawy] has said that the question of using or not using contemporary technology for the well-being of people is in essence not a question of income level or the specific requirements of a locale or a country. It is a philosophical issue. Every effort should be made by all of us to build up a store of techniques and knowledge that will increase our ability to prosper when fifty or sixty years from now we will all have reached a point where we will not be as free in our expectations of technological solutions for contemporary problems as we can afford to be today.

VIGIER: I will now entertain comments, questions, or statements from the floor.

SPEAKER: I wonder if the speakers could supply some sort of statement as to what in their projects addressed a specifically Islamic context. The different strategies mentioned seem to be equally applicable to any urban housing scheme anywhere in the world.

NEUBAUER: The overall design and certainly the presence of the mosque made our project very clearly designed for a Muslim country. The way the house functions—the strong separation of the family from the guests, the facilities provided for the guests—is also characteristically Islamic. That is not to say that Western families would not be able to live in those houses; however, we have found that it works best to design for the Eastern tenant and let the Westerners fit in. I agree with your comment that the design could be for any hot, arid climate, but I choose to take that as a compliment. Architecture has to accommodate the environment first of all: particular religious or cultural characteristics might be there, too, but they can always be added as tenants change.

I. SERAGELDIN: Especially among Westerners there is an undue preoccupation with looking for a uniquely Islamic solution to everything. Islamic architecture is the architecture of the Muslim people; the genius of Islamic civilization lies precisely in its ability to adapt to climatic conditions and to the needs of societies that at some later point became Muslim societies. It provided a subtle over-
the same time; different parts of life are at different points on the scale.

In the case of Yanbu, the only thing we had to go on was a collection of statistics, the result of a series of rather expensive mathematical exercises produced from a quite sophisticated simulation model developed by Arthur D. Little. It was supposed to come to grips with the problems of dealing with different economic bases and different population profiles and produce the programs required to house that population. That was about all, and hence, almost by definition, many of the specific program decisions that were made and given to the architects, or given to the planners for that matter, were arbitrary policy decisions, choices that were made for better or for worse. We can talk about them, criticize them, praise them, but they are simply choices.

It was decided, for example, that the houses should be free-standing—even if they are separated only by a symbolic two-meter strip of land—and not attached. That was one choice: it had a cost attached to it, a physical form that resulted from it, and it will have repercussions later on when real people move into it—perhaps it will not, for that matter. But it is one of a set of arbitrary decisions. Many of us, including the ones who have been working on and off on this project for a long time, share misgivings about the results, but those problems are inherent in the development of any new community lacking a target population that is to be settled in the area, as it was in Yanbu, and Jubail, and for that matter most any new town constructed for purposes of economic development.

SPEAKER: It sounds like a compromise of two forces coming together.

VIGIER: I do not think it is a question of compromise. A series of possible solutions, of possible approaches, were offered to the decision makers—in this case, the Royal Commission for Jubail and Yanbu—by various teams from various professions, with various approaches to a very complex problem, usually only partial approaches which reflected their own interests and the professional services they were trying to sell. In the early discussions I used to feel very sorry for the then very small commission staff because it was being asked to make momentous decisions which would absorb very substantial financial resources and would preclude changes and flexibility at a later time, and to do so on the basis of very hypothetical, theoretical, often even doubtful information. It was the best that could be offered them, but that did not make it any easier: some choices were made, and here are some of the results.

SPEAKER: Certainly problems came up in the early days of Jubail: it turned out that the people we built the houses for could not afford to live in them. In Yanbu, too, we have set the standards that the commission wanted to set for the people of the nation, but given the costs and the incomes that these people have, it will be very difficult for them to live there as well. Instead, various companies that occupy the industrial section will probably have to purchase or subsidize the houses for the people who work for them. The houses will be occupied, but the construction workers will be living somewhere else. Workers do not live in Jubail and Yanbu: there are construction camps set up for them elsewhere.

NEUBAUER: In view of the extensive use made of modern technology in Saudi Arabia, was any consideration given to utilizing solar technology at Yanbu?

SPEAKER: We used solar panels to provide hot water; we investigated using them for heat, but the cost would have exceeded that normally required for heat by traditional means. Heat is only needed a few evenings a year there; it was not worthwhile to construct enough solar panels just to take care of that so we ended up using solar panels only for domestic hot water. Extensive studies were done before that decision was made, however.

SPEAKER: We built a large project in Tobruk and used solar heat there for a complex of twenty-four buildings. Saudi Arabia is a good place for solar heat, and it is going to be used there more and more, I'm sure.

OMAR NASIF: Let me clear up a misunderstanding. Although Saudi Arabia does use high-tech ideas, we have also done considerable research on the background of our people and how they live. We have compiled extensive demographic data that have been used as guidelines. We have studied the form of the old towns of Jeddah, Mecca, Medina; the use of mashrabiyyas, windcatchers, baked earth. The location of Yanbu, however, does not lend itself to a number of these traditional solutions. The prevailing winds come from the north and pass through a broad stretch of sand; the site is also near the sea. There are insulation problems, dust problems, and humidity problems quite different from those in the old wadi cities like Mecca. In addition this town will house laborers from other countries. We are not a numerous people, and need to accommodate peoples from elsewhere in an environment suited to them. Nor can one build in terms of what will happen in thirty years. Who knows what will happen in thirty years? Nobody knows.

SPEAKER: I think we should now look beyond Yanbu. Saudi Arabia is not the Islamic world; Saudi Arabia is not the Arab world; Saudi Arabia is not the third world. So let us comment on the other presentations, and in particular the comment by Mr. Serageldin that we should concentrate on housing for the urban poor. We have already been doing that for a long time—the entire history of housing policies has dealt almost exclusively with the urban poor, but those policies have never attacked the origins of the problem. Those origins are not urban; they are rural. Before we can solve the problem, we have to consider what is happening outside the city, because the city is not an island inside a country; it is connected with and related to it.

The practical way to deal with this problem is to provide interrelated policies for urban and rural areas. Because if we do not do that, no matter what we do, no matter what the model dwelling units we develop are like, we will not have solved the problem at all because the populations will still be pouring in to the cities, and we will still have slums. We will never extricate ourselves.

Mr. Serageldin also remarked that the project in Algeria could not be generalized because it was too expensive, and that the situation in Saudi Arabia could not be
generalized because it was too particular to be generalized, and generally that the role of the architect was not to design housing for the poor. I think that we still have to depend on official housing.

I. SERAGELDIN: In raising the first issue you seem to be implying that nothing has been done about rural development, and that is totally untrue. Just to take the case of an institution that I know well: 43 percent of World Bank lending over the last thirty years has been in support of rural development, as opposed to only 7 percent for urban development. But an even more important point that I have already tried to make is that, however important and essential rural development might be, it will never solve the problem either of rural/urban migration or of housing for the urban poor. The reasons are two: first, all societies—and this is a secular trend throughout the world—are industrializing. That means that industry is representing a larger and larger share of the gross domestic product of all societies. For that reason, with one exception, every country in the world has witnessed an increase in its rates of urbanization. The exception is the People's Republic of China, and it is an exception because of a very particular type of commune system which tries (with mixed results) to combine rural and industrial development. You may recall the Great Leap Forward of 1958 and the Cultural Revolution of 1966. But aside from that unique case the idea that, if only we would redirect investments and concentrate them in rural areas, the problems of the urban poor will gradually become more manageable is a myth.

Finally, even if you could control urban migration, completely abolish it tomorrow, the urban population would continue to grow simply because of the birth rate. Of the projected rates of natural increase in urban centers throughout the third world between 1980 and the year 2000, 55 percent is accounted for by natural increase among the people who already live there and only 45 percent by urban immigration. I agree that 45 percent is not an insignificant amount, but 55 percent is even more substantial. Take Egypt, for example: it is projected that 17 million people will be added to the urban population between 1980 and the year 2000. Of that number, under even the most optimistic circumstances—the development of new towns, and all the rest of it—at least 5 million people will be added to the population of Cairo. Of that 5 million people, a minimum of 3.5 million will be the progeny of people who live there already. That is what I meant when I said that we have to address the problem of the urban poor, and I deny that we have been doing so. We have not, and I think that Yasmeen Lari's presentation demonstrated that fact remarkably clearly.

The housing we have been supplying has turned out to be housing for middle-income and possibly upper-middle-income people. Even when government programs are targeted for the poor, they do not reach the poor because the building standards are too high and the investment-recovery rate is too demanding for them. As a result people are not able to afford the dwellings built for them, and if the government brought the price down to a level they could afford, the project could not be replicated. What is the result? Take Egypt again: only 6 percent of the present residential construction is built by the government, 94 percent is built privately, and 80 percent is built illegally. Now I ask you, is it not time that we addressed this problem? We, as responsible architects and planners who advise institutions or are employed by them, cannot continue blindly to pursue the same solutions we have been advocating in the past. What is the point of improving the design structure, getting away from the high-rise slums that we know and despise so much, and building imaginative and beautiful solutions, if no one can afford to live in those solutions? We will remain locked into that 6 percent. That is the heart of the problem.

As for the role of the architects: we hear a great deal in architectural journals and elsewhere about architects being the articulators of cultural expression, responsible for defining the environment, and so on and so forth. I do not think that this is necessarily true. Perry Neubauer has reminded us very graphically what the realities are: architects work for clients, and clients determine what architects build. The question then becomes, who are the clients when it comes to large-scale urban housing? Urban housing represents about 70 percent, at the minimum, of the total land use of any urban center. Now I doubt that that can be planned exclusively by decision makers; one would certainly end up with a very bland type of settlement. I think, for example, the people who planned Yanbu should be complimented for choosing a variety of architects to work out the designs. Anybody—no matter how brilliant he is—is bound to become repetitious in a very large-scale series of units. I advocate that the planners should demonstrate flexibility and try to define the general framework and that the architects define the urban environment. But that mission, it seems to me, lies not in finding solutions for housing the urban poor, because that problem does not fit the tools and the institutional structures we have at our disposal. It lies in designing those monuments that become landmarks, help us recognize cities, and define our landscape.

SPEAKER: I am sorry, I have to come back to Saudi Arabia again. I wonder why the mosque was placed on the periphery. It seems to violate the notion that the mosque belongs at the center of the community to symbolize the psychological centrality of Islam in every Muslim.

VIGIER: Area R-4 is not the whole community or a community as such; it is misleading to call it that. The community is comprised of roughly four of these areas grouped around the commercial center and the mosque. The districts which were a significant part of the physical master plan must be thought of on two levels. One is the organization of the socioeconomic hierarchy; the number of people needed to support a mosque, a school, a grocery store, what have you. The logistics of implementation involved dealing with small chunks carved out of that larger surface which corresponded to the community as well as the economic structure. Those small chunks were doled out to firms X, Y, and Z, and to contracting firms, in sizes small enough to avoid the repetitive rubber-stamping which invariably occurs beyond a certain scale. That procedure also had the advantage of a relatively
quick beginning-to-end construction period, one of the key issues when building a new town out of nothing. At least parts of it have to be more or less finished and more or less liveable in a reasonable time, as opposed to the whole thing’s remaining a huge construction site until all the parts are finished. At the center is indeed where the mosque is, if you imagine several more areas grouped around it. The catchment area for that mosque is a lot bigger than what you see on the drawing.

SAME SPEAKER: In fact, I would not necessarily insist on the mosque’s being at the center. I do not know how correct I am in this, but I feel that, while in the old days people came to the mosque to meet and discuss common problems, now television and radio have largely taken over their leisure, and there is no immediate need for a mosque to perform that function. To continue to place it in the center is to that extent suspect. On the other hand, in our societies women do not have a place to gather, so perhaps it will become a social place for women; they might still need such a center. I am just throwing this out as an idea.

MINIAWY: Housing for poor people has to be simple, and this means we have to be scientific. What we have been doing for the past ten or twelve years is in practice decreasing the amount of housing—what we should have been doing is providing the possibility of their building houses for themselves, without any subvention. On the other hand, consider another proposition, which I am sorry I did not present earlier, and that is to decrease the cost of the construction, while maintaining quality. It is the only way from the human point of view, from the practical point of view, and from the point of view of productivity to provide housing—I shouldn’t say just for the poor people, we can say for the majority of the population—by lowering the costs. How can we do this? How can we decrease costs with international price competition? We cannot very well say to the whole world, “Decrease the costs for two years just for us.” We have to think about the participation of the inhabitants themselves and about materials. It is perfectly possible to decrease costs by more than 40 percent, if we choose the right methods.

VIGIER: One quick comment on urban immigration. Rural housing is obviously a very important issue, and it is, as a matter of fact, one that the seminar may address sometime in the future. It is worthy of a week on its own. But I stand behind my colleague all the way in insisting that, regardless of the extent to which we will be able to control rural-to-urban migratory flows, the urban housing problem is going to remain major. Let us, then, try to concentrate our comments on that particular issue.

SPEAKER: I would like to make one more comment about Saudi Arabia. Yanbu is telling us something about what values prevail when money ceases to be an overriding issue. The tragedy of Saudi Arabia lies in what has been produced there. The plans for Yanbu and the new plans for Jeddah are essentially American semi-suburban neighborhoods of the forties, fifties, and sixties based, it appears, on the assumption that they will remain automobile-dominated societies. Most of the West seems to be edging away from that now. But here we have a society which, unlike the West, has both the opportunities to make fresh moves and the money to do it with, and it is not doing that. I think the fault lies at least in part with those of us who had the opportunity of providing models, even if only verbal or paper models.

SPEAKER: We keep coming back to the role of the architect. But we ought also to consider the role of others beside the architect. I see people in this room who are in a position to have an even greater impact on the environment than the architect has. The gentlemen from the Royal Saudi Commission, for example, will probably have a much greater impact on the cities of Saudi Arabia than any individual designer will ever have. Journalists and educators will also play their part. We should be considering their influence as much as that of the designers.

Finally there is a great deal of experimentation going on. It is easy to criticize; there will rarely be an example that we will find even 50 percent good. But there will usually be some good things, along with some bad things, from which we can learn. We have to learn to evaluate systematically. I think that is an important role for organizations that are well funded.

NASIF: I am not trying to defend Saudi Arabia, but we should remember that this city of Yanbu has not even been built yet. We will not know for thirty years or so how successful it will prove to be. Any judgment now is just hypothetical; we are hoping it will be successful. We studied other model cities—in England, the United States, and elsewhere. We are applying the same method to a different situation, using the data we have on the culture, the background, the way people live in their own houses. Some people who have never lived under a roof before will be living in these houses. We know that they will change them, but not how. There are many answers we cannot give right now.

VIGIER: Let me come to the defense of Yanbu. If one contrasts Yanbu with the Karachi project, one is apt to assume that because Karachi is a well-defined problem it should produce a well-defined solution, and because a new town is a nebulous and dynamic situation one must keep the greatest number of options open and maintain total flexibility. But I think that in fact the opposite is
probably true. A totally nebulous problem—what on earth are the characteristics of the future population going to be? the rate of growth? what will it end up to be like?—forces one into making very strong commitments in order to provide a finite dimension to a problem which has at present an infinite number of facets. On the other hand, a well-defined population that you can talk to and do your social-worker-outreach bit with allows you to be more flexible. You have some notion of what they are going to do; they cannot do an infinite number of things. I do not know what conclusion to draw, but it is worth pointing out that reality may in fact be quite different from what logic might suggest.

ABDULAC: As the years go by I become more and more optimistic about the collective wisdom of people. We were taught as architectural students that old cities were junk, old and winding streets with no rational pattern were bad, and that people were stupid to live there. Eventually we found that these old areas had unexpected qualities. We were taught that to provide sun, air, and greenness, we should build garden apartments, and when people refused to enjoy living in large apartment buildings eventually we came to realize that they were not so stupid either. We were taught that illegal settlements were the shame of the cities, and especially that better conditions of life for the people living in them required legal housing, and that illegal settlements should be suppressed. Eventually we discovered that squatter settlements had many good qualities and filled the many requirements of their inhabitants quite adequately. Perhaps we ought to contemplate the many proofs that we can be wrong as architects.

We ought also to reassess our role as prima donnas, or as monument designers—though I am sure that Ismail did not mean that when he made his remark. Perhaps we can assume other roles, improving quality more rapidly, for example, but starting from what the people have traditionally done, or from what people are doing now. Working with the people does not preclude our attempts at creating new types and models of architecture, provided they are not abstract things, but derive from a vision of reality. Collective wisdom has always produced models and improved them constantly, but those improvements often take a very long time. Perhaps one thing we can do is speed that process up by finding solutions more quickly. But let us take care that these adaptations of tradition are not merely romantic or trendy—wind-catchers are not always required. Wind-catchers have been used for three thousand years, but were never used everywhere. The collective wisdom selected them for those areas in which they could be helpful. Even in the areas where there were duststorms or sandstorms, wind-catchers were sometimes used, but equipped with traps to close during storms and in winter. Architects might now design wind towers with hermetrical devices to keep the dust out. The choice is not between using tradition as it is and using all these modern mechanical devices; they can be combined, to the benefit of both.

I am also not convinced that traditional devices are necessarily more expensive than mechanical ones. In many situations they remain less expensive, and they should always be at least considered, especially when dealing with the poor. Still, I understand the Saudi context in which TAC has been working, and I am not criticizing what it did there.
Planning and Financing
12. Housing the Poor: The Role of the Public Sector

Ismail Serageldin

Development planners in the 1970s have gradually shifted their attention from the single-minded pursuit of economic growth that preoccupied them in the 1950s and 1960s to the qualitative aspects that development should involve, and one of those is the provision of basic needs to all members of society. Among those needs—to quote a World Bank publication by Anthony A. Churchill entitled Shelter (p. 1), to which I am generally indebted for much of the material presented here—"shelter is always given prominence along with food and clothing. Shelter does not mean, however, simply protection from the elements. More than just a roof overhead, it requires a series of services that are an integral part of the specific location and dwelling." Societies in today's developing countries have themselves taken up this notion of basic needs, and it is now generally accepted that their provision is one of the inescapable responsibilities of any ruling elite: it is the foundation of a new social contract.

The role of the public sector in the field of housing—what it is and what it should be—is too broad a subject to cover here, so I shall limit the discussion to the developing countries generally, to the Muslim countries of the Middle East specifically, and to the lowest 40 percent of the income distribution in particular. Because a housing market based on a Western model, with developers and financing intermediaries, does not cater to these people, and they are similarly excluded from the benefits of most government-sponsored programs, it is their needs that are most urgent and that we seek to address today.

A gloomy picture of the future emerges from any serious study of the subject. One of the most recent of those exercises is the Global 2000 report to the president of the United States; its conclusions were summarized as follows:

If present trends continue, the world in 2000 will be more crowded, more polluted, less stable ecologically, and more vulnerable to disruption than the world we live in now. Despite greater material output, the world's people will be poorer in many ways than they are today.

For hundreds of millions of the desperately poor, the outlook for food and other necessities of life will be no better. For many it will be worse. Barren revolutionary advances in technology, life for most people on earth will be more precarious in 2000 than it is now—unless the nations of the world act decisively to alter current trends.

Rapid growth in world population will hardly have altered by 2000. The world's population will grow from 4 billion in 1975 to 6.35 billion in 2000, an increase of more than 50 percent. The rate of growth will slow only marginally, from 1.8 to 1.7 percent. In terms of sheer numbers, population will be growing faster in 2000 than it is today, with 100 million people added each year compared with 75 million in 1975. Ninety percent of this growth will occur in the poorest countries.

While the economies of the less-developed countries (LDCs) are expected to grow at faster rates than those of the industrialized nations and the gross national product per capita is projected to rise substantially in some LDCs (especially in Latin America), in the great populous nations in South Asia it will remain below $200 a year (in 1975 dollars). The large existing gap between the rich and the poor nations widens [see Tables 1-3].

Other studies, notably the World Bank's World Development Report 1981, voice those same conclusions. In his farewell address to the annual meetings of the International Monetary Fund and the World Bank, Robert McNamara remarked:

... lest we become insensitive to the magnitude of those circumstances in the developing countries, it is worth reminding ourselves of their scope:

- 600 million of their adults—100 million more than in 1950—can neither read nor write, and only 4 out of every 10 of their children complete more than 3 years of primary school.

- Of every 10 children born into poverty, 2 die within a year; another dies before the age of 5; only 5 survive to the age of 40.

- Common childhood diseases—measles, diphtheria, whooping cough, and polio—which have either been eliminated or reduced to minor nuisances in the developed nations, are frequently fatal in the developing world. A case of measles is two hundred times more likely to kill a child than here.

- Though all four of those diseases can be prevented by a simple vaccination, fewer than 10 percent of the children born each year in the developing world are now being protected.

- Malnutrition afflicts hundreds of millions of individuals, reducing their energy and motivation, undermining their performance in school and at work, reducing their resistance to illness, and often penalizing their physical and mental development.

- In the low-income developing countries, average life expectancy for their 1.3 billion people is 50 years. It is nearly 75 in the industrialized nations.

- In short, compared to those fortunate enough to live in the developed nations, individuals in the poorest countries have an infant mortality rate eight times higher; a life expectancy one-third lower; an adult literacy rate 60 percent less; a nutritional level, for one out of every two in the population, below minimum acceptable standards; and for millions of infants, less protein than is sufficient to permit optimum development of the brain.

- These impersonal rounded numbers are not simply statistics on some economist's computer. They represent individual human beings. Most tragic of all, so many of them are children. Of the total of two and a quarter billion people in the over one hundred developing countries that the Bank has served, some 900 million are under the age of 15.

The diagram (fig. 1) of population pyramids dramatically illustrates this point by showing comparable age structures for populations in the less-developed and industrialized nations for 1975 and projected figures for the year 2000. The structure shown for the industrialized nations becomes more columnar with time, a structure characteristic of a mature and slowly growing popula-

* The views and interpretations in this document are those of the author and should not be attributed to the World Bank, its affiliated organizations, or to any individual acting on their behalf.
tion; the structures for the LDCs remain pyramidal, a characteristic of rapid growth. The LDC populations are predominantly young people who have their childbearing years ahead of them, and thereby built-in momentum for further growth. The diagram also tells us something about the clients we are concerned with in this discussion of housing: large families living in abject poverty, with barely enough income to feed themselves. (A graphic summary of three decades of effort in the struggle against poverty is shown in fig. 2.)

Fig 1 Age and sex composition of the world's population, medium series, 1975 and 2000

<table>
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<tr>
<th>INCOME</th>
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<td>GNP Per Person (1980 Dollars)</td>
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<td>Industrial Countries</td>
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<td>Middle-Income Countries</td>
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<td>Low-Income Countries</td>
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<tr>
<td>Average Annual Growth (Percent)</td>
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<td>Industrial Countries</td>
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<td>Middle-Income Countries</td>
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<th>HEALTH</th>
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<tr>
<td>Life Expectancy at Birth (Years)</td>
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<td>Industrial Countries</td>
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<td>Middle-Income Countries</td>
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<td>Low-Income Countries</td>
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<th>EDUCATION</th>
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<tr>
<td>Adult Literacy Rate (Percentage)</td>
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<td>Industrial Countries</td>
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<td>Middle-Income Countries</td>
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<td>Low-Income Countries</td>
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<td>Nonmarket Countries</td>
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<td>Literate 1976</td>
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<td>Industrial Countries</td>
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<td>Middle-Income Countries</td>
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<td>Illiterate 1976</td>
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<td>Low-Income Countries</td>
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<td>Nonmarket Countries</td>
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Note: All tables exclude China.

Fig. 2 Three decades of progress: Income, health, education, 1950-80

Ninety-two percent of the population growth will occur in the less-developed countries: of the 6.35 billion people in the world in 2000, 5 billion will live there. As the population grows, people will move into and around the cities until, if present trends continue, many of these cities will become almost inconceivably large and crowded. Projections give Mexico City more than 30 million people by the year 2000—roughly three times the present population of the New York metropolitan area. Calcutta will approach 20 million. Greater Bombay, Greater
Cairo, Jakarta, and Seoul are all expected to be in the 15-20 million range, and 400 cities will have passed the million mark (tables 1-4).

Rapid urban growth will put extreme pressures on sanitation, water supplies, health care, food, shelter, and jobs; urban services will have to be increased by approximately two-thirds by 2000 just to stay even with 1975 levels of service per capita. The majority of people are likely to live in slums and shantytowns where sanitation and other public services are minimal at best (pl. 1). In many large cities—Bombay, Calcutta, Mexico City, Rio de Janeiro, Seoul, and Taipei, for example—a quarter or more of the population already lives in such uncontrolled settlements, and the number grows daily. Whether the projected trends for enormous population increases will in fact continue for twenty years is, of course, not certain. Lack of food and jobs, illness and misery may slow its growth.

The need for shelter is growing twice as fast in urban areas as it is in the countryside (see table 5), and the numbers involved are huge. We are talking of providing 33 million units over the next twenty years, or approximately the equivalent of the total 1975 stock. The task is also pressing, for there are indications that urban, low-income residential areas, while starting off at the same health and environmental levels as rural areas, may now be lagging behind—the nutritional intake of slum dwellers, for example, is often lower than that for rural people.

A global view can carry us only so far: whether we like it or not, problems must be dealt with in terms of the economic development, social change, and the modern institutional structure of each individual nation state. Governments in today's LDCs are not only being asked to replicate, or even exceed, the economic performance that it took the West two hundred years to accomplish, but to do so while avoiding the hardships and misery that the West's development entailed, and simultaneously to implement the welfare measures that the West achieved sequentially. The realities of these requirements are being translated into social and political pressures that governments can ignore only at their peril. The provision of basic human needs is the very minimum that people are demanding of government, but for a variety of reasons stemming from the inadequacies of institutional building, governments are failing even to do that.

The shortage of basic shelter is the result of just one of those failures. It has arisen from a general misconception, which runs something along these lines: (1) the poor cannot afford decent housing unless it is heavily subsidized; (2) the private sector cannot cater to those needs; therefore (3) the public sector should build subsidized decent housing for the poor. But when governments try to oblige, quite aside from their usually horrible architectural and urbanistic features, the public housing projects that result are invariably built to such high standards in relation to the country's resources that the government cannot afford the subsidies required to continue to fulfill that obligation. The vast majority of the poor do not benefit in any way. The few projects that are built constitute an inordinate drain on the budget; the middle and lower-middle class usually displace the poor as the beneficiaries of the programs; and the poor continue to bear the burden of providing their own shelter without government assistance. What we have to do now, then, is to recast the whole problem and then redefine the role the public sector should have in solving it.

Contrary to the common assumption, except for the extremely destitute the poor can afford to pay for housing, and the amount they can pay, usually between 15 and 25 percent of their income, is adequate to cover the cost of a minimally acceptable unit in terms of health and safety. Therefore their lack of shelter reflects its too high price, and the high price reflects a failure on the supply side, since bank experience shows that low-income groups will pay for adequate shelter if it is available. Providing it, however, requires challenging our current practices in land distribution, public services, and finance.

The supply of urban land for shelter must confront the problem of delivery to low-income groups. Land is a small but significant part of the total shelter cost. World Bank experience shows that the poor will not invest in shelter improvement unless they are given some kind of security of land tenure, but that when they have tenure,
considerable improvement does take place. Strong vested interests and other difficult social and technical problems nevertheless make the challenge of urban land reform even more intractable than that of rural land reform.

At low income levels a high proportion of shelter costs—20-30 percent in most World Bank projects—is accounted for by public services. Low-income settlements on city peripheries are inadequately supplied with them, and they are usually government monopolies. The poor pay much more—sometimes as much as 10 to 20 times more—than the rich do for public water, but are often given access to electricity on a straightforward commercial basis.

Most low-income housing is financed directly from household savings. Churchill cites a survey in Cartagena, Colombia, which showed that less than 10 percent of its low-income housing had any debts against it. Construction is apparently regulated by the accumulation of family funds or materials, usually slowly but sometimes accelerated by such factors as remittances from family members living elsewhere. Security of tenure is again a factor, since its absence impedes mortgage lending, a problem compounded by the lack of protection for the lender, and the rationing of credit by governments which effectively freezes out low-income households.

It seems clear, then, that the public sector would do well to get out of the business of building houses completely and devote its energies instead to removing the institutional and other obstacles represented by current policies in land, public services, and finance. If we accept the premises advanced here, we have also to conclude that a public/private partnership is required to make the system work. The public sector could then confine itself to providing the general institutional and physical framework for development and leave to the individuals themselves the task of building their own shelters as they see fit.

The possession and use of land are at the core of urban housing problems. Land is traded in a special market whose functioning is imperfect, although, contrary to belief, it has not made the price of land excessive: the aggregate value of urban land appears to remain relatively stable as a proportion of GNP. These imperfections are many and well known, but a few of the most frequently mentioned might be listed as follows: land is not a homogeneous commodity, so price comparisons are difficult; the urban land market is highly segmented and localized; transactions are relatively few; no central information system exists; supply of serviced land is very slow to adjust to demand; and land is notoriously amenable to speculation and graft. It is not surprising, then, to find doubt expressed as to whether the urban land market is an efficient allocator of resources. There is an uneasy suspicion that its operations tend to yield benefits only or mostly to the rich. Dissatisfaction with the operations of the urban land market, however, is tempered with doubts that the alternatives could be any better. Would we simply be substituting public misjudgment for private misjudgment?

Even if the urban land market functioned perfectly, however, other tools are needed to deal with land-related urban problems, and there will still be demands for public intervention in the name of a "public good" that is more important to the community than private profit. The reason appears to stem from the many demands on the land and from the many conflicting objectives that no single instrument, not even a perfected urban land market, is adequate to deal with.

All types of instruments, actions, and interventions can probably be classified into one of the following three groups:

**Direct purchase and development by the government.** Examples from this category are both abundant and frequent, from public housing to public buildings to public parks. Two general constraints on this type of intervention are the resources needed to do it, and the wisdom and ability of the government to exercise its authority in that way.

**Spatially specific controls on the land and its use.** These vary from zoning and subdivision regulations to property taxes to the provisioning or withholding of services to certain sites. These interventions can be either permissive and stimulatory, or restrictive and exclusionary.

**General policies and programs not tied to specific sites.** Here fall all the institutional and financial measures to improve the operation of the land market and the implications and ramifications of government policies.

To deal with the land market a variety of objectives and tools (all flawed) have to be used in mutually reinforcing combinations, and making those combinations is one of the key tasks of the urban planner. It is important to remember, however, that the absence of basic information (e.g., cadastral surveys) is inhibiting our ability both to develop appropriate tools and to implement plans and policies, and that unless we increase the supply of serviced land, no controls of any kind are likely to succeed.

Nevertheless, as a general principle, planners who work in the public domain should seek to guide and channel, encourage and discourage, but not to regulate and control. When planners try to regulate they soon strangle in red tape of their own devising. Excessive controls have already compounded urban problems, and have resulted in urban land market and construction activities' taking place largely outside the pale of legality, leaving governments scrambling to accommodate faits accomplis established by squatters' rights and private developers' initiative.

The provision of public services is a natural monopoly: it is inconceivable that a city should experience competition among alternative sewerage or water-supply networks, and the inescapable result is that public services have to be provided by governments. The poor can manage to build their own shelters but not to provide the necessary services for them. The public record in providing them is very poor. Services have not been extended fast enough, and settlements without services have been increasing at an alarming rate throughout the developing world. This is partly because urban growth has accelerated at such a fast pace in the last twenty-five years that governments are institutionally and psychologically incapable of coping with it and partly because most
### Table 1. Population Projections for World, Major Regions, and Selected Countries

<table>
<thead>
<tr>
<th></th>
<th>1975 millions</th>
<th>2000 millions</th>
<th>Percent Increase by 2000</th>
<th>Average Annual Percent Increase</th>
<th>Percent of World Population in 2000</th>
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<td>1,323</td>
<td>17</td>
<td>0.6</td>
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<tr>
<td>Less developed regions</td>
<td>2,959</td>
<td>5,028</td>
<td>70</td>
<td>2.1</td>
<td>79</td>
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<td>MAJOR REGIONS</td>
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<tr>
<td>Africa</td>
<td>399</td>
<td>814</td>
<td>104</td>
<td>2.9</td>
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<td>Asia and Oceania</td>
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Source: Global 2000 Technical Report, Table 2-10

### Table 2. GNP Estimates (1975) and Projections and Growth Rates (1985, 2000) by Major Regions and Selected Countries and Regions

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1Projected growth rates of gross national product were developed using complex computer simulation techniques described in Chapter 16 of the Global 2000 Technical Report. These projections represent the result of applying those projected growth rates to the 1975 GNP data presented in the 1976 World Bank Atlas. Projections shown here are for medium-growth rates.

2Includes Puerto Rico.

3In most cases, gross national income growth rates were projected for groups of countries rather than for individual countries. Thus the rates attributed to individual LDCs in this table are the growth rates applicable to the group with which that country was aggregated for making projections and do not take into account country-specific characteristics.

4Does not include Puerto Rico.

Source: Global 2000 Technical Report, Table 3-3
Table 3. Per Capita GNP Estimates (1975) and projections and Growth Rates (1985, 2000) by Major Regions and Selected Countries and Regions

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<td>percent</td>
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The medium-series projections of gross national product and population presented in Tables 3.3 and 3.4 of the Global Individual Development Report were used to calculate the 1975, 1985, and 2000 per capita gross national product figures presented in this table. The rates attributed to individual LDCs in this table are the growth rates applicable to the group with which that country was aggregated for making projections and do not take into account country-specific characteristics.

Source: Global 2000 Technical Report, Table 3.5

Table 4. Estimates and Rough Projections of Selected Urban Agglomerations in Developing Countries

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<td>10.9</td>
<td>31.6</td>
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<td>7.1</td>
<td>19.6</td>
</tr>
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<td>5.7</td>
<td>6.9</td>
<td>16.4</td>
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The LDC's share of the world's population increased from 66 percent in 1950 to 72 percent in 1975, and is expected to reach 79 percent by 2000. LDC population growth rates will drop slightly, from 2.2 percent a year in 1975 to 2 percent in 2000, compared with 7 percent and 0.5 percent in developed countries.

Source: Global 2000 Technical Report, Table 13.9

Table 5. Projected Growth in the Number of Households in Poverty, Rural and Urban, 1975-2000

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<th>Region</th>
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<th>1980</th>
<th>Increase or Decrease</th>
<th>1990</th>
<th>Increase or Decrease</th>
<th>2000</th>
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<td>-361</td>
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Rural Poor Households (1000s)

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<th>1980</th>
<th>Increase or Decrease</th>
<th>1990</th>
<th>Increase or Decrease</th>
<th>2000</th>
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<td>-807.0</td>
<td>3,761</td>
<td>-1,428</td>
<td>2,333</td>
<td>-970</td>
<td>1,403</td>
</tr>
<tr>
<td>LAC B</td>
<td>6,040</td>
<td>-1,108.0</td>
<td>4,932</td>
<td>-1,904</td>
<td>3,028</td>
<td>-1,407</td>
<td>1,621</td>
</tr>
<tr>
<td>Total</td>
<td>83,279</td>
<td>-3,738.5</td>
<td>79,441</td>
<td>-11,279</td>
<td>68,162</td>
<td>-11,694</td>
<td>56,468</td>
</tr>
</tbody>
</table>

Europe, Middle East, and North Africa
Latin America and the Caribbean

Source: Based on Anthony A. Churchill, Shelter, Table 1, p. 3
public-works projects on a vast scale are of long gestation and are difficult to finance, while the private scatter and sprawl of urban expansion proceeds in small but speedy steps. The standards to which these systems are built are extremely high, and the systems are consequently costly, requiring massive outlays of public funds, which cannot be recaptured by the almost universally low tariffs in the LDCs. The need for massive public subsidies further constrains the ability of governments to expand their services. Decision makers favor primary over secondary and tertiary systems, so poor residents in outlying settlements are often not connected to systems even when they do exist.

Decision makers must face up to the fact that these conditions are not temporary aberrations, but are the reality of contemporary organization in LDCs, and are not amenable to solution by the bulldozing of slums and the building of a few model projects. Authorities ought therefore to turn their attention to eliminating institutional and policy rigidities that impede the extension of the networks and the expansion of their delivery systems by giving priority to the expansion of secondary and tertiary systems; by designing special programs to increase the connections of poor households to the system; by reviewing tariff structures to ensure the most effective cost-recovery schemes, or at least a diminution of and dependence on subsidies; and, finally, by reducing standards where it is possible to do so in order to expand the delivery systems of the most essential services.

Providing adequate shelter for the poor by the year 2000 will cost, according to World Bank estimates, on the order of $116 billion for urban areas and $45.5 billion for rural areas, for a total of roughly $160-170 billion in 1975 dollars, or an annual investment of $8-9 billion. These estimates could be reduced slightly to, say $7 billion annually and a total of about $120-130 billion in the period for delivery of public services and financing of shelter per se. The combined costs of public service (water, sewerage, etc.) and social infrastructure (schools, health clinics, etc.) account for approximately 50 percent of total expenditures in any poverty-oriented shelter program, with public services absorbing approximately 30 percent.

The main problems in financing housing for the poor are that poor people usually do not have secure title to the land and hence no security to offer lending institutions; therefore lending institutions have no guarantees against default, nor can they consider foreclosure since foreclosing on the poor is a politically unacceptable move. To solve this impasse governments in the LDCs have tried to set up special financing institutions channeling their, usually subsidized, loans to the poor. This, however, raises another host of problems related to the management of indirect subsidies and the rationing of credit which again tends to freeze out the poor.

Subsidies are a form of income transfer, and as such can be desirable as an instrument of policy in certain cases, so long as it remains within the means of the government to expand and replicate the shelter program. As Churchill wrote:

Many countries... can clearly afford to subsidize the provision of shelter for low-income groups, and the provision of shelter is an attractive way of redistributing income. Whether it is an effective way is open to question. The experience gained so far suggests that it is not easy to direct subsidies in such a way that they reach only low-income groups, and the extension of these subsidies beyond the target group quickly leads to programs that are financially unfeasible. Some of the difficulties might perhaps be overcome by the more careful use of subsidies, but their efficacy remains to be demonstrated.

If a program is to include an element of subsidy, the effectiveness of a subsidy as a way for redistributing income can be judged by determining whether the program can be replicated on a scale sufficiently large that all of the target group can be covered within a reasonably short period. Such a test must go beyond the theoretical financial feasibility and include judgments as to whether is is practical, politically and administratively, to implement the program for the length of time that it would require. The effects of such subsidies on the distribution of resources between rural and urban areas would have to be explicitly recognized. Even if the resources came from within the urban economy, the effect of the subsidy on migration from rural areas to the cities would have to be taken into account.

That much more is required than merely diverting more public resources to investments in shelter for lower-income families is, then, obvious. What is needed is a change in the policies that have created the constraints on the supply of land and services to begin with. They should be replaced by some that would provide ready access to these commodities by the poor and that mobilize domestic private and public resources toward an efficient solution to the housing problem. At best the public sector can only create a climate in which people can solve their own problems effectively.

Although shelter programs do something for the bottom two deciles of income distribution, self-help or home-ownership solutions to housing shortages have only limited application, because poor people are nearly always renters, with limited and often fluctuating incomes that do not permit investment. The most appropriate solution for them is obviously an increase in the supply of rental accommodation, coupled with environmental and service improvements, particularly water and sanitation systems.

The lack of emphasis placed on design standards and related costs is a consequence of governments' having subsidized low-income housing. The result, as Churchill pointed out, is a small number of over-designed, costly units so heavily subsidized that they have had to be rationed. The political influence of higher-income groups often results in an exclusion of poor families; in one survey of housing in developing countries, 60 percent of the population was found to be unable to afford the cheapest public housing unit, even with subsidies. Should not this situation be a cause for concern?

Remedies are at hand, and it is not technical or cost considerations, but social acceptability and feasibility, that inhibit their use. Bank projects have been welcomed by the low-income group that they serve, but they often offend the sensibilities of government decision makers, who have different, more theoretical, ideas about what is and what is not desirable. Take an example from China: the provision of common toilets and kitchens for each
group of dwelling units in a public project built there drastically reduced the capital costs involved and enabled the construction of many more units than would otherwise have been the case. Unfortunately few governments in LDCs today would have been willing to accept a similar compromise involving such "inadequate standards."

Obviously, however, upgrading the provisioning of sites and services should be the new focus of attention, in view of the failure of subsidized, traditional projects. To many it seems odd—not to say perverse—that the poor should be made to pay for their own minimal shelter and services, but in fact only then can the necessary realism and discipline be injected into the design of shelter projects for the poor and only then can replicability be ensured, making a large-scale attack on the problem possible. Otherwise we will only continue to provide occasional "beautiful, better" units on a woefully inadequate scale. Replicability is feasible only in the presence of affordability, and the only guarantee of affordability is cost recovery.

Obtaining land alone will not solve the problem, since bureaucratic obstacles can impede the development of new sites. At least in World Bank experience, projects that involve upgrading benefit a greater number of poor people than do those financing new sites and services. This is because the same authorities who are willing to tolerate the lowering of standards in upgrading settlements may still insist on high standards for new sites, and may well demand designs that preclude any benefit to low-income groups. Projects on new sites also make greater demands on scarce skilled-labor resources in what is already a hard-pressed market. The upgrading of existing shelter can of course rely on the manpower resources of the community itself, and in any event needs less management and is less dependent on trained staff and the accumulation of experience. Scale, too, plays a role. A new site developed by the public sector is invariably a large-scale project, and large communities created from scratch always carry with them the attendant risks of economic and social dislocation.

Poor communities often include a sizable unemployed or under-utilized population, and this is one rationale behind the emphasis on self-help, since it provides both employment and shelter for the population. Bank experience has demonstrated that self-help does work, but perhaps not to the extent originally envisaged, partly because there is less surplus labor than was thought, and partly because it cannot be diverted into shelter construction if other employment is available. The households themselves recognize the advantages inherent in a division of labor by contracting out the labor involved, retaining for themselves only the work of design and management.

Significant attention has also been given to generating on-site employment opportunities in all types of sites-and-services and slum-upgrading projects, because it minimizes commuting and other transport costs and increases employment opportunities for the poor, which should be central considerations of any comprehensive urban planning exercise. Particularly the large urban communities in the developing countries have conventionally been regarded as saturated with surplus labor, whether unemployed or underemployed. In the late 1970s new studies challenged this assumption, however. Their findings indicated that the low-income household simply cannot afford extended periods of on-and-off employment, although they do work at low-productivity jobs whose low wages reflect the highly elastic labor supply. Shelter projects can still include a useful employment component, for example in helping set up procedures for the delivery of credit, which are often lacking or inadequate in poorer areas. But this process will be slow and difficult, requiring a sustained effort before significant results can be observed.

Applying large-scale industrial techniques to housing for the poor has its appeal, but its effectiveness has yet to be proven. Industrialized, prefabricated housing is repetitive, dull, devoid of humanity, and tends to undermine the values that the designs sought to preserve. Examples from Saudi Arabia show that, even when wealth is unlimited, the results lack individuality and humanity (pl. 2). Basically, industrialized housing forces humans to adjust to the requirements of the machine in scale and uniformity of layout and facade. The uniqueness of each dwelling, the personal statement of the owner, is conspicuously absent in these dreary, repetitive patterns which emphasize the supremacy of the builder and his machines. The heavy hand of technology crushes the spirited, individual quirkiness which gives a collectivity of dwellings its charm, its character, and its attractiveness. The commendable impulse to build public housing results in endless arrays of identical blocks whose distinctive drabness and monotony are by now international in their ubiquity. Their surroundings are uniformly dusty and unkept, since the tenants do not recognize them as their own. The pattern is recurrent from country to country and from year to year (pl. 3).

Compare this industrialized housing to the beautiful and inviting traditional housing common in many Arab countries in the Middle East. It is the pride and joy of its inhabitants as the charms of its mural decorations often testify; they are painstakingly executed and range from simple coloring to intricate designs (pl. 4). There is much to learn from this traditional "architecture without archi-

Pl. 2 Mass-produced, prefabricated housing in Jeddah
tects." Most of it has stood the test of time, proving itself well adapted to its ecological environment and remarkably energy efficient, given the primitive building technology employed. Spontaneous, informal, or squatter settlements in many countries of the developing world show the same bustling, cluttered environment where people take pride in their modest shelters. These communities, though deprived of water and sewerage, nonetheless represent the inhabitants' social desires, albeit constrained by their economic means. In terms of building standards, hygiene, and services, they are infinitely worse off, yet the settlements they have built have a human intensity and an architectural variety that are sorely lacking in the repetitive blocks cloned by one public housing agency after another (pl. 5).

Examples from many parts of the world support this view (pl. 7). The tall, highly decorated structures of old Sanaa with the narrow, winding ravine-like streets suddenly opening into wider spaces teeming with activity, as in the Suq-al-Malk area, create an infinitely more attractive articulation of urban space, even if the individual units, lacking basic services and rudimentary hygiene, are not functionally "better" living spaces than those provided in the "modern" apartment buildings of the new areas.

Examples not subject to the same degree of poverty that characterized old Sanaa are also more difficult to criticize in terms of hygiene or functional utility. Sidi-Bou-Said, in Tunisia, a charming village outside of Tunis, is now a favorite spot for tourists from all coun-
tries. It undoubtedly provides a much more attractive urban setting than the large, industrialized housing projects or the wide, dehumanized boulevards of the modern city. Its human scale is inviting, where the mammoth scale of the new housing is forbidding. It allows for individuality of expression while retaining a harmonious, distinctly recognizable overall character. Finally, it is organic and alive, whereas the other reflects the discipline of the dead hand of the machine.

What has been said about the changing urban fabric applies a fortiori to the practice of architecture. Architects have been seduced by the elegance and possibilities opened to them by the new building technologies, and in the process have become the captives rather than the masters of progress. They have in many ways broken with the past, and in so doing have frequently chosen to copy and emulate, rather than to design and innovate. The failure of those architects who have chosen this path finds its most flagrant expression in the building of modern structures that are totally unsuited to the environment, as is so frequently the case in the Gulf states.

Many have tried to provide a modicum of cultural continuity in the contemporary expressions of their buildings. Where this is superficially done, it results in a sad and pathetic caricature of the original. Where it is successful (pl. 8), it has avoided copying the decoration and detail of the beautiful originals (pl. 9) and has concentrated on recapturing the spirit of the individual structure, if not of the urban context.

If there is a need for public/private partnership, it is now pertinent to ask what role the public sector should take in terms of the spatial and architectural aspects of the housing problem. The lesson that emerges, or so it seems to me, from studying the previous examples is that respect for individuality, privacy, efficiency, and the traditional urban fabric would best be achieved by the public authorities’ adopting of the high-density, low-rise planning concept, laying out the general guiding legal and physical framework, and letting families do most of the work on the individual units. The advantages of this choice are as follows:

1) The houses are in contact with the ground and with small, private gardens, patios, and courtyards, making a physical environment that is appropriate and attractive for family life.

2) Close physical proximity allows easy contact mainly by walking between the dwellings and neighborhood religious, educational, social, medical, and commercial facilities and services.

3) The houses in the same neighborhood can exhibit some variation in size and type, and also offer possibilities for expansion, thus permitting variety in family size, income, and occupation, and a richer community composition.

4) High-density neighborhoods keep distances short, so that walking can be the main means of locomotion, and dependency on mechanized transport, along with its
accompaniments—pollution, high building costs, and social isolation—is kept to a minimum. Low-rise neighborhoods can be designed to have very high densities, equal, if required, to high-rise development.

5) The concept embodies an efficient use of the land, minimizes infrastructure, and therefore assures low overall urban-development costs.

6) Low-rise development is inherently attractive, human in scale, convenient to landscape in any climate, and easy to maintain.

7) Privacy, a very important requirement for Muslim life, is provided in houses and in neighborhoods alike, including family privacy, privacy for zones within the family, and privacy for individuals. The low-rise urban form is particularly adept at combining high levels of privacy with high urban densities.

It is clear from this discussion, though we have barely scratched the surface of a complex and promising subject, that the public sector can do a good deal. As an example of what is possible, I would like to leave you with some ideas involved in the upgrading of the old medina in Tunis (pl. 10) which are now being discussed with the World Bank.

A first effort was undertaken by the Association pour la Sauvegarde de la Medina (ASM), in Tunis, which, through its dedicated staff's extensive research, documentation, surveying, and sensitive designs, was able to produce a partially successful renovation scheme in Hafisia. The failures it met were the familiar institutional and financial ones: the new population was homogeneous and considerably wealthier than originally anticipated. Displaced poor residents could not afford to move into the new dwellings. The new structures were too expensive and required substantial government subsidies that also precluded replication.

The new proposal is trying to avoid these errors by involving the public sector in some creative new development and upgrading activities. The project will be largely self-financed and will require minimal financial input from the Tunisian government, mostly some initial working capital which, if things work out well, could be repaid, at least in part, within a relatively short time. The plan is as follows:

1) An entity will be created to develop the area selected for the pilot project (if successful, the scope could later be developed for the whole medina).

2) The government will deed municipal lands and buildings within the project area to the new entity.

3) With this capital, the entity can borrow from private banks to finance the construction on the vacant land of (a) commercial, revenue-earning buildings; and (b) some well-designed residential units, each with one or two rental rooms.

4) Borrowed funds will also finance the renovation of the existing municipally owned old mansions, and turn them into tourist facilities (similar to the M'trabet restaurant).

5) The residential units will be sold to the public. The availability in them of the rentable rooms will make the units affordable to persons lower on the income scale than those who moved into the Hafisia redevelopment scheme a short distance away. These rental rooms will also provide affordable shelter for some of the urban poor now living in the grossly overcrowded residential units in the area.

6) Overcrowding in the existing residences can then be relieved by moving some of the inhabitants into the new units (whether owner-occupied or rental).

7) The remaining municipally owned residential buildings can then be renovated within the context of an area-wide slum-upgrading scheme. The building renovation can be financed partly by revenues earned from the commercial buildings, thus keeping rent increases (still necessary for cost recovery) to an acceptable level. Rental units in the adjacent new buildings will eliminate overcrowding in the renovated buildings.

8) Loans, technical assistance, and other incentives will encourage private owners to participate in an area-wide upgrading. The spontaneous activities of some of the owners of the medina properties adjacent to the existing Hafisia development lend credence to the idea that a "demonstration effect" will take hold in the medina as a result of the scheme.
While Ismail Serageldin was giving his presentation, I was sitting in the corner crossing off points in my notes one by one as he made them for me. It was a relief when he finally reached the subject of self-help, because all he said was that he did not have much faith in the self-help system, and that left me with a topic for discussion. I shall begin that discussion by pointing out that the term “self-help” actually includes four different categories and many more subcategories. To avoid confusion we ought, then, to begin by defining the four main systems that are collectively referred to as “self-help.”

The first category, which is “family self-help,” simply refers to people who build their own houses. In rural areas in developing countries, probably 90 percent of the housing constructed is built by the family who lives in it. The product varies all the way from a mud hut with a dirt floor to some fairly permanent and substantial housing.

The second category, “mutual self-help,” is more or less the same thing, except that people help each other. One thinks of our own Southwest Indians or the barnraisings of American farm life. In almost every country some evidence of mutual self-help can be found.

After World War II the term “aided self-help” became popular, with Greece having the first very large-scale self-help program aided by the government and some financing provided from outside. Many other countries—Puerto Rico, Venezuela, Bangladesh—have used it as well. In general, I would agree with Ismail Serageldin that government-sponsored aided self-help programs have not been successful on a large scale. Normally the administrative costs are very high. They are often also hidden, and not passed along to the cost of the house. They pose a lot of problems in logistics, because collecting the materials on time, getting the people there, and teaching them skills from the bottom up are all complicated matters, but our foundation does not rule them out entirely, because occasionally they do work. We helped with one, along with the government of Bangladesh and CARE, that involved building 7,000 self-help units with what is called a cinja ram block machine. Some of you might be familiar with it. It takes a lot of labor to make bricks that way for 7,000 units, but in this case it worked.

The fourth category, “aided mutual self-help,” can be split again into cooperative approaches (with a small c) that are very formal or very informal. Either can also be perfectly usable. In short, we should not be dogmatic, and we should avoid preconceived ideas about which form of self-help will or will not work. Try the system on a small scale, if it seems appropriate. Then if that works, make adjustments and expand it.

The various house-financing and ownership systems that fall under the term “cooperative” ought also to be clearly distinguished. The formal housing cooperative in the Western sense, meaning the European model transferred to the United States about thirty years ago, is by now routine in this country. The cooperative is a legal entity, a corporation, all of whose owners are people who live in it; there are no owners outside. All owners have an equal share in the whole piece of property. The average size of the cooperatives we develop here in the United States is between 20 and 500 units, but in New York there is one called Coop City which has 15,000 of them. There is one mortgage on the whole property; the individual member has a piece of paper which gives him the right to his lot and to his dwelling. That piece of paper is similar to a deed, in that it ensures his right to live there as long as he pays for his house and lives by the regulations that have been agreed upon. He can also pass it on to his heirs, but he can not sell it on the open market. The cooperative retains the right to buy it back, according to a predetermined formula which varies with income level. This type of cooperative is called a “limited equity coop,” and it is the only kind that our organization deals with because it works well for low-income people.

A variation is the homeowners’ association. It is also a legal entity, and it comes in two types. One is called an “automatic” or “mandatory” association: to buy a house in a community that has an automatic or mandatory homeowners’ association, one must join as a condition of purchasing the house, and abide by its regulations as well as receive its benefits. Basically, the owner owns his piece of property and benefits from whatever common facilities and services exist—maintenance and so forth. The difference between a coop and a homeowners’ association is that the latter does not attempt to control resale of the individual lot. Instead of an occupancy agreement it carries a fee-simple deed, just like any other house, and it can be sold on the open market. But when a person buys that unit, the deed is recorded in such a way that he too must join the homeowners’ association and abide by the rules.

A third category of housing similar to coops are financed by a credit union. In this country credit unions have some $30 billion in assets, and they can make mortgage loans. In practice they do not do so very often, but they do make home-improvement loans. Credit unions are useful because they do not tie the loan to the land; they tie it to the credit record of the individual.

Three processes are involved in the development of a typical housing cooperative project. It is difficult to describe a “typical” project, because if you ask fifty experts you will get fifty different approaches, just as you will have fifty different designs if you request one of a room full of architects. But basically the sequence of events leading to completion of the project and occupancy that is related to the architecture, the engineering, and the construction is only half the process, although too often when we think of housing for low-income people, we forget the rest of what is going on because it is the visible part. People think of housing as a problem for architects to solve. It is certainly that, but there are other processes
that are equally important, and they are the ones that most often break down because they are unseen and therefore largely ignored. One of them is simply administration, the management of the whole project. In most countries, including our own, institutions, whether government or private, that can deal with the housing problems of the very poor are very rare. The private sector in most countries is capable of providing housing for upper-income groups. Public organizations, like our Department of Housing and the ministries of housing in other nations deal with part of the problem, but not all of it. No institution deals with the rest.

A third aspect to the process is social and human. In the case of a cooperative this includes the group that is intended to live in the project, the coop’s legal framework, organization, and selection procedure. In this country the last is called marketing, because we have to sell what results, but projects at a very low income level do not involve sales; for them it is simply a question of selecting those people who are most likely to live up to their commitment to pay back the money that was loaned for the project.

One contribution that coops can make toward mobilizing resources for low-income housing is to improve the collection record, especially in developing countries, from the residents of low-income housing projects after they are built. In most countries delinquencies vary from 30 percent to 90 percent, depending on how the delinquencies and the collections each month are calculated. Because is it so firmly believed that poor people will not pay up, in many countries, including poor countries, local resources are channeled, not to the poor who need them, but to upper-income housing, condominiums, office buildings, and so forth, because bankers and planners regard low-income housing as charity. But it is possible to organize a coop in such a way as to ensure that poor people will repay their loan and keep delinquencies at a minimum, if the whole process is coordinated. If only construction is emphasized, the buildings will be ready but no one will move in or assume the responsibilities for managing them.

While it is important to recognize that great differences between countries exist and that the answer for one country is not necessarily the answer in another, it is equally important to recognize that there are similarities too, and that the similarities in the problems of housing for poor people are particularly striking. We prepared a chart for income distribution in the United States and related it to the affordability of housing. In March of 1981 the median family income in the United States was about $17,000. The credit terms that were assumed in matching that income with the kind of house that can be afforded was about 14.3 percent interest, 5 percent down payment, 25 percent of income available for monthly payments, and a 25-year mortgage. Using those assumptions the affordable house without subsidy for a family in the United States costs approximately $39,000. But in March of 1981 the average new house in the United States cost $77,000, which, using the same assumptions on credit terms, requires a family income of close to $42,000 or $43,000. That means that probably less than 5 percent of American families could buy a house without subsidy, given those credit terms. This is an oversimplification, but the gap between the affordable house and the median income is real and steadily increasing. Starting in the 1930s we had been making progress closing that gap, but depending on whose figures you take there are still between 5 million and 10 million people in this country living in very substandard housing. Dirt-floor shacks can be found in the middle of Tucson, Arizona, along with unplumbed houses. Clearly we have not solved all our problems either, nor can we afford to subsidize housing to the extent of producing $77,000 units for all the people that cannot afford them. At least it is not in the budget now.

For developing countries the numbers are very different, but the problem is the same. There are many solutions, including the “minimum shelter” or “site and services” ones already mentioned, but whenever they are introduced—and we heard yesterday about just such a program in Karachi—political leaders object because they feel that a slum is being created; the project does not look like a new housing project should look. The only way to answer that criticism is to show after a period of years that it has worked.

Two examples can be cited in Panama. One of them was an expandable plan for a small project in a town called Los Positos. The first stage was simply one step up from what the people already had—usually a single room—to two or three rooms (the choice was theirs), and to show them how they could eventually expand the unit still further. The design of such projects should always be done by local architects, though there may be back-up from and exchange of experience with architects of other countries. In this particular project, designed by Panamanian architects, the people decided they wanted some concrete-block construction. A credit-union cooperative was formed and, using that as a base, a housing cooperative was formed. With its own money, the coop purchased little wood block-making machines and started a block-making operation.

Village incomes were so low that the monthly payment which was affordable without a subsidy was no more than three or four dollars. Calculating backward from that gave a total house price of around $300 or $400. That meant utilizing materials that were available in the area and familiar to the people. Traditional housing there used a type of wood that is not attacked by termites. Walls were made of a cane that has about a ten-year life and provides ventilation. The two major changes made over that original house were to introduce concrete-slab floors and a metal roof. This was the choice of the people who lived there. In fact it is the choice of people in most rural areas of Latin America, and they have good reasons for it. Having a floor is important because dirt floors have a way of conducting parasites through the bare feet. The people are sufficiently educated now to have learned the connection between those parasites and certain illnesses. An outside technician or architect did not have to advise them; they had made the decision already.

One or two courses of concrete block are placed around the bottom of the house not only to help keep out
attracted to the cane because it is romantic and it looks better—everybody thinks concrete block is ugly. But the people living there wanted concrete block because all the houses in town were concrete block, and the lady down the road has a concrete-block house. It is also secure. Very quickly, through the coop, they expanded their block-making operation to about two hundred blocks a day. When their machines wore out, they replaced them with metal machines and increased their production by purchasing a cement mixer. Within a two-year period every house in that particular community was concrete block. The model was later used in nineteen other villages in Panama, with variations in combinations of materials, including wood and concrete block in some cases (pls. 1-5).

The metal roof was also widely regarded as a bad solution. It is ugly, it rusts, and so forth. But again, in tropical countries the people themselves, if they are given the money and allowed to make the decision, will buy a corrugated roof every time. Again, they have good rea-

rodents, snakes, and so forth, but to provide the option of converting from the cane to concrete block at a later date. The architects involved—both foreign and local—did not want them to convert to concrete block. They were
son. If you have ever slept under a thatched roof that is old and not repaired, you know it leaks; it also lets in rodents and snakes. But the main problem is again disease. In Latin America there is a chronic disease, which is carried by a little bug that lives in the thatch. At night he crawls down the wall, and whomever he bites will contract it, and it is practically incurable. It attacks the vital organs of the body, and though it takes twenty to thirty years before it is fatal, it is a serious problem in the meantime and affects productivity. The old red tile, which was so attractive, is too expensive now. Other options are hard to find.

The revolving-fund concept can work in a very small coop as well as a larger one; it is really quite simple. As the first group—say, ten units—of houses are completed, the people pay their monthly rent into a revolving fund. Since they are only paying three or four dollars a month, it takes a number of years to complete the project. In this case, it would have taken about a year and a half before the fund could make the first loan to the member who had been promised the eleventh house. In theory at the end of seven years there would have been twenty-nine houses in that village. In fact the process was accelerated with outside help, and thirty houses had been built at the end of about two years.

What makes this system work is group pressure. The department of agriculture would not have been able to collect the rent, but the pressure of a waiting list right in the village is something to be reckoned with. Everyone knew who had the money to pay, and who did not. If someone tried to spend his rent money in the cantina, peer pressure kept him from it. The payment record was really quite good.

The other program in Panama, run at the same time, was an urban one, producing the kind of housing found in any high-density, downtown central-city slum area. Around the city were thirteen major squatter settlements that were really a step up, so far as living conditions were concerned, because at least space was available. But they had the problems found in many countries, and the early efforts to solve them were also similar. The government first tried high-rise apartment buildings in 1966-67. The tenants did not like them—the units were too small, they were not expandable—and did not pay their rent. At the same time the government experimented with some other programs, some coop, some not, but basically all site-and-service or incremental housing coupled with efforts to provide job training and produce building materials as part of the coop.

One particular coop was formed by two or three hundred residents from an area called Trujillo. They obtained a piece of land on the edge of town with some help from the government, and about two hundred of them moved out there and started a block-making operation. They had grants and donations from some outside agencies and from their government housing ministry. They started fabricating windows, doors, and other components for the first seven hundred houses. They did not think that aided self-help would work, however, so the labor was contracted out, with the contracts written in such a way that the contractor was encouraged with a pretty heavy hand to hire people from the area, at least for the unskilled tasks. They completed the houses as shells; it was not especially exciting architecture or planning, but it provided the people with a shell to finish, expand, and improve.

A program in Panama being built now on a large scale grew out of the development around the canal and the changes relating to the treaty negotiations. It is budgeted at about $75 million, but it is using the same plan that was used as an experiment in the early sixties, basically a site-and-service solution.

Another project used an expandable core unit. Five or six years later not one house looked like it had when it was built. It should be added, however, that these projects have the advantage of building codes and a building-inspection system that do not function as rigidly as they would in a developed country. All that is required is a setback line and reasonable safety. The only two ingredients the government adds are credit for building materials and home-improvement loans. It makes no effort to restrict those loans by stipulating what they can be used for. If a tenant wishes he can spend his loan on grillwork and decorations, even if what he obviously needs is another bedroom. As a result, the decoration adds style, and six or seven years later the community has not turned into a slum. Compared to housing projects in developed countries, Europe, the United States, or Japan—wherever you want—they look wonderful because they do not look like projects. There is a lesson to be learned from this built-in flexibility for this and other developed countries.

A project in Haiti funded by the United Nations is in one of the worst slum areas I have ever encountered. Three years ago when the project started, the 20,000 people in the area were living in the center of the capital city of Port au Prince at a density of 1,500 people per hectare. There was no vehicular traffic into it, and no access except pedestrian pathways, no drainage, and only four public water taps and two fire hydrants to serve 20,000 people. Six hundred fifty latrines of a very crude, unsanitary type served approximately 30 people each. There were no community buildings, no street lights, and no community organizations. This last was curious.

![Pl. 6 Pre-cooperative group is formed to organize self-help construction, Haiti](image-url)
because usually in a squatter settlement community life is quite active. But here there was only indifference: nothing was ever going to get better.

In this case, a formal housing cooperative was out of the question; about all we would be able to do was upgrade the area somewhat in terms of the community's own priorities. Nor was housing highest on their list; first they wanted to build an access road so an ambulance could drive in when somebody was sick; then they wanted street lights and water. But housing had been made part of the upgrading program, so it was included. In this case it was accomplished by aided mutual self-help and actually done rather well. The administrative costs were probably high, but the results were quite good (pls. 6-8).

A large-scale program started in 1976 in Egypt was undertaken jointly by ourselves, through the AID program, and the Ministry of Housing in Egypt. Joint sponsorship is absolutely essential when outsiders are trying to be helpful, but it is especially important when those outsiders are dealing with a completely new environment. The main ingredient was money—an $80 million grant from the U.S. government in the form of a donation, not a loan, and an equal amount from the government of Egypt. The site was the Helwan industrial area south of Cairo.

We first took a look at the informal settlements in Egypt, since one soon learns that the people who live in those communities are much happier with their houses than are the inhabitants of any of the formal projects that have been officially built: European-style walk-up apartments that are very expensive and in any case available to only a small percentage of the people who need them. We are dynamiting the same kind of housing in St. Louis because we know it is a mistake. The government of Egypt is also aware it has to change, but it has the same fears as others do about whether an informal, incremental approach will work. The project is very controversial, and it is still unclear how successful it will be (pls. 9-10).

The location for the project was carefully chosen. We did not want to use agricultural land for housing, and the line between desert and agricultural land is very sharp. The industrial part of Cairo is far from the center, and this poses a tremendous commuting problem—an estimated 60,000 people were commuting daily from the central part of Cairo out to Helwan and back again in
1976. That and other considerations led us to conclude that the site should be in the Helwan area and that it should accommodate people in the lower-income categories.

A master plan was made before the project started. The project as it finally developed had one new community adjacent to the old area of Helwan, which forty or fifty years ago was a spa—a place where people went for weekends. The overall area was a mixture of residential and industrial use. Eventually this new community will have 7,000 lots, of approximately 60 square meters each. The plan calls for a zero-lot-line design and convertible expansion, so the density will be high.

A second part of the project involved upgrading, and that was really the major part so far as the allocation of money was concerned, since the majority of the funds had been earmarked for that purpose. Five areas in Helwan were selected for upgrading. Housing existed there, and a few small stores, but no water or sewerage, or many other essentials. A lot of time was spent on surveys to find out what in fact was missing, what the people wanted, and what, of those things they wanted, it was possible to provide with the money available. Also included in the upgrading plan were home-improvement loans for people to enlarge their own houses; financing for some little pockets of new housing; utility hook-ups where there were main lines but no hook-ups to houses; schools; health centers; and transportation.

The designs for the housing that is going to be built in the new community are still not final. As a side line, we sponsored a competition for them with the Graduate School of Architecture at Carnegie-Mellon University about a year ago. The three winning designs are still not part of the project, but they display a surprisingly good understanding of the problems involved in designing incremental self-help housing that has to grow vertically. We have little experience with that problem, because most often site-and-service expandable housing projects are built in suburbs where they can expand sideways. The legal and structural complications of a three- or four-story apartment building are much greater, and I think the students came up with some rather good solutions.

A very new $25 million project in Casablanca, Morocco, is a joint effort between the government of Morocco and AID. The people in the area need jobs, along with a long list of other things, so this project is concentrating on encouraging small industry, job training for women, handicrafts, and the like. It includes upgrading services, a new core-house area to provide for some reduction in density, an activity zone basically for the kind of small industry that will produce jobs, and a community-facility zone for schools, vocational training, health clinics, and the like. A very preliminary house plan has been submitted by the Moroccan architects, showing several variations for structures ranging from an 80-square-meter lot to a 54-square-meter lot, using an incremental design that was based on the already existing architecture found there (pl. 11).

To sum up, there are many similarities in both housing problems and the approaches to solving them in even very different cultures. In the effort to avoid impressing inappropriate solutions on other cultures that fact can easily be lost sight of. If a solution seems to make sense, try it on a small scale. If it does not work, drop it or change it, but keep an open mind.
The Search for Design Approaches
14. Design Workshops: Determinants of Housing Design

The rapid growth of cities in the Islamic countries has created a housing crisis that affects, directly or indirectly, all segments of urban society. The combination of inflationary trends in construction costs and skyrocketing land prices has put the price of even a modest dwelling beyond the means of approximately one-fourth of urban households. As a result, between a third and a half of new housing is being built illegally, often without sewerage or piped water, or on land for which occupancy rights are dubious or invalid. Concurrently, the quality of existing housing is deteriorating at a rate of about 2 percent per annum as a result of the overcrowding and the low quality of new construction, and infrastructure systems everywhere are severely overburdened.

Faced with this crisis, governments have spent considerable effort and have used up scarce financial resources trying to devise housing and services to meet the shortage. Solutions have ranged from large-scale, high-technology projects inspired by European and North American postwar housing types to so-called core house and sites-and-services developments whose lower costs and marshaling of the savings-and-sweat equity of individual beneficiaries were seen as offering the opportunity to house more people for a minimal public investment. Both approaches, however, have rightly been criticized for their lack of sensitivity to the needs of the users, to climatic conditions, and to indigenous building traditions. Developing more appropriate housing, particularly for low-income households, remains a challenge that few architects and planners have successfully met.

The purpose of the workshops was to evaluate the determinants of housing, from the shelter itself to the functional social groupings of housing units and the appropriate provision of public facilities. Identifying the relative roles of culturally influenced design requirements, limited economic resources, and building technology in shaping the physical form of the dwelling and its functional relationships to other uses were required in the problems assigned.

Small teams of participants selected housing prototypes from among those in the background presentations and reference materials, and evaluated their appropriateness to the needs of one of the population profiles given and one of three climatic conditions. Alterations and improvements to the prototypes or, alternatively, the definition of more appropriate housing solutions were encouraged. Unit-cost data, in U.S. dollars, were given. A diagram described the general conditions of a 50-hectare site located on the fringe of a large city, with additional land available, if needed, on its eastern edge.

The following steps were suggested as a methodology to be followed by all teams, so that a common level of information on the determinants of housing design would be available for discussion.

Step 1. Analyze the population profile to determine housing and community needs. Determine ability to afford housing, desirable housing types, alternative modes of occupancy.

Step 2. Evaluate housing prototypes. Diagram the arrangements of buildings to show their utilization and relationship to community facilities and services.

Step 3. Modify housing prototypes or sketch a design of an alternative housing solution to meet the needs of the population profile.

Two population profiles, one for a low-income group needing rehousing, and the other for middle-level government employees who are a prime target group for subsidized housing programs, were also provided.

The reports that follow were taken from the presentations delivered to the group as a whole the following day. The illustrations that accompany them were made as working sketches in the workshop sessions by the various team members.

Workshop I: Low- and Moderate-Income Housing in Yemen

In common with the other groups, our first problem was to decide what it was possible to accomplish in the time at our disposal, and in our case that question was complicated by the fact that Yemen was totally unknown to all of us: none of the group came from or had ever been there. We selected it because we wanted to start from scratch, to see how we should be able to deal with an entirely new situation, a new culture, and new conditions. We were all also interested in working on an area that had few economic resources for developing a subsidized housing project and where the government could not afford public housing schemes. We soon learned that, though it is a poor country, it has much less of a housing shortage than do many of the countries that surround it, mainly because it has a long tradition of cooperative house-building among neighbors: a house-raising is a community event and participating in it a social obligation. While this might also be the custom in other countries, it is particularly common in Yemen.

Three main issues for any housing project are the quality or liveability of the project, the quantity or supply, and the management or administration of the scheme. The three—what to build, how many to build, how to build them—are so intertwined that it is almost impossible to separate one from the other. We decided to design for a mixed-income group, since we felt this would
provide the most viable community for both economic and social reasons, and because traditionally in that country that is the way people live. It also simplified the supplying of the community's infrastructure and thereby its everyday needs. Although the mix would obviously increase total cost, we felt the social considerations were worth it.

We began by deciding that in the process of building we would utilize both self-help and mutual self-help procedures, but primarily the latter, since we had the tradition of house building to depend on. We wanted to encourage shared ownership and the availability of rental units for new settlers or rural immigrants, so that they would have somewhere to stay while they were settling in and building their economic place in the community. Later they could go on to better units. We wanted to keep the construction locally independent—that is, we not only did not want to involve international agencies, but not even the government of Yemen itself. We wanted to ensure that the community could build the project by itself with strictly local resources, and that it could decide what kinds of units it wished to build, though we would give the people preliminary architectural designs to start from. While we were equipped to answer technical questions of design, construction, and funding, we knew we were in no position to decide what kind of housing would best respond to local traditions or the individual requirements of its future tenants. By approaching it in this fashion, we hoped that the community would supply that information for themselves.

We next began looking at the construction of traditional houses and the character of the people living in our community. From that we decided that the practice of mixing houses with shops must be maintained, not only because it was convenient for a nonmotorized population, but because it afforded an opportunity for additional income to the family owning the house. We noticed the richness of color and texture and the kinds of material that have been used, most commonly adobe or stone, both of which are quite successful in that climate and last for years. In particular we noted how the Yemenis combined color and texture on the facades of their buildings in a way that expresses the individuality of each tenant, while at the same time fitting into the local context, and that characteristic we wished to retain.

Since we had decided at the beginning to eliminate the role of agencies and governments, or at least limit their involvement to the roles that they play well, we assumed only that they would donate the land to the project, since this is already commonly done in Yemen. Having solved the land problem we had then to determine what other resources we had at our disposal, especially financial resources, since money automatically provides access to all the rest. In addition to the land itself, our givens were the budget in the workshop outline, free labor ("sweat equity"), local materials that were usable, and the military camp nearby which might have both equipment and expertise that we could tap. We assumed that the public sector would take care of the schools, the health-care facilities, and the trunk lines for the utilities, since that was also commonly done there. We also assumed that we would be able to tap into some organizational expertise from one or another of the nonprofit international organizations in the country. It was necessary to become acquainted with the community's governing and social structure, for we were already thinking in terms of a cooperative, and a cooperative is only possible if it can involve the leadership that already exists. Yemen has a recent history of very successful cooperative projects.

We then considered the possibility that the cooperative would provide additional items—acting as a purchasing agent for food, clothing, and other necessities which any community has to buy. Through the coop something like a traditional suq could be provided to the community, with funds from the suq flowing through the cooperative to realize the cost savings that accrue from that kind of organization.

Finally we decided that our community should house both low- and moderate-income groups. We considered a variety of mixes, and decided finally, for somewhat arbitrary reasons, to base our cost projections on a 50/50 split. At first we tried to accommodate all of the low- and middle-income people listed in the program, but we felt that the extreme overbalance in numbers in the low-income portion of the community would produce social problems that could not easily be dealt with.

The income and expenditure breakdowns that the program specified allowed us to plan for 2,250 low-income units and 2,250 moderate-income units, yielding an income of $218,289 per month, or $2,619,000 per year, for the cooperative. Subsequently, in developing the project further, we contemplated taking a $12 million loan on the land, with a loan amortization of $1 million per year, bringing us a net remainder of $1.6 million. Allocating this in relation to the proportion of income to housing expenditure for both the low- and moderate-income groups gave us roughly $7.00 per month for low-income units and $25.00 per month for the moderate-income units. These were basically the funds available to the corporation. Our cost projections were based on the assumption that the coop would develop the land, put in the infrastructure, and provide the wall to enclose each housing unit and the minimal plumbing for it. The total costs plus a little bit for fees came to $12,150,000. Since we were taking a loan on the land of $12,600,000, this would leave us with $450,000 of additional working funds.

Whether he buys or rents, each tenant will essentially be provided with an empty space with a wall around it and some minimal plumbing. Both the low- and the moderate-income people can themselves choose what they are going to do with it. A low-income tenant can simply move into the empty space and use whatever of his own materials and his own labor he can devote to it, at no further expense to himself or, at the opposite end of the possible scale, he could buy the labor of the coop crew presumably drawn from the unemployed of the low-income community, buy his materials from the coop at about a 15 percent saving, thereby providing a more substantial shelter for about a $17.00 per month rent to cover those costs. The moderate-income people, using roughly the same system, could, on the low end of the
scale, acquire shelter for about a $56.00 a month rent and, at the high end, about a $90.00 per month rent, depending upon how they choose to spend their money, how much they choose to do themselves, and how large and elaborate a unit they want to build. All these figures are within the rent budgets given in the program, and in every case no additional funds should be required from the tenants. If the coop also engages in the suq activities, primarily through providing food and clothing, we figured there would be savings of about 15 percent for those items that would accrue to the community as a whole and pretty well cover common maintenance costs.

We then turned to see what we could learn from the site itself (fig. 1). It is located approximately 10 kilometers inland from the coast, at an elevation of about a hundred meters above sea level on the Red Sea near the major port of Hodeida, on the inland edge of the coastal plain or piedmont, affording opportunities for views out to sea in the west and toward the mountains in the east. It slopes gently toward the wadi in the direction from which the cooling breezes blow, which also happens to correspond approximately to the direction of Mecca. We also traced the course of the sun as it rises and sets across the site.

![Fig. 1 Site location](image1)

There is room for further expansion off toward the east, so we had to analyze the demographic composition of our community to calculate the need for schools and public facilities. One boys' and one girls' school were proposed of a size that may be attractive to the government to pay for and that would provide some monuments for the site. Four kindergartens would be required. Two mosques were regarded as sufficient, given the male population that would be using them.

One development issue centered on whether or not we needed a buffer against the military camp. We finally rejected the idea of building a wall and abutting houses against it on the grounds that the military would probably turn around and build another wall and guard towers when the homes went up. Whatever sort of buffering we needed there, it should not be a wall. We finally decided to develop an open, recreational space to the south of the military camp, since it could be used by the boys' school as well as providing the buffer (fig. 2).

![Fig. 2 Site context](image2)

To the north along the wadi we left space for vegetable gardens and orchards as further inducement to the cooperative to take on the function of tending to the food supply. Commercial facilities are expected to develop, also in conjunction with coop requirements, along the paved ring road that loops through the site from one entry point to the other. Adjacent to the main highway entrepreneurship will encourage the development of highway-related commercial activity: the series of bus stops at the contact points for the entry road might generate cafes, for example (fig. 3).

The pedestrian ways within the residential fabric are oriented in the direction of the prevailing cool breezes which, combined with the vegetable garden and orchards (if the coop can be induced to develop them), will offer aesthetic benefits the community will need. Opportunities for development also exist within the community at the intersections in the hierarchy of pedestrian ways.
They are all naturally paved, not hard-surfaced; we have suggested a grading and utilities concept since we are applying to the World Bank for seed money. We want them to know we are taking care of some high points in the grading, not only for aesthetic reasons, but also to take advantage of natural drainage for storm and sewage. We have provided for force lines going up hill and gravity lines going down hill. The main trunks are located within the open space with the buffer to the south and the fruit gardens to the north, so that maintenance problems will not disrupt the vehicular traffic that we have to expect along the main road (fig. 4).

We are not specifying the exact nature of the architecture, but are assuming it will be single-story, at least to begin with. When people's requirements grow as their income rises, stories can be added.

In designing the core unit we tried to have the toilet units adjacent to each other so that one pipe would serve two units. Since the two chief considerations were economic and climatic, we designed with the prevailing wind in mind, used as many common walls as possible, placed stairways so that the space underneath could be used for storage, and provided some houses with shops underneath (figs. 5-6). At the intersections of primary, secondary, and tertiary connectors we expect that little spaces may develop in which we might locate a fountain, some shade trees, a cafe. All these, too, will help encourage the community to develop its own network and sense of worth.

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Workshop 2: Low-Income Housing in Algeria

The site chosen to plan was to be located on the outskirts of Constantine, a city in northeast Algeria about 70 kms from the Tunisian border and 70 kms from the Mediterranean coast. The site is about 600 m. above sea level, and the climate is hot and dry, with southern winds and a high of nearly 40 degrees C. in the summer, and rather cold, with a low of around minus 5 degrees C. in the winter.

The group was to deal with two different situations—upgrading an already existing settlement and building a totally new, unimproved site. This involved us first of all with relocating at least some of the inhabitants, since in the old settlement, while 50 percent of the housing structures were sound and 30 percent only needed roof repairs, 20 percent would have to be demolished altogether. The approach we decided to take was first to upgrade the old area by encouraging owners of sound structures to invest in improving their property and by redeveloping the remaining vacant lots, and then to develop the new settlement. We would first complete an area sufficient to shelter the people living in the 20 percent of housing that had to be torn down. These would most likely comprise roughly 40 percent of the new site’s population. The area in the new site allocated to the other 60 percent would be made available to newcomers, who would most likely turn out to be migrants from Algeria’s countryside.

Algeria’s official housing policy included promotion of self-help construction; improving the quality of new construction by attracting workers to the construction industry; and avoiding dependence on other institutions—for example, by providing manufacturing facilities for building materials on the site. We decided that the policy would work well with a cooperative system of managing and finance that also has precedents in Algeria and would allow members to purchase housing either through direct payment or indirectly through the contribution of services. The cooperative provides equipment and space to manufacture building materials on site. The 50 percent of the population that is unemployed would then build their own houses on the lots assigned, with technical services and assistance provided by the government. This system fulfills official policy by avoiding dependence on outside institutions, providing materials on site, and paying for shelter through tenant labor. The other 50 percent of the population could choose from among three or four alternative plans, each of which is designed so that it can be built in one, two, or three phases, depending on the resources available to the owner. Installments would not amount to more than the equivalent of 25 percent of family income or less than the equivalent of 12 percent; actual figures would vary according to individual circumstance. Since it was thought that the presence of some middle-class people would encourage the development of an economically viable and therefore more stable community, the cooperative would attract a mixed population by distributing land provided by the government to middle-income families.

The building materials manufactured in temporary facilities on site can utilize the available clay and stone, and provide, among other things, tiles for pitched roofs and mud brick for walls. The nearby old town of Constantine will be a fruitful source of inspiration for alternative designs to harmonize with these traditional building materials. When construction is complete, the manufacturing site can be transformed into a recreation area.

The first phase of development had to be completed within a stipulated time or ownership would be forfeited, a regulation made to discourage speculation and other misuse of the donated land. Some rental units were also included in the plan for those not in a position to buy or build; these will be managed by the cooperative.

The services that will be provided by the government to the new area are infrastructure, including water, drainage, electricity, paved roads, garbage disposal; and communal facilities, including a mosque, four primary schools (coeducational), one secondary school each for males and females, one clinic for each sector, post office and telephone services; an artisan’s shop for every four or five houses, a recreation area for each sector; and public baths for each sector.

The sloping site is an important asset in supplying water, since it can be piped down from the high southern end of the site. Water taken from the municipal line that runs along the highway will be sufficient to supply the whole area. Outlets for sewage and storm drains can be installed on the northern, lower end at the river bed. The southern end will be planted with high trees both to serve as a windbreak and to separate the community somewhat from the army base. Curved and broken street patterns will be used to discourage wind, and houses will have no exposure toward the southern sun. Courts will be oriented toward the east, which is traditional for the people living in this area, who use their courtyards for everyday activities. (fig. 1)
We assumed that the low-income population would show the following characteristics: they will be city dwellers, and conservative in their way of life; many of them will earn their living as small-scale artisans. They will live as extended families (nuclear families are increasing in this area but are not yet in the majority). For the most part the heads of households will be men, since women in Algeria work at paying jobs only if they are the sole source of family support. Social life there is characterized by strong kin and neighborhood ties and a good deal of mutual assistance. The active street life will be confined for the most part to men and children, since Algerian women prefer not to stay long in public places.

Adequate primary education facilities had to be provided for the entire population since schooling at the primary level is now compulsory; in the case of older children boys are more likely than girls to continue in school. Housing designs will have to provide multipurpose rooms and movable furniture, as units will be too small to allow for rooms with specialized functions; and special-function rooms are, in any case, not customary in that part of the world.

We assumed that middle-income families would show a somewhat different profile: they too will be experienced city dwellers, but more sophisticated in their habits than the low-income population, and educated at least through the high-school level. Forty percent will own cars, and a great many will have modern appliances, especially a television set, suggesting the need for some modification of housing design to accommodate them and for design flexibility to accommodate the social change which the presence of television invariably generates.

Half the population will be more than twenty years old, the other half under twenty years, with an equal proportion of male and female. The anticipated population-growth rate will be about 6.4 percent.

We planned the site around the communal facilities and the commercial area, with directions for future expansion and growth built into each plan. The street hierarchy was conceived in terms of a progression from public to private life, with the central market the most public area, the streets leading off from it as semipublic areas, the spaces around the housing as semiprivate, and the interior of each house as private (guest quarters) and most private (family quarters). Roads in the interior of the settlement will be restricted to pedestrian traffic; automobile roads will ring the settlement but provide access to the marketplace and to parking areas.

We expect that the army population on the southern border of the site will participate to a certain degree in the development of the community by patronizing the markets and exchanging various kinds of services. For that reason we did not consider the military camp to be a negative presence; we are anticipating that some positive interaction can occur.

A number of alternative plans were provided to show the various ways in which the settlement, once completed, might grow.

Option 1 (fig. 2) locates a main market and communal space in the center of the settlement with other, smaller markets scattered around the area. A main road divides the settlement and extends eastward. Expansion could take place to the east along that road by forming similar centrifugally patterned groups.

In Option 2 (fig. 3) the two halves would be treated as mirror images of each other, with market and communal places located at the periphery. Expansion could take place in all directions except south.

In Option 3 (fig. 4) the main market would be placed on the highway. A main commercial street would then divide the settlement into its northern and southern parts, and would provide a soft transition between the low-income dwellers in the south and the middle-income dwellers in the north. In this solution expansion could be both eastward and westward across the highway.
**Option 4 (figs. 5 and 6)** was considered by the team to be the most viable solution. The market would be located toward the center but close to the highway, and the focal point created by the communal marketplace would be supplemented by smaller markets distributed about to service neighborhoods and serve as a pattern for future growth. The expansion in that case will probably be eastward.

In their deliberations the workshop team concentrated on questions of design and quality rather than on trying to house a great many people. It did not come up with anything that it regarded as a definitive solution, but each attempt did try to build and improve upon the previous one.

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**Workshop 3: Moderate-Income Housing in Kuwait**

Kuwait, at the northwest end of the Persian Gulf, is an oil-producing country with one of the highest per-capita incomes in the world. Its capital is Kuwait City with a population of over 2 million, 30 percent of whom are foreigners. It has a desert climate with dust- and sandstorms blowing in from the east-southeast, but it also suffers from high temperatures and humidity.

Unlike most Arab cities—Jerusalem, Cairo, Damascus, Baghdad and Tunis—Kuwait has little in the way of an architectural tradition, because aside from a temple built by Alexander the Great on the Failaka Islands, few large religious, historic, or architectural monuments remain to act as starting points to planning or as models for building. Kuwait is therefore having to search for its architectural identity as it plans and builds its city almost from scratch. While it is true that in that situation the practical difficulties of ownership and existing urban matrices are much reduced, design often poses a much more serious problem. Since most of the new housing in Kuwait is government sponsored, master plans are rigid and the housing is often impersonal and inappropriate, responding neither to climate, nor to environment, nor to occupants' preferences or needs. What little privately constructed architecture there is reveals a whole gamut of experimentation with all sorts of architectural traditions, ranging from neoclassical and Greek revival to Islamic (which in fact never existed in Kuwait) to contemporary, international-style buildings.

While the architecture already existing in Kuwait has little distinction, its colors are warm and it is very simple in its details, perhaps reflecting the hot desert climate in which it is set. As designers and planners working in Arab countries, we felt that we needed to utilize this as well as look back to the more generally Arab architectural past before proposing our plan. We did not want to imitate the past, but thought we could perhaps use some elements from it so that our hypothetical town would direct the people into a social environment where a sense of neighborhood and of belonging would be encouraged and where people would use public spaces to get together. We provided recreational facilities, pavilions, shopping, a mosque, and shaded, landscaped pathways to encourage this (fig. 1).

The scheme is designed for Kuwaitis, since the foreigners now living in the country are clearly a temporary population. We made the neighborhoods homogeneous and decided that most of the units would be single dwellings on individual lots, i.e., no unit would share a common wall. Kuwait is a small city, but growing very fast, and real estate is already expensive, so we also introduced a concept for future development that used condominiums and townhouses; this we placed to the south.
The wadi on the site posed a potential flood problem, so we developed the area around it as a green belt that included both parks and recreational facilities. The shopping center is sited on the main road where the major traffic will pass by; the highest buildings, the condominiums, are placed to the south to act as a buffer against both the military camp and the sand- and dust-bearing winds, and where, if successful, they can be expanded into other areas. Building heights then decrease as one proceeds north. Small shopping areas are scattered about to provide minor services. Two mosques are planned, one located to serve the school system and the other near the green belt (figs. 2-6).

We allowed for fewer units and added more facilities than the program required. This made an altogether different type of neighborhood than the problem specified, but we reached the decision on the basis of an assessment of what the actual residents would wish to have. That assessment dictated the choice of independent villas, lot sizes, and circulation (an informal pattern instead of a grid, to add individuality to the area). We tried to avoid identical facades and mass housing; uncontrolled movement of cars (in the plan, cars cannot be driven into the central areas); we tried to supply varied

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**Fig 1** Site on a major road, 5 kilometers from the city center

**Fig 2** Climate

**Fig 3** Climatic response
Workshop 4: Low-Income Housing in Egypt

The workshop was assigned the task of planning a low-income settlement project in Egypt, but before tackling that exercise we had first to decide the scope of the project we would plan: would it involve no resettlement, some resettlement, or an entirely resettled population? We began by determining hypothetical situations for each.

1) The hypothetical no-resettlement situation (fig. 1a) retained the entire population on the existing site, since the government did not need it, and upgrading and improving it were feasible. The new site the program gave us could then be used for other rehabilitation projects and for a different population, once renewal of the existing site had been completed.

2) The hypothetical total-resettlement situation (fig. 1b) moved the entire population to the new site, or entirely outside the area, because the government had preempted the existing site for another project.

3) The hypothetical partial-resettlement situation (fig. 1c) resettled a portion of the existing population in the
new site, and left the rest on the old one, because the government needed only part of the land for upgrading and infrastructure (fig. 2).

We rejected situations 1 and 2 as too complicated to solve in the time we had at our disposal; they would involve us in too many social ramifications and financial and implementational difficulties. We restricted our solution to the last situation—partial resettlement—because it was the easiest to implement, would cause the least amount of socioeconomic disruption, and would allow us to design improvements and stage the development program of the new site. We assumed that, as indicated by the seminar's case study of Karachi, the designing of housing and site were less important than the determination of approach and process, so we made no attempt to design either the site or the housing units.

We decided on the strategy of encouraging the better-off people from among the old-site population to move to the new site. This would vacate a sufficient number of housing units in the old site to accommodate the homeless low-income people and provide vacant lots for the provision of community facilities and other development.

We first considered what land-tenure regulations should be established and decided that for both the existing and the new site the government would have to donate the land for infrastructure and for the required public services, tax property to fund improvements, regulate the exchange of land, and legalize land tenure. On the

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**Fig. 1** The three different approaches

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**Fig. 3** Cross subsidies

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new site government would also have to provide the subsidies that would encourage mixed land use; legalizing land ownership would again be the incentive for improvement.

The old site could be financed from an initial investment by the government, with all or part of the costs being recovered from the inhabitants in the form of taxes. For the new site, a part of the land could be sold to investors to finance the first phase of the infrastructure (fig. 3). The formation of cooperatives could be encouraged to fund other buildings, and the government could subsidize part of the initial cost.
Some form of self-government should be encouraged within the community so that the residents can have a voice in its administration; in the new area, this could be an aspect of the building-cooperative organization.

Infrastructure will be provided for the population remaining in the old settlement, and the needed services will be housed on land designated for the purpose. In the new area, the two types of services will also be provided in a manner in harmony with the phasing of the entire development.

No particular housing design is to be recommended; instead inhabitants will be encouraged to build houses according to their own tastes and requirements on the new land, with incentives such as cheap land, available building materials, and technical help for structural elements. In the old area, the inhabitants will be encouraged in similar ways to repair and improve vacated houses.

The general guidelines for designing the plot were: (1) to have the site accessible from the main highway (fig. 4); (2) to plan growth and expansion to the east of the highway by providing the necessary services in the first phase and having the main arteries lead in that direction (fig. 5); (3) to provide services and utilities in phases according to the scheme found in figure 6.

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Workshop 5: A Low-Income Housing Policy for Morocco

The Moroccan design group dealt with housing for bidonville dwellers, but the group concentrated on proposing, not a specific physical design, but a housing policy that would serve as a guideline for government participation—as opposed to intervention—in public housing.

The policy is based on the premise that interaction between the dweller and technicians, i.e., the group of professionals who represent the government, should be increased so that the design initiative comes from the dwellers, with the professionals only assisting as needed. The conventional role of architects in public projects is overemphasized. They serve as agents for a market economy that treats housing like any other merchandise available in the free market. That market mechanism is incompatible with the requirements of public housing, which should result from the initiatives of the concerned dweller and should conform with his ideas of what a suitable dwelling would be.

We consider three issues to be critical in that process: (1) First, the dwellers and the professionals should establish a vocabulary that is mutually understood. The dwellers must be recognized as a unified group with common problems and concerns. This is not difficult to do in the bidonville, where the community normally organizes into coherent and well-defined groups that continually interact. (2) The slum dwellers should be helped better to understand the dimensions of their problems. (3) Local material and manpower resources should be utilized, but to do that the dwellers must organize into action groups.

Technicians, architects, engineers, and concerned government officials ought to join forces to liberalize building codes and bring them more closely in line with realistic building standards. The design policy initiated by the technicians should try to substitute dwelling ownership for land ownership, and make the design process center on a continuous chain of linked housing units. It should emphasize use of local building materials, in contrast to the present market structure which depends upon imported and extremely sophisticated building methods. In particular, the present trend toward building in reinforced concrete is incompatible with the local tradition and with the need for low-rise housing structures. Density should be not more than 288 families per hectare, but high enough to stimulate cooperative efforts within the community.

The gap between the poor and the powerful must be bridged. Strategy should be oriented from the grass roots upward, and that must be understood by those in power. Another valuable innovation would be to provide an architect or perhaps a student of architecture to every community in the bidonville; he could teach the community certain basic construction techniques, and act as an intermediary with government officials.

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Fig. 1 Site analysis

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Fig. 2 Land-subdivision scheme (preliminary)

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Fig. 3 Preliminary block-layout scheme
Workshop 6: Low-Income Housing for Southeast Asia

To relate the population profile and the data given in the program to a specific context, the group located its site in Dacca, Bangladesh. While its targeted group was the lowest income, a mixed-income community was proposed for the settlement.

From the population profile given, it was evident that relocation was not necessary solely on the grounds of the physical condition or the standards of construction in the existing settlement. We assumed, therefore, that the site was needed for some public purpose. The political situation of the country suggests that relocation, if carefully planned, can be undertaken with some sympathetic consideration for the population involved.

The negative consequences of relocation include disruption of the social and economic networks already established by the residents, which in turn reduces job opportunities and even the choices for survival in the new site, if employment is not provided for. Rural-migrant squatters in particular rely on often newly established social ties for survival, and care should be taken not to disrupt them in relocation and to absorb or reabsorb the population in the urban economy.

The site chosen must be easily accessible to jobs and to low-cost housing and services. Employment must be made available not only for the household head, but for the whole family, either on site or by improving transportation from the new site, or by locating the site within walking distance of the city.

Providing these conditions in a large urban economic, political, and social context will involve continuous negotiation and close communication throughout implementation between the government and professional personnel involved and the people to be relocated. This must be provided in the plan, because none of the groups concerned will be successful working in isolation. Negotiations ought not to be limited to technical advice, but should include political and social support. This will ensure the maintenance of a community structure in the new site to cope with community problems and interests that will arise in the future.

Squatters and renters must both be given the opportunity to gain security of tenure and be provided with services at a price they can afford. Utilization of local labor in the construction and development of the new site and of government buildings will be another incentive to relocation, with the unemployed and underemployed given first priority to allow them time to settle into the new site, establish new networks, and find new jobs. Construction work provides an excellent mechanism for training and incorporating unskilled and semiskilled workers into the economy.

The relocation of this particular project will have two aspects: (1) relocation within the old site to free space, and (2) relocation to the new site of the surplus population. The project will be broken into stages to make it easier for the professionals and public institutions to manage the logistics for much smaller numbers of people at a time. The community structure can more easily adjust to change if the development progresses incrementally. People with jobs will be left in the old site, and the unemployed moved to the new, where sustained immediate employment will be offered in site construction.

The first group of people to be relocated will be chosen from volunteers, who will of course have the incentive of immediate employment in the new site. Once they have departed, minor relocation will be carried out within the old site to vacate specific areas. This process can be continued until the whole area is vacated, if that is required.

In the new site, the low-income population will be housed together with middle-income and government employees to achieve a mixed-income community. Government employees will be provided with already built units, whose construction has been a source of employment for the people relocated in the new site. The mix of income groups will at the same time generate both job and business opportunities for the poor and services for the prosperous. A high-income population can also be attracted to the site by selling commercial and industrial plots at auction, and this, too, will create job opportunities in the long run.

The following criteria should be used in the design of the new settlement: (1) The layout should be flexible enough to accommodate immediate as well as long-term changes. Designs should be easy and speedy to execute and should facilitate community interaction. A grid layout with housing clusters is proposed. (2) Government responsibility should be kept to a minimum in building and maintaining the housing estate. Public areas should be small, so that the responsibility for their maintenance can be left to the residents. Serviced plots would be provided for all but the government employees, who will be housed in built units. (3) Regulations should be minimal, and devised and enforced by the neighborhood itself. Self-regulation is still found in all the traditional quarters of cities in Bangladesh where government has not preempted that responsibility. (4) Public and community facilities should be located where they will facilitate the growth of private commerce and ensure a varied economic life. This will reduce the time it takes for the community to take root. (5) Neither income nor land use should be segregated, i.e., there will be no high- or low-income zones within the site and no areas reserved for industry and commerce, whose sites should be dictated by the convenience of the community. Lot use will be determined by locational advantages, and the size of the plot by the income of the person who will occupy it. (6) To help fund the project and land purchase for low-income groups, lots will be sold at auction for commercial and industrial uses.

Prepared by: Aminul Khan
Workshop 7: A House Adapted to Islamic Cultures

The accompanying plan (fig. 1) represents an attempt to address the problem of designing housing for workers in the Middle East by adapting a Western house to conform to the particular cultural preferences and religious codes of potential non-Western occupants. Most of the houses that are made available to foreigners working in the Middle East today are designed for Western tastes and customs. Some are barracks types that do not meet the minimum needs of any expatriate, though in this case the occupants are usually not Westerners. The most obvious defect of all this housing is lack of privacy. Another is lack of accommodation for large families, particularly for Asians, whose households tend to be numerous because they often include other relatives—younger brothers and sisters of the household heads, for example—or even friends. Under those conditions the problem of privacy becomes particularly acute in confined quarters.

The house should have two distinct areas, one for women and one for receiving and entertaining guests. The Western concept of living-dining areas is totally unsuited to that purpose. Living areas should also have a balcony where older people can sit and see outside, and be designed with an outlook close to the floor since Asians and Arabs use the floor more often than they do furniture. That very lack of furniture also provides needed flexibility in the spaces they inhabit. Even reception areas are usually simply carpeted spaces with cushions scattered about; meals are served from a large metal tray either to the whole family, or, if guests are present, to its male members.

There should never be an entrance directly into the living room—and this has been taken care of in the design offered here—because otherwise women might be surprised by strangers. Similarly there should be no direct view into the bedrooms or bath. The WC/bath area should never be near the main entrance; it must have some sort of intervening lobby. The bathroom must have the fixtures and spaces dictated by customary usage. Running water must be provided in the WC, for example, because washing is a requirement of the culture and religion of Asians as well as of hygiene. A good amount of space, protected from the wet areas, must be built in to use as an enclosure for changing clothes. Separating wet and dry toilet uses also allows more than one person at a time to use the area.

In the kitchen, provision must be made for dealing with large utensils because of the size of the families involved, and for washing them in a squatting position, since women customarily wash dishes in that way. A great deal of storage space is also a necessity because of family size and the nature of the food supplies.

Bedrooms should be multiple-function areas, because in these cultures they are used for a number of activities, especially prayer, in addition to sleeping. Care must be taken to orient the bed properly, because the feet of the sleeper must never point toward Mecca.

In short, it should be clear that at least minimum consideration should, and easily can, be given in the provision of housing for various types of expatriates to their religious and cultural attitudes and preferences.

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