Islamabad, the creation of a new capital

The text that follows is a slightly edited version of a document by C.A. Doxiadis extracted from The Town Planning Review, *vol. 36, no. 1, April 1965, pp. 1-36.*

Introduction

The subject

My subject is the problem of the creation of a new capital city and its solution. I will analyse and present it as a general case of interest to all of us, and as an illustration I will take the example of Islamabad, the new capital of Pakistan which was conceived in 1959, planned from 1959 to 1963, and which entered the implementation phase in 1961.

The analysis and presentation of this problem as a general case is necessary because in the field of human settlements we are inclined to attach too much importance to the example and tend to imitate it; whereas what are important are the underlying principles which led to the specific solution – a solution which in some ways is coincidental, as it represents the application of principles of general validity on specific (coincidental) features of nature.

On the other hand, I am taking a specific example in order to illustrate the general problem we are facing, for without the specific we cannot easily demonstrate the practical importance of our general theories; Islamabad has been chosen since, to the best of my knowledge, it demonstrates in actual practice, and in the best possible way, the implementation of my analysis.

In our generation, up to the end of this century, we are going to build many new cities and capitals, and we must develop a systematic approach and look at it as both theory and practice. I hope that this article will help us to begin such a discussion.

A multi-dimensional subject

A human settlement is a multi-dimensional subject, and it is always a great problem to present it: how can I give a complete and systematic picture of it? We can present a settlement through its plans, in which case we overemphasize its two main dimensions and seldom its third one, that of height. This was done much better in Medieval and Renaissance cities or in Moghul monuments through three-dimensional plans, either as perspectives of the settlements or as a geometric two-dimensional projection of the third dimension on the same plan. Even in such a case we completely miss the fourth dimension – that of time – which is indispensable for the existence and use of any settlement.

But even the best plans show only two or three of the elements of a settlement (shells, networks and nature), and we miss the other two, man and society. We must find ways to present these, as well as all the aspects of a settlement, economic, social, administrative, technological, cultural, etc.

With such a complicated multi-dimensional subject a systematic approach would necessitate our following one line in one dimension and studying the elements of the second dimension along it, then repeating the same process with a second line, etc. (fig. 1a). But such a process requires a long and laborious 'voyage' (fig. 1b), which cannot be undertaken in the space of this article. The simple fact that during the planning period our office had to prepare more than 4,000 different drawings and documents, a total of more than 8,000 pages, shows how such a task is impossible here. Apart from that, the application of the method I suggested above can be boring even with a two-dimensional subject; when dealing with as many dimensions as a new settlement has, it may be indispensable for proper analysis, but impossible to present.

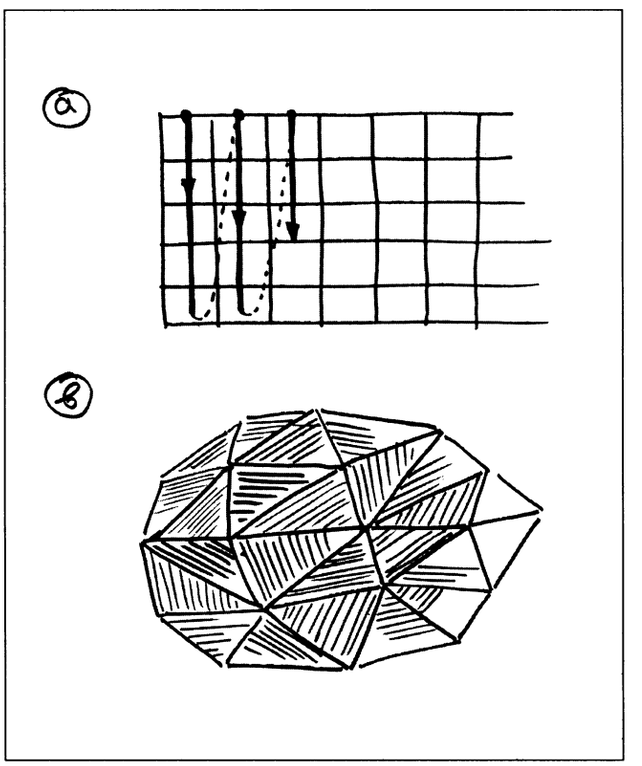

Fig. 1: A multi-dimensional subject.

Outline

As I cannot present all the dimensions or aspects of our subject, I have selected some of the most important ones and have tried to present them in text (a one-dimensional way) with plans, drawings and photographs (two and three-dimensional illustrations).

Thus I follow a simple road by answering the practical questions:

- Why?
- Where?
- How?
- What?

and then by presenting the city of Islamabad as conceived, designed, and as it now enters the phase of construction.

In following this road I will mention only certain considerations and very few dimensions out of the multitude of factors which enter the game at every decisive moment, and will give the result in some key plans and photographs in the last part of this article.

Why?

General considerations

Many countries which have recently become independent have no capital cities, either because the capital city of their area remained in another country (as was the case of Delhi, which remained in India as its capital city) or because there was no capital city in its territory with the necessary facilities or in a proper location. The same occurred with several regions which remained without a capital city, such as Punjab, the capital and main part of which became part of Pakistan – thus forcing India to create Chandigarh as a regional capital.

Such countries or regions must create a capital city to house their central functions. Such was the case with Pakistan. The city of Karachi was first selected. Right from the beginning, though, the question arose as to whether Karachi was the best solution as a capital city or whether a new capital city should be created.

This is the most important question to be asked in such a case: *why* a country needs a new capital city, and why the existing one is not satisfactory. Many people tend to believe that this is a matter of prestige; but whether it is or not has to be seen in the light of several aspects of this problem, some of which I will present briefly below.

Economic aspect

The main argument of those who are against the creation of a new capital is that a new country cannot afford such a luxury. But it so happens that a new city often has to be created exactly for economic reasons.

The functions of a capital city are determined by the size and organization of the country. A capital city means so many square feet of office buildings, so many square feet of residences of certain classes, and so many corresponding facilities, from shopping and entertainment to roads and sewers.

If an existing city has such facilities and is properly located, the country has a capital. But if the country has cities, even in proper locations, without the necessary facilities, the question can be answered only by correct calculations. Such calculations in the case of Karachi proved that the city was over-congested (having overnight become the only port town in West Pakistan, with its forty million people), and the proper functioning of the administration would have meant the construction of public buildings, residences and facilities of a certain magnitude.

The question then arose: given the task of investing in buildings, residences and facilities, should these be added to an existing city, or to a new area? Investigation proved that there were two main economic arguments in favour of a new city:

- If such investment took place within the existing city, about fifty per cent of it should go towards the acquisition of land, the widening of streets and the remodelling of facilities to serve the new functions. This meant that the capital expenditure per square foot of administrative building would be *double* in the existing city.
- If such an investment took place in a new non-developed area, the increased land value of the surrounding area would go to the government – which would initiate action and investment – and not to those who *happened* to be land-owners near the new government developments.

Both of these were strong economic arguments for the creation of a new-capital city (fig. 2).

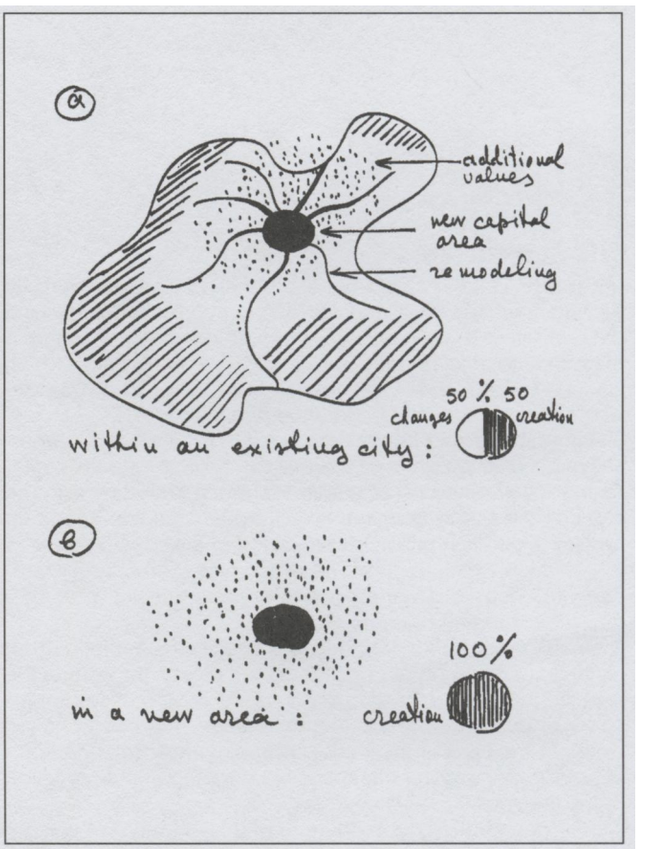

Fig. 2: Economic alternatives.

The question remained open as to whether the creation of a new capital city would not require greater expenditure for access roads and other indispensable networks (power, gas, water, etc.), but this question will be dealt with when we investigate the 'where'?

Social aspects

A capital city exercises great influence on the entire country. Thus its inhabitants should not belong only to one social group (economic, political, ethnic, etc.), but should belong to as many groups as possible – in ratios corresponding as close-

ly as is feasible to the national ratios – so that its population is the best possible representation of the nation as a whole, and not of any specific group (fig. 3).

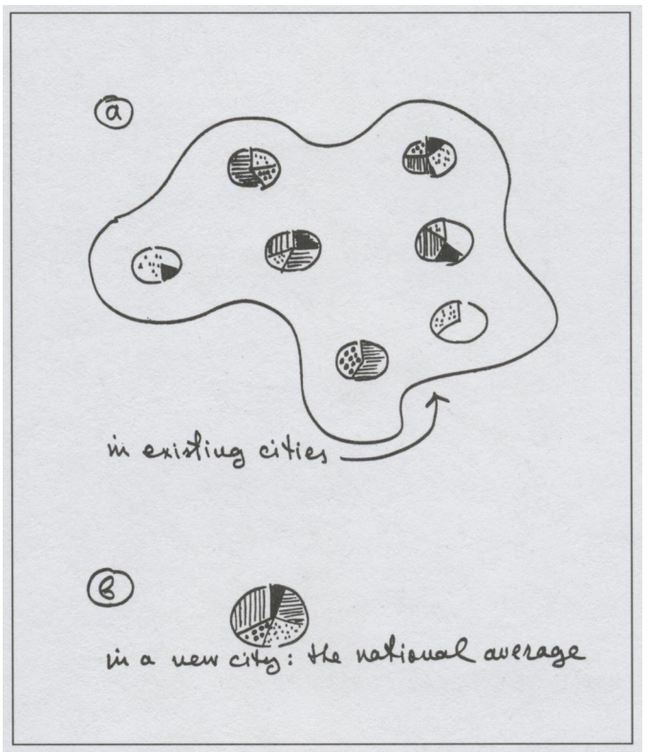

Fig. 3: Social structure.

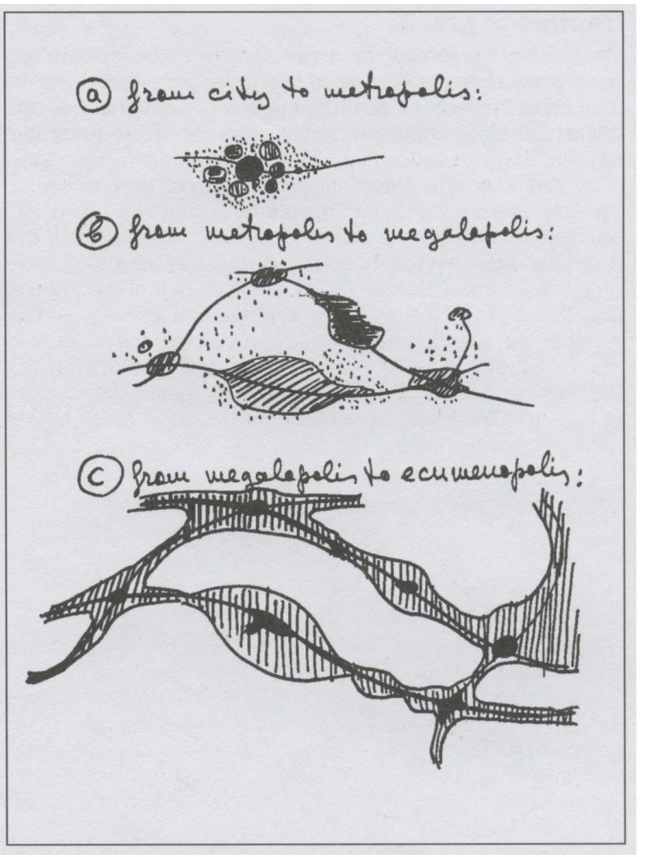

Fig. 4: Towards Ecumenopolis.

From this point of view the creation of a new city is imperative, as existing cities do not represent the nation as a whole unless they happen to have served as capitals over long periods. Failing that, we conclude that from the social point of view a new capital city is imperative.

Technological and cultural aspects

Existing cities are old cities and thus, both from the technological and cultural points of view, do not represent the future but the past. If this past has value, it should not be spoiled by the creation of new functions in new buildings and facilities; if it has no value, it does not represent any asset.

Seen from this point of view, the creation of a capital city of a newly independent country must either take place in an existing city (whose past is of value and it happens to have ample buildings and facilities), or, if this is not the case (and this was not the case with any city in Pakistan), it is better for it to be created without any commitments to the past. If it cannot represent the great values of the past, it is better to open the road for the values of the future.

Ekistic aspects

If a nation must create its most important ekistic functions in the capital – since it represents in national buildings and corresponding facilities the greatest ekistic investment in economic or cultural terms – it is wise to think carefully about its ekistic future. Don't we do the same if we have to build a great thermo-electric plant? We do not simply add it on to an existing antiquated power station.

Here, certain trends are unavoidable. First, the population will continue to increase; and secondly, we must expect this additional population to become almost entirely urban, which means an unprecendented increase in the urban population. Such countries as Pakistan are entering the era of urbanization. During this era we must expect the cities to grow dynamically and many a city to turn into a metropolis (fig. 4a), then become a part of a megalopolis (fig. 4b), until it becomes a link in the greatest city that man has ever seen, which is going to cover regions and continents with its branches – the universal city, or ecumenopolis (fig. 4c).

We cannot expect these great urban organisms to function properly unless we create the proper nuclei for them, and do not leave the old cities of the past to bear the burden of the proper functioning of a universal city.

So from the ekistic point of view, too, Pakistan needed a new capital city.

Where?

General considerations

There are many considerations leading to the selection of the site of a city and they can be classified in many ways according to several dimensions – from geographic and climatic, to economic, financial, social, political (international and national), defensive, administrative, technological (from transportation to resources), cultural and aesthetic, from historical to philosophical, and from material to spiritual. This work was done by dozens of experts in corresponding committees and their decision represents the synthesis of a multitude of views, some of which, together with corresponding problems and solutions, I will illustrate below.

Centres of gravity

The basic consideration for anyone studying the location of a capital city is that it should lie in the centre of gravity of its total area. There is no dispute, therefore, when the theorists of the ideal state locate the capital in the centre of a circle (fig. 5a). But this presupposes a circular and uniform area.

By extending this line of thought we conclude that even if the area is irregular its centre of gravity must be found (fig. 5b). But again we have assumed a uniformity of area. If this is not the case, we must decide whether we want the centre of gravity to be that of the fertile land (fig. 5c), of the population (fig. 5d), of the system of transportation (fig. 5e) or whether we want all these factors to be considered as they are or as they are going to be after due development (fig. 5f). We then want to find the centre of gravity of all the centres of gravity and what kind of coefficients to use in order to balance all possible factors (fig. 5g).

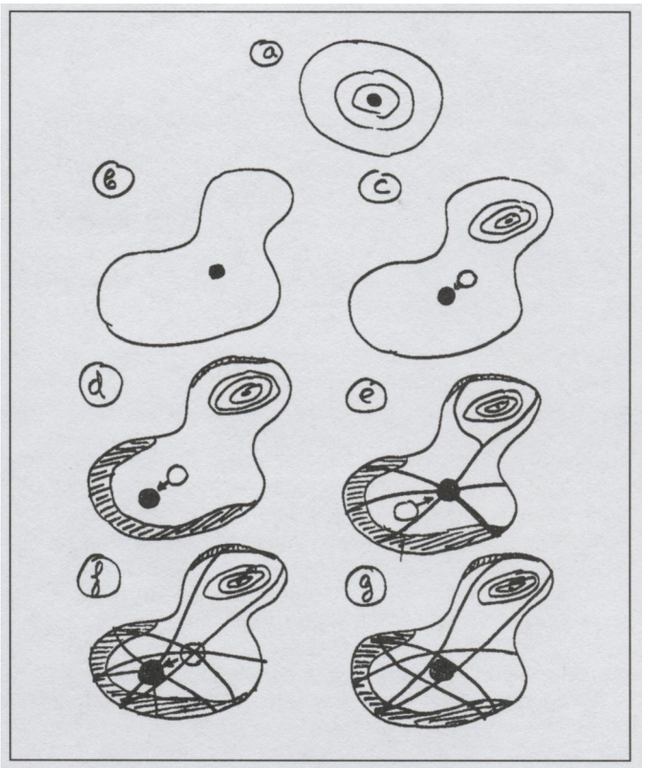

Fig. 5: Centres of gravity of an isolated state.

But then we discover that in this whole analysis we have been thinking in terms of an isolated state. If we think of it as a part of the whole world we must exclude border areas (fig. 6a) and place much greater importance on the lines connecting our state with the outside world, in which case we may well have one centre imposed by the sea, others by land and air-transportation, and another as the result of all these (fig. 6b). We can then proceed to the synthesis of these views with those derived from the considerations of an isolated state and reach even different conclusions (fig. 6c).

It is quite clear that the simple notion of centres of gravity needs great elaboration and every aspect of it requires proper evaluation in order to lead to the final synthesis. And what happens if after such an analysis we discover that the 'centre of centres' lies on a mountain or in a desert?

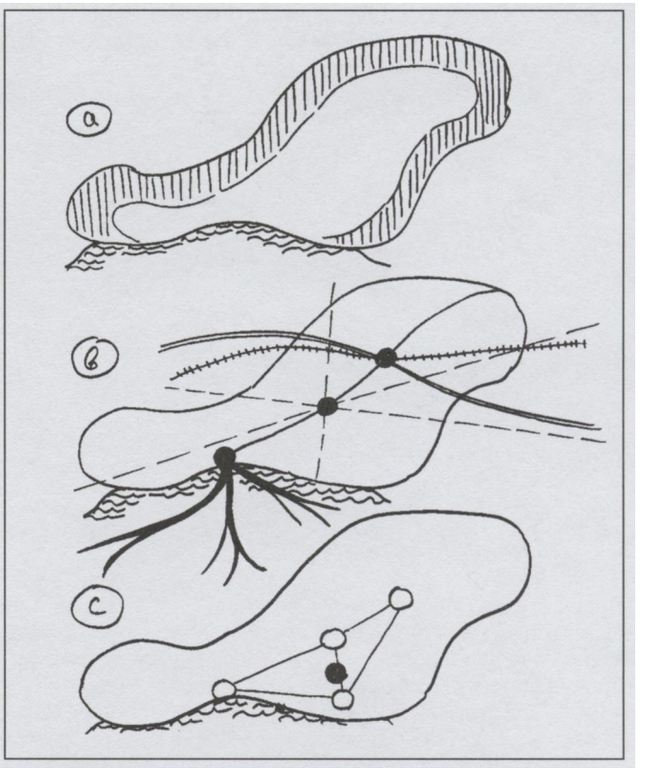

Fig. 6: Centres of gravity of a part of the world.

The past

Such difficulties lead us to think of other ways to see our problem more clearly and facilitate its solution. One such method is the history of the area. If the present situation is not very different (in inhabited areas, economy, transportation, population, etc.) from the past, a study of where successful capital cities existed can lead to useful conclusions.

In our case it was quite clear that there was only one strip of land on which most of the successful capitals existed for centuries, and this was along the Grand Trunk Road of the Indian peninsula. Teheran, Kabul, Peshawar, Lahore and Delhi marked this line, and when Alexander invaded this area, it was in Taxila that he created his capital. The British had to move from Calcutta to Delhi. Geographic and historical forces placed the capitals on the same line (fig. 7).

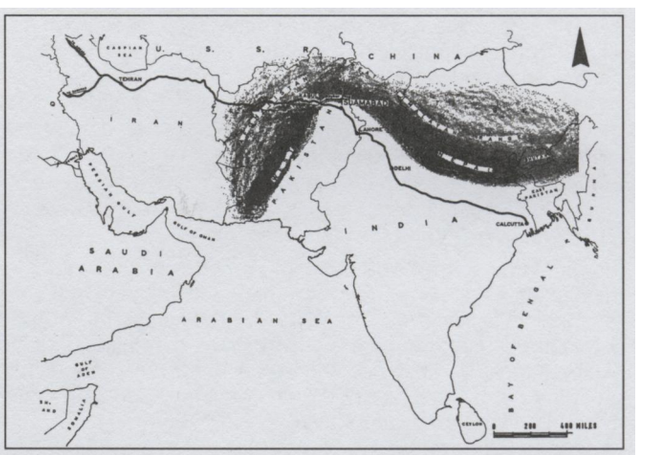

Fig. 7: The capitals of the area.

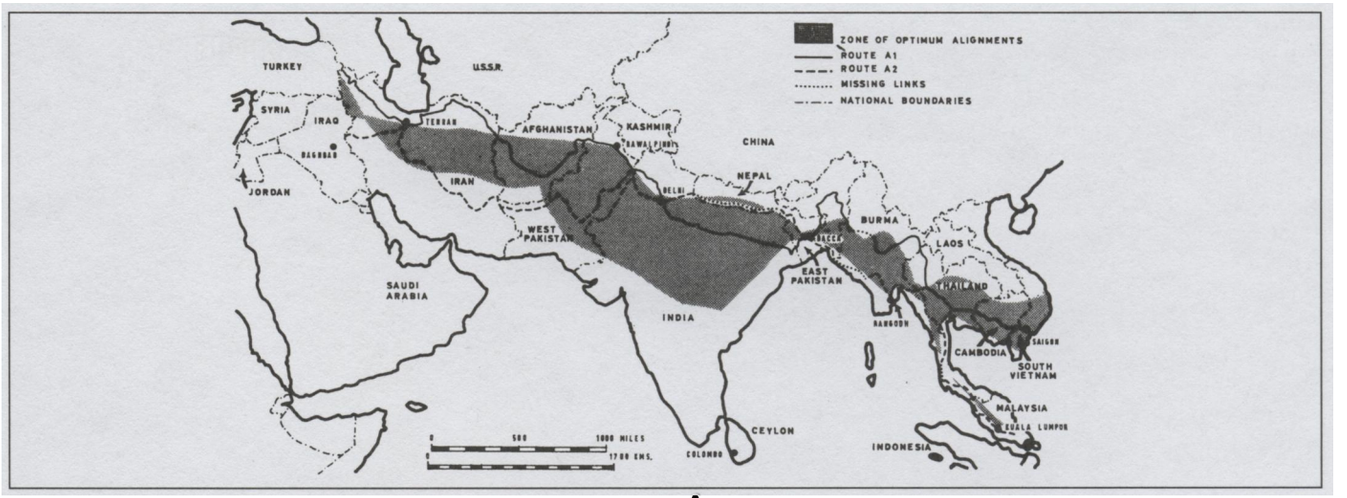

Fig. 8: The Asian Highway. Zone of optimum alignments as desined by gravity lines.

The future

Restricting our thoughts to the past can be misleading, unless we also have the ability to project them into the future. In our case this meant, mainly, an evaluation of whether the age-old importance of the historic backbone of Western Asia – the Grand Trunk Road – would lose its importance because of sea transportation.

A study of geographic, economic and other factors proved that it was very improbable that the centre of gravity of population, economy and activity would shift towards the sea. The desert areas and the climate of this part of the Indian peninsula prevented this from occurring. Thus, the three forces that would shape the settlement of the future (that is, the universal city or ecumenopolis) – the existing centres of gravity, the main lines of transportation and aesthetic-environmental forces – were going to operate in favour of the internal lines of transportation, as a recent study we carried out for the United Nations on the Trans-Asian highway has proved (fig. 8).

The solution

A series of analytical studies carried out by Pakistani experts, with the assistance of their consultants, showed that the best geographic location for the capital would be the northern part of the Potwar Plateau (fig. 9), which has many advantages:

- it is on Asia's main highway;
- it is on the crossroads of this highway and another main one entering the hills, Kashmir and the mountainous area of Asia;
- it is in one of the highest levels of the West Pakistan plain with the best climate;
- it is in the most developed part of the country; and,
- it is in a central location of the universal city of Asia.

The topographic selection of the specific site of the city followed the same type of analysis as the geographic location, but in addition, it was also based on many factors related to the questions of 'how' and 'what', which in my presentation by necessity follow the question of 'where'.

On the basis of all these considerations the site finally se-

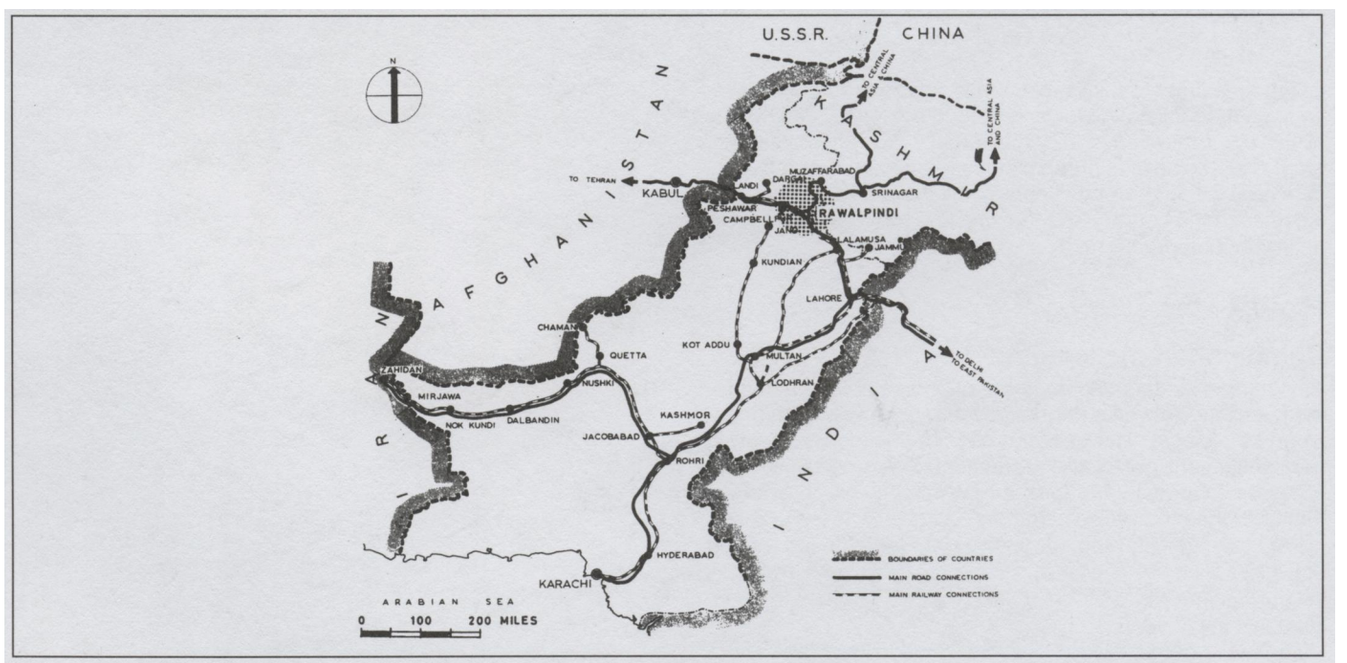

Fig. 9: Geographic location.

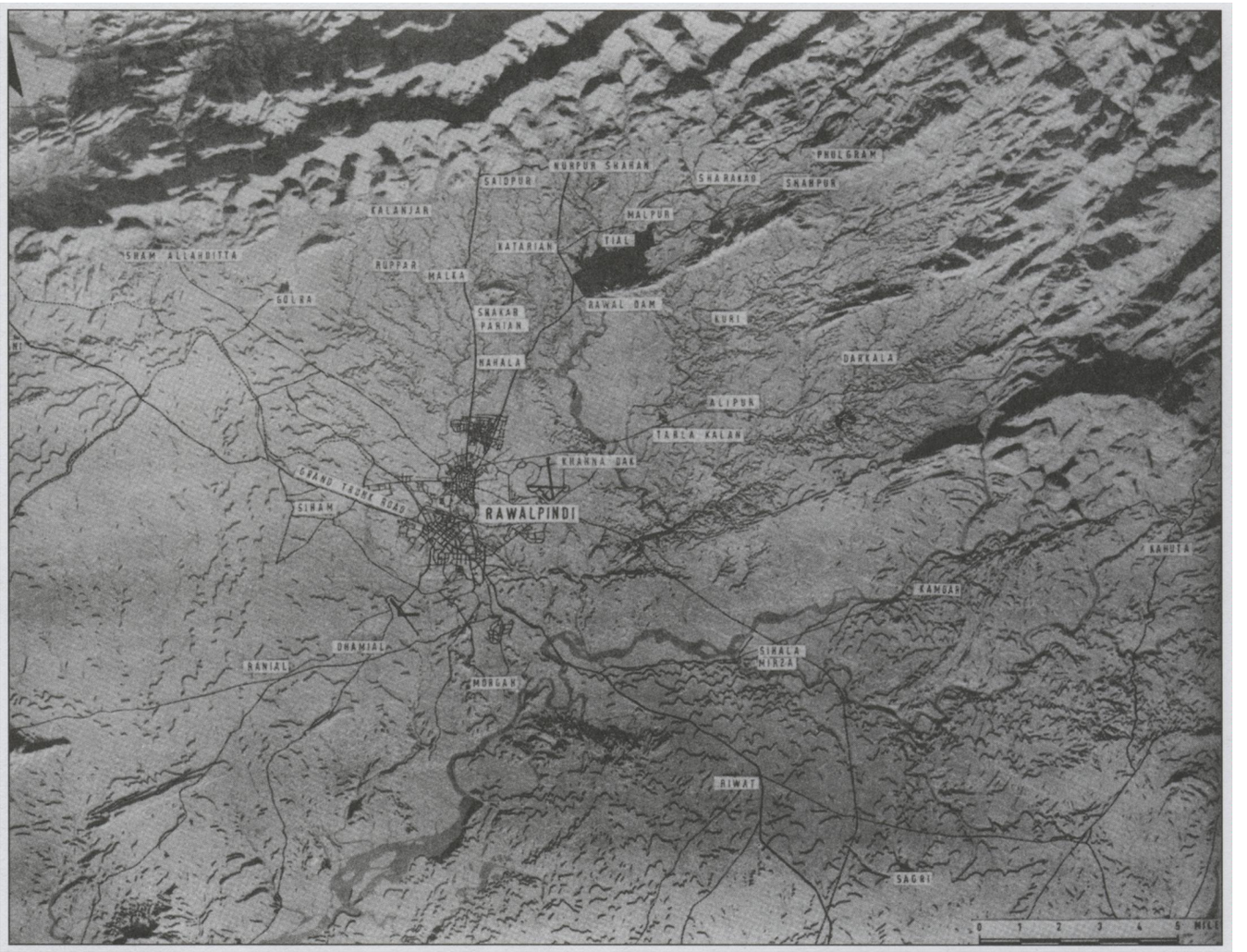

Fig. 10: Photograph of the model showing the topographic location of the metropolitan area (see also figs. 27a and 27b).

lected best (fig. 10) fulfills the combined requirements of setting in nature (climate, views, surroundings, etc.), technology of the city (transportation, water supply, sewage, drainage, etc.), and aesthetic cultural aspects – in a way which is economically within the limits imposed by the present and future incomes of the country and the city, and which allows for the necessity of a proper method of growth.

How?

Combination of elements

Any human settlement consists of five elements: nature, man, society, networks (roads, power, etc.) and shells (houses and buildings). The question now is, *how* do we create a new settlement out of these elements? We certainly must bring in new people and form a new society, but how do we deal with the other three elements?

We have the following alternatives of elements to be used (fig. 11):

- Nature alone
- Nature with networks
- Nature with shells
- Nature with networks and shells

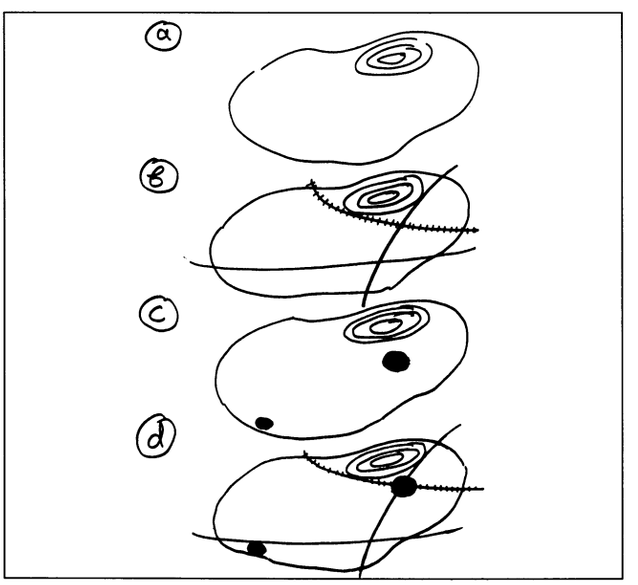

Fig. 11: Combination of elements.

The first of these solutions creates the least commitments for the new settlements, but is the most difficult and expensive. The last is the easiest and cheapest, and it is reasonable to work with in order to guarantee the maximum success, especially when dealing with the economies of developing countries.

The creation

Once we decide to use existing shells and networks, we must answer the question of how to conceive the inter-relationship of existing shells with the one we will create. There are several possibilities:

- Create the new settlement around the existing one. Here we would have all the weaknesses of an old settlement plus additional ones.
- Create the new settlement next to the existing one, in which case we would have the previous weaknesses to a lesser degree.
- Create the new settlement at such a distance that we can minimize the weaknesses while making the best use of the existing settlement and its networks for the creation of the new one.

It is obvious that we must try to implement the third of these solutions by selecting a location the right distance from the existing settlement (fig. 12).

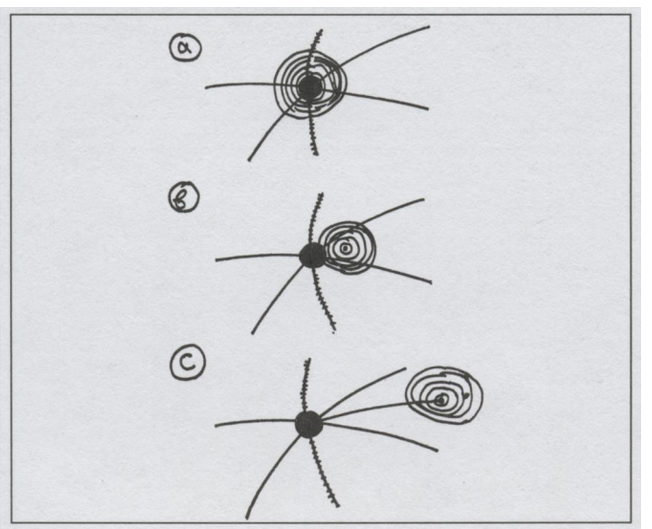

Fig. 12: The creation.

The growth

Once we have selected the proper distance for the creation of the new settlement, we can envisage its growth as a repetition of the growth process of certain newly-born animals.

First the newly-born completely depends on its mother: it is supported, guided and supplied with food by her (fig. 13a). Then its organs are developed but it is still guided and supplied by the parent organism (fig. 13b).

When the newly-born has its organs completely developed, it can cut the line connecting it with the parent organism (fig. 13c). But this does not happen in human settlements for here the process is, after a certain stage, reversed, and the newly-born supplies and guides the parent settlement (fig. 13d), until one day, by growing even more, it absorbs it within the broader organism; in other words, in the metropolitan area (fig. 13e).

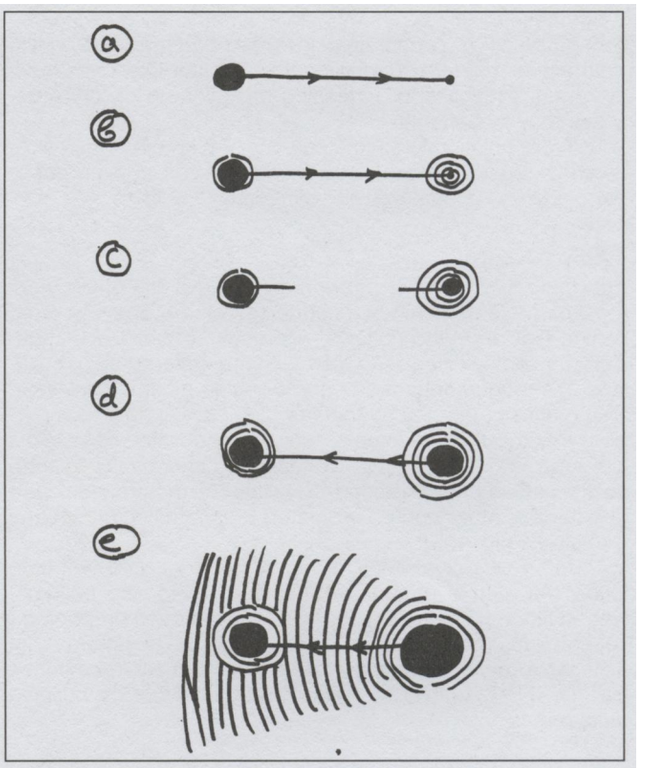

Fig. 13: The growth.

The formation

Speaking of growth I have illustrated my point by using concentric circles and assumed the settlement would grow like waves in the air or water. But this cannot happen. We always assume it as the most natural form because human settlements for thousands of years have grown in concentric circles (fig. 14a). But then they were small, with no more than a few hundred thousand people, and the rate of growth was slow.

Now settlements grow at a high speed with millions and tens of millions of people, and follow several lines of networks (fig. 14b). This has led some people to believe that we can have linear or star-like settlements (figs. 14c and 14d).

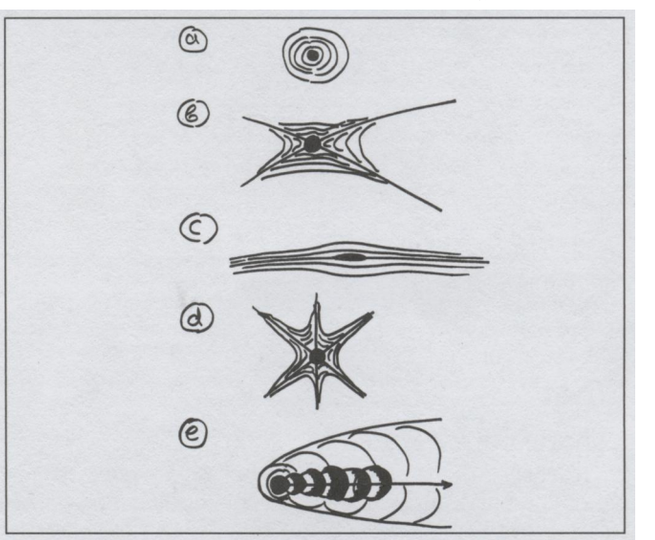

Fig. 14: The formation.

But these solutions cannot help a dynamically growing settlement, since all pressures are exercised on its centre, which is strangled to death. In addition this, the star-like forms have the great weakness of increasing the average distance between their inhabitants.

The only solution to save a growing settlement from a slow death is a unidirectional growth which leads to a parabolic form, an ideal dynamic city or dynapolis (fig. 14e).

The process

Assuming that we have answered the questions of creation, growth and formation, we must decide on the process: what comes first and what follows. A process often used, especially for capital cities, is to start with the governmental buildings, the monumental areas and the high income dwellings. This process (fig. 15a) cannot lead to success for it is imperative that the lower income groups – those which *can build* a city – are settled first. If this is overlooked, the result is a composite settlement consisting of a central monumental part and several other non-co-ordinated areas, including several with slums (fig. 15b).

There is only one way to avoid this danger, and that is to follow the natural process of first building for the builders, who will then build the city (fig. 15c). This means proper conception and creative control of the overall development – not a negative attitude towards real needs, but full recognition that we must start by covering needs, and not by building monuments.

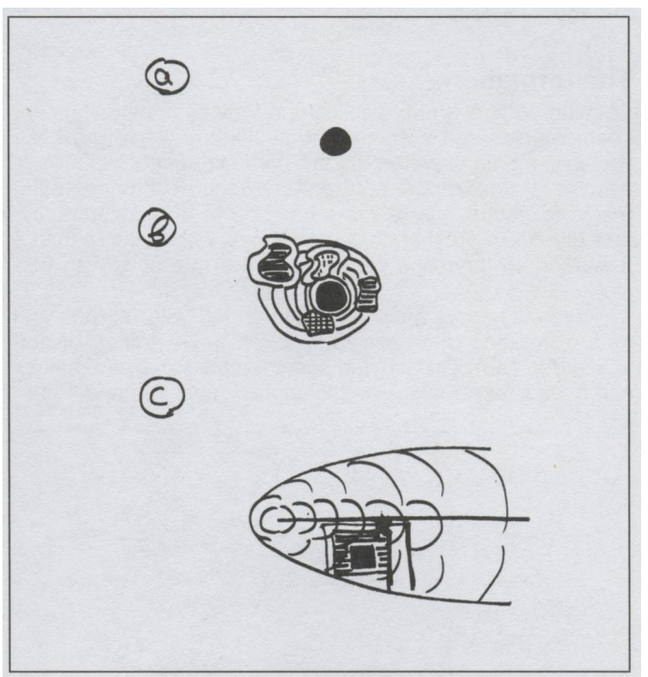

Fig. 15: The process.

one-way road in this multi-dimensional subject. Every single aspect of it is conditioned by many others. Thus I will present several aspects of the question of 'what' kind of a capital is to be created without implying that the answer to the first problem necessarily leads to the solution of the second, for on many occasions all these answers had to be given simultaneously.

Size

The basic question of size has upset many efforts and led many new or existing cities to failure during the last few generations, as people's minds stuck to the old notion of a static city and they tried to specify its size. This has meaning for a small agricultural settlement or for a remote market town in a non-developing area. But, in all normal cases in our era of development, no size can be fixed unless it is a prediction for a certain given moment in time.

We cannot condition the size of Islamabad. It started with one inhabitant, the first man employed to observe climatological data day and night; then it reached the thousands; it is increasing to hundreds of thousands and will reach the millions; it is going to be linked with other settlements into major groupings and then move towards a population of tens of millions.

The only reasonable action in relation to size is the definition of a curve of probable population growth, which again must be continuously revised in order to allow the capital city to adjust to an evolving humanity in the area of its greatest

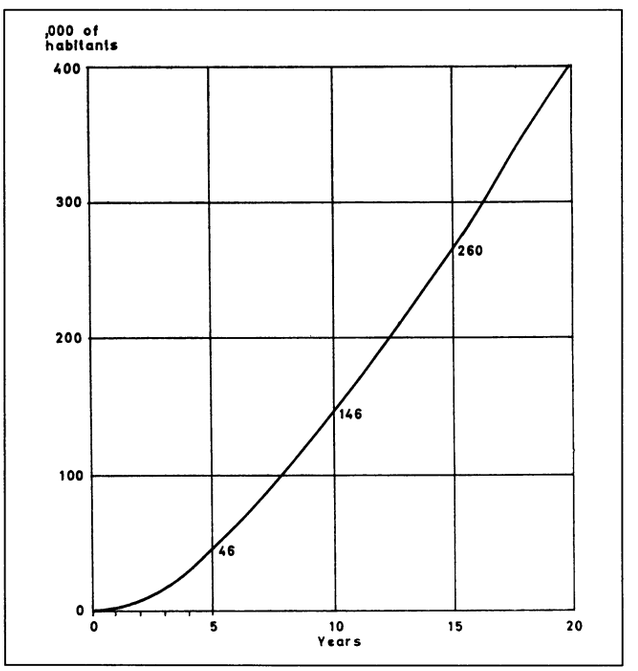

Fig. 16: Federal capital population increase.

What?

General considerations

We can now face the questions of 'what' we are going to create on the basis of our needs, the potentialities and possibilities presented by the previous analysis. As has already been explained, there is almost no chance of following a development.

The curve of reasonable growth which was first planned and is now being implemented is shown in fig. 16. On the basis of this population curve we proceed to calculate the land required (fig. 17) and the corresponding investment (fig. 18). In any type of phenomena we cannot fix static dimensions but only curves of growth.

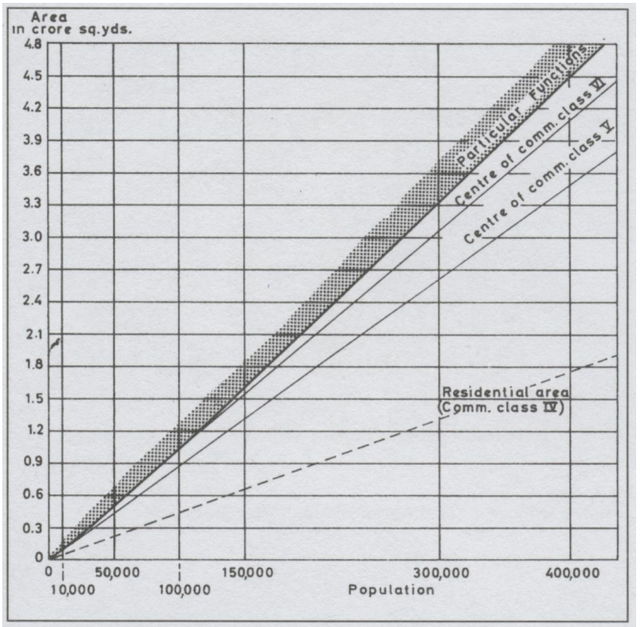

Fig. 17: Land required according to population size.

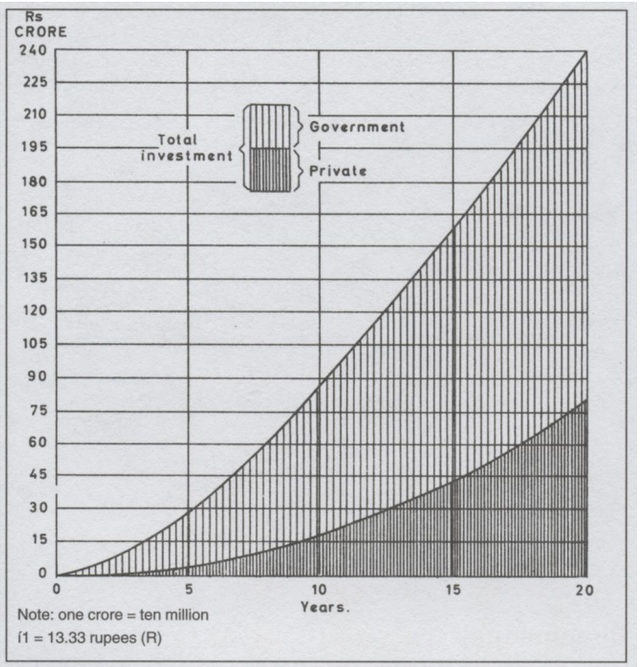

Fig. 18: Government and private investment.

Character

By explaining the proper attitude to the question of size, I have also indirectly answered the question of character. As the capital is going to grow continuously, it cannot be static, but must be dynamic, a *dynapolis* (fig. 19a).

Because it will be created near an existing city (fig. 12), it will be a *two-nuclei* dynapolis (fig. 19b), and because growth will be guided and uni-directional (fig. 14), the two nuclei will spread in space and form a dynamic metropolis (fig. 19c).

Thus Islamabad begins as a dynapolis fed by another nearby city, the city of Rawalpindi, will continue as a double dynapolis, will then merge with Rawalpindi into a dynamic metropolis, which will again become a part of the megalopolis along the Grand Trunk Road on the basis of the theory

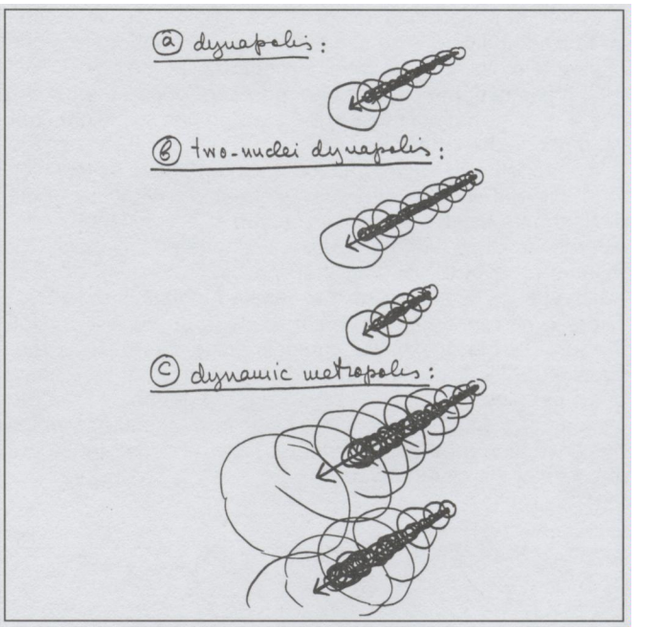

Fig. 19: Towards a dynamic metropolis.

which explains how our major settlements are led towards ecumenopolis.

We are now witnessing only the beginning of a process, and this fact conditions our role: which is to help this process to develop properly.

Basic form

The character of the capital also gives the first notion of its form. In dealing with a two-nuclei metropolis, we cannot envisage a linear form (fig. 20a); we will have to work with forms whose dimensions in two directions crossing each other at a right angle would not differ very much. By defining the character we can be led to the basic form of a concentric city with

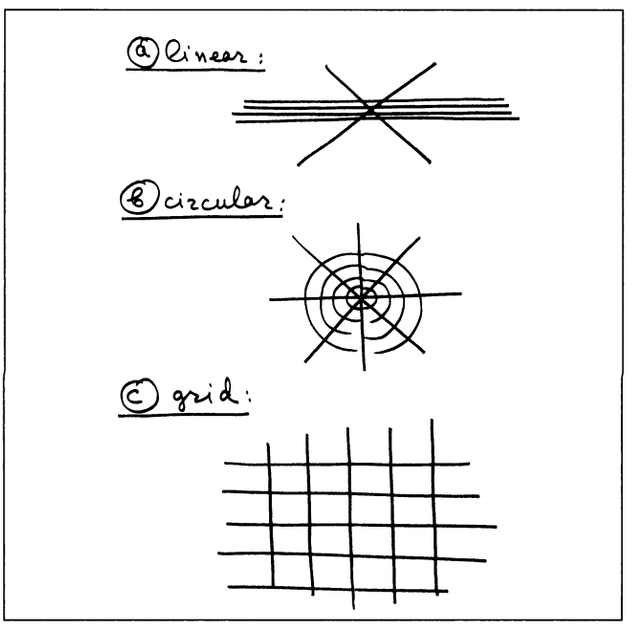

Fig. 20: Basic form.

a pattern of radial and circular streets (fig. 20b) – very similar to a naturally growing settlement – or to a pattern of a grid of streets crossing each other at right angles (fig. 20c).

Of these two, the circular one must be excluded, for it can fit a static city, but definitely not a growing one – and our capital must be the latter (fig. 14).

We are left with a grid, and the question arises as to which form this grid should have – the elongated city blocks of the past, square blocks, straight or curved streets? Various considerations show that the traditional elongated city block is a rational product of the fact that the block consists of plots which are in two rows of the same orientation (fig. 21a). There is no reason for the main roads to be curved, unless the form of the landscape compels us to do so. Only mechanical traffic leads to this solution, which may look naive but is genuine (fig. 21b). Thus we are led not only to the basic form of a grid, but also to the basic form of squares which by conception (of a grid of squares) are all equal; these are the cells of the city (fig. 21c).

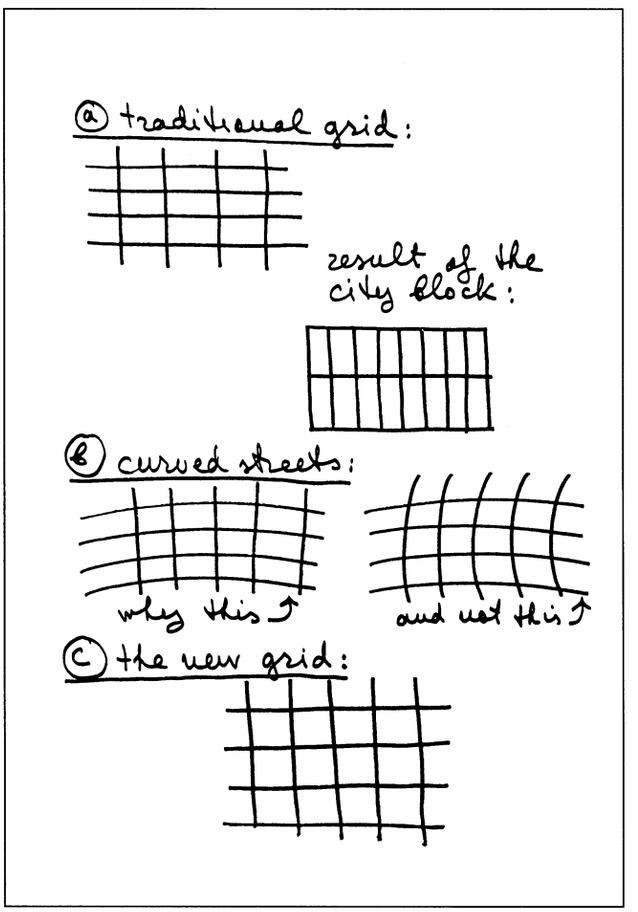

Fig. 21: The form of the grid.

And now back to history. It is here in the Indus basin that one of the first cities of man was created: Mohenjo Daro, with a typical rectangular grid (fig. 22a); and here we have the Moghul architecture – again based on a two-axial system (fig. 22b). Both present-day requirements and the cities of the past lead to the same conclusion: full respect for a geometric grid.

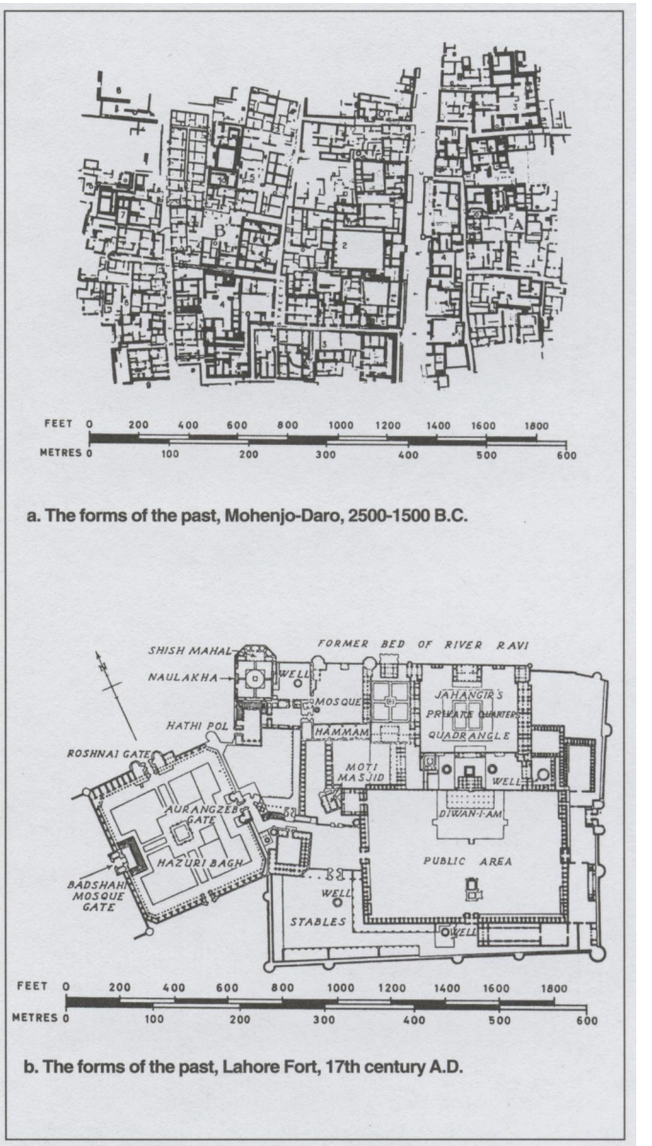

Fig. 22: Historic cases with full respect for a geometric grid.

Dimensions

Once we have defined the form of the grid, we must define its dimensions. This means defining the overall dimensions and the dimensions of the basic square – the modulus – which by continuous repetition will form the whole.

The overall dimensions are defined by the size of the city and the formation of the landscape; we do not know the former, but we do know that very soon the population will be in the hundreds of thousands, and we expect the metropolitan area to have reached the million mark within one generation's time.

We must conceive Islamabad as a dynamically growing settlement which will eventually have several million people. Its first planning phase should take into account a population of around two million people, a figure which could be reached in this century. Such a figure, and the one million forecast within a generation, show that the limitations of the overall dimensions will be drawn by the landscape. Actually, the phys-

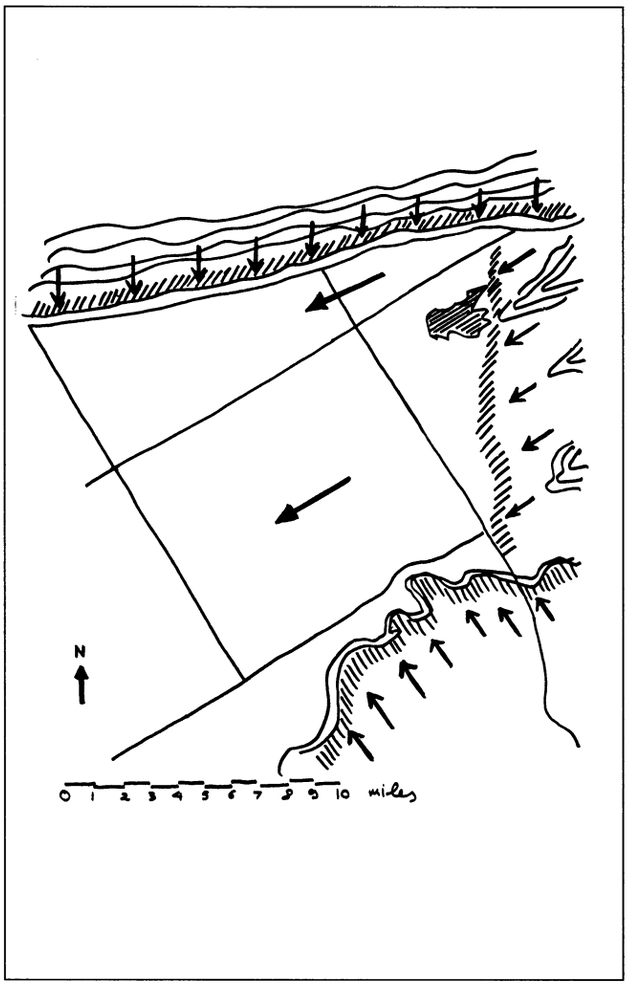

Fig. 23: Dimensions of landscape and metropolitan area.

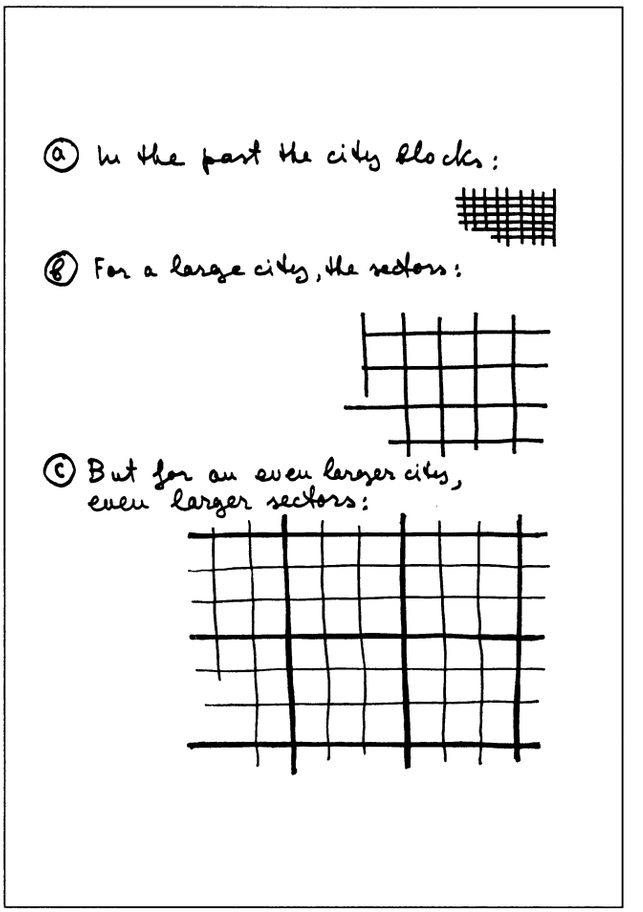

Fig. 24: The moduli of the grid.

ical dimensions of Islamabad are defined by the container – closed to the North, the East and the South-East, and open to the South-West; this is ideal for a dynamic settlement, which requires uni-directional growth (fig. 23).

Given this container for the beginning of the life of our urban area, we must define its modulus. This is related to two forces, external and internal. The external forces are defined by the size of the whole. Given the fact that the size will be in the hundreds of thousands at the outset, we know that the city should be divided not into city blocks (fig. 24a), which are the moduli of the pedestrian city with several thousand people, but into sectors of such a size that the urban area can contain dozens of them (fig. 24b). But when the city reaches the million mark, even these sectors will be small as subdivisions, and will have to be united by groups into major moduli (fig. 24c).

Another external force is afforded by the kind of mechanical transportation we use: we know that the distance between the lines of the grid depend on their accessibility, the speed allowed on them, etc. Taking all these factors into consideration, we are led to the conclusion that we need a grid which can form squares of different dimensions, depending on how many moduli we unite (fig. 25). The basic question, therefore, is the size of the smallest square of the grid.

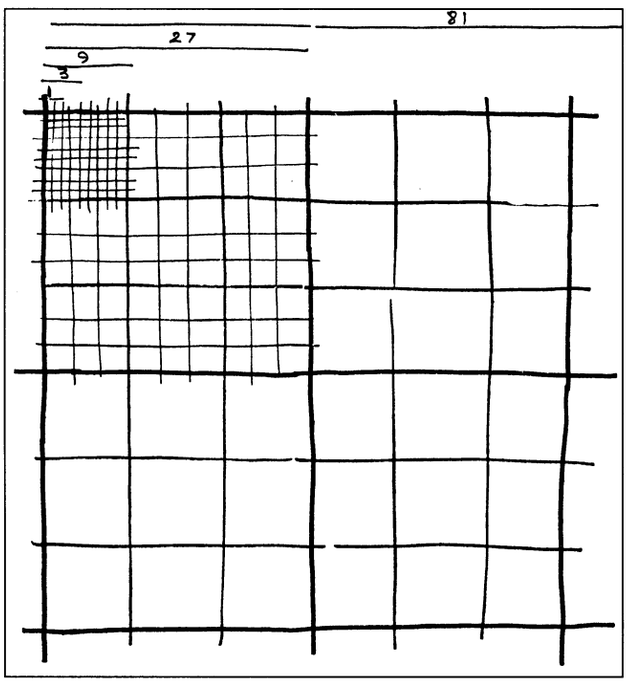

Fig. 25: A multimoduli grid.

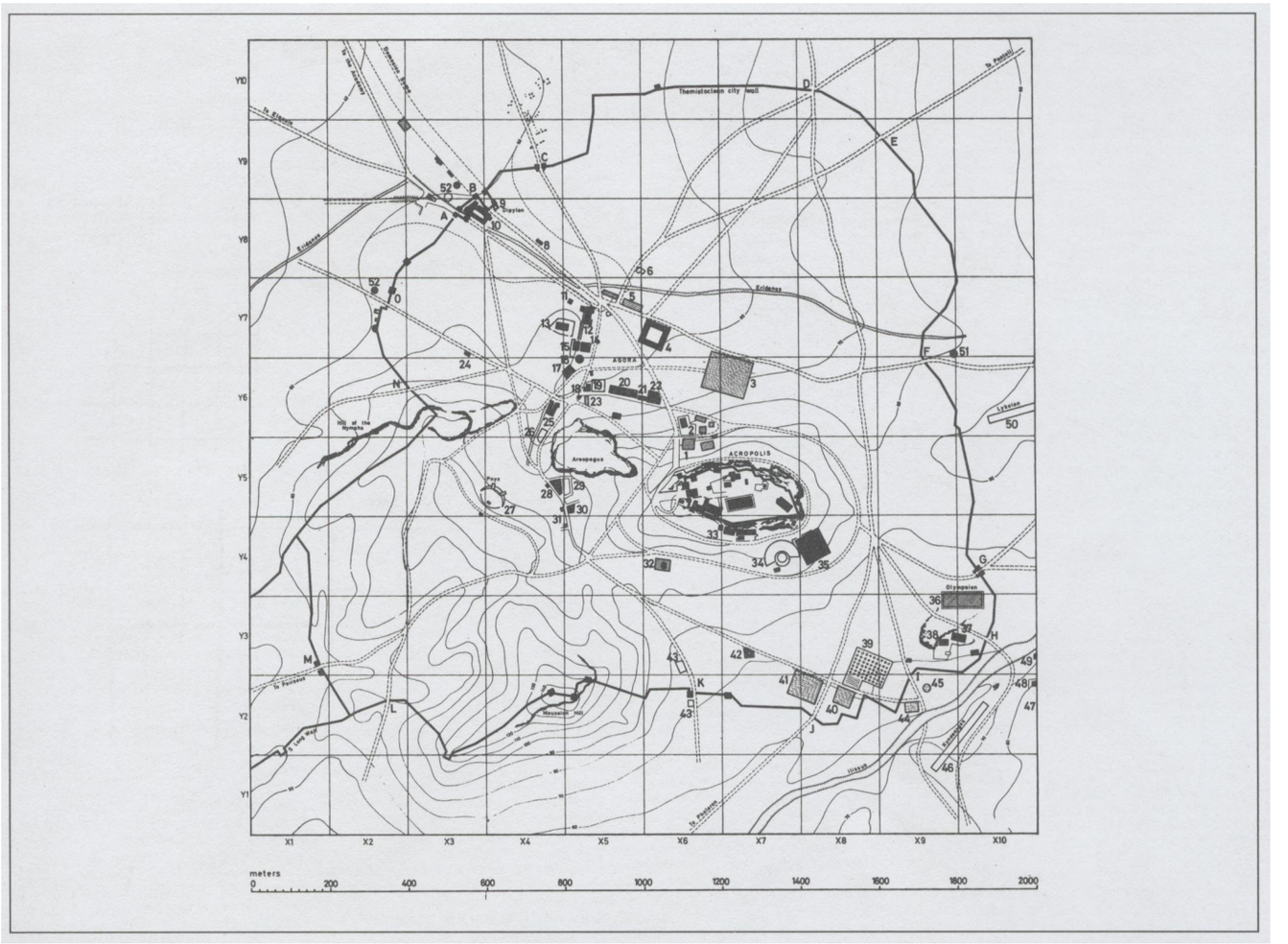

Fig. 26a: Athens.

Fig. 26b: Rawalpindi.

This can be defined by the internal forces. Unlike the external forces, which are defined by machines, the internal forces are defined by man. And unlike the external froces, whose dimensions we have no precedent for, we have thousands of examples of internal forces: almost all cities that existed up to the eighteenth century. The lesson drawn from them is quite clear. The normal city, based solely on man's natural force, is a city whose dimensions are such that man can reach the centre without walking longer than ten minutes. If we go as far back as the ancient Greek city (fig. 26a) or to the nearest city in the neighbourhood of Islamabad (that is, to Rawalpindi, fig. 26b), the conclusion is the same – the longest distance is no more than 2000 yards or about 2000 meters. This is the modulus we are looking for, the square derived from the human scale (which now has some content) and from human tradition (five or six thousand years old) that is a square of about 2000 by 2000 yards.

On the basis of this we can now build our entire grid (figs. 27 and 28); a grid which, although consisting of static cells based on the human scale, can develop dynamically and unhindered into the future, into space and time.

In such a dynamic city we do not have a conflict of man and machine, we do not run the danger of moving in the vicious circle of the old city devouring its own self in order to grow (figs. 29-36).

Fig. 27a: The metropolitan area of Islamabad.

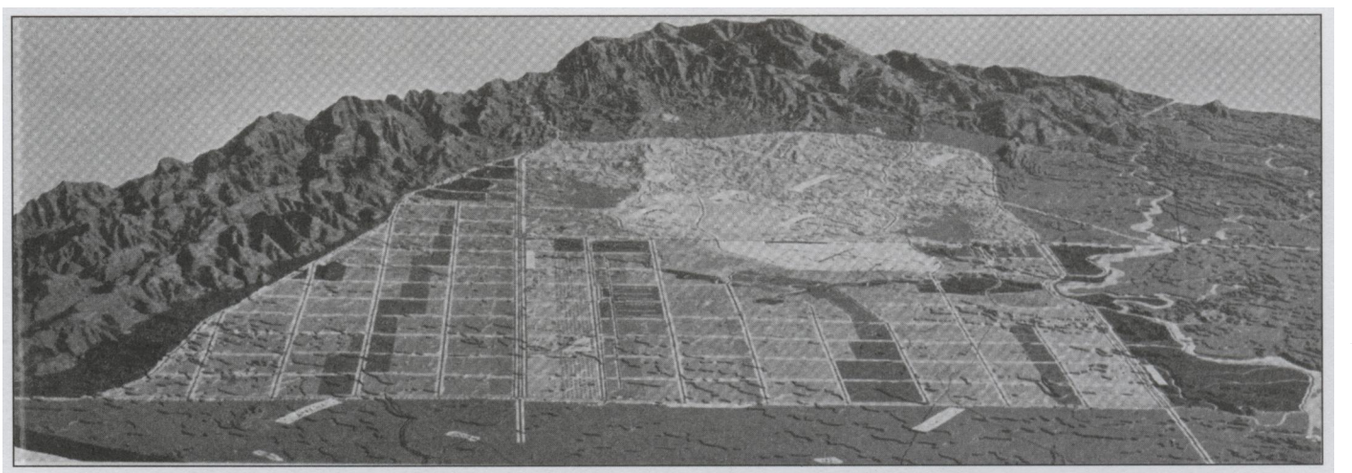

Fig. 27b: General view of the metropolitan area towards the east.

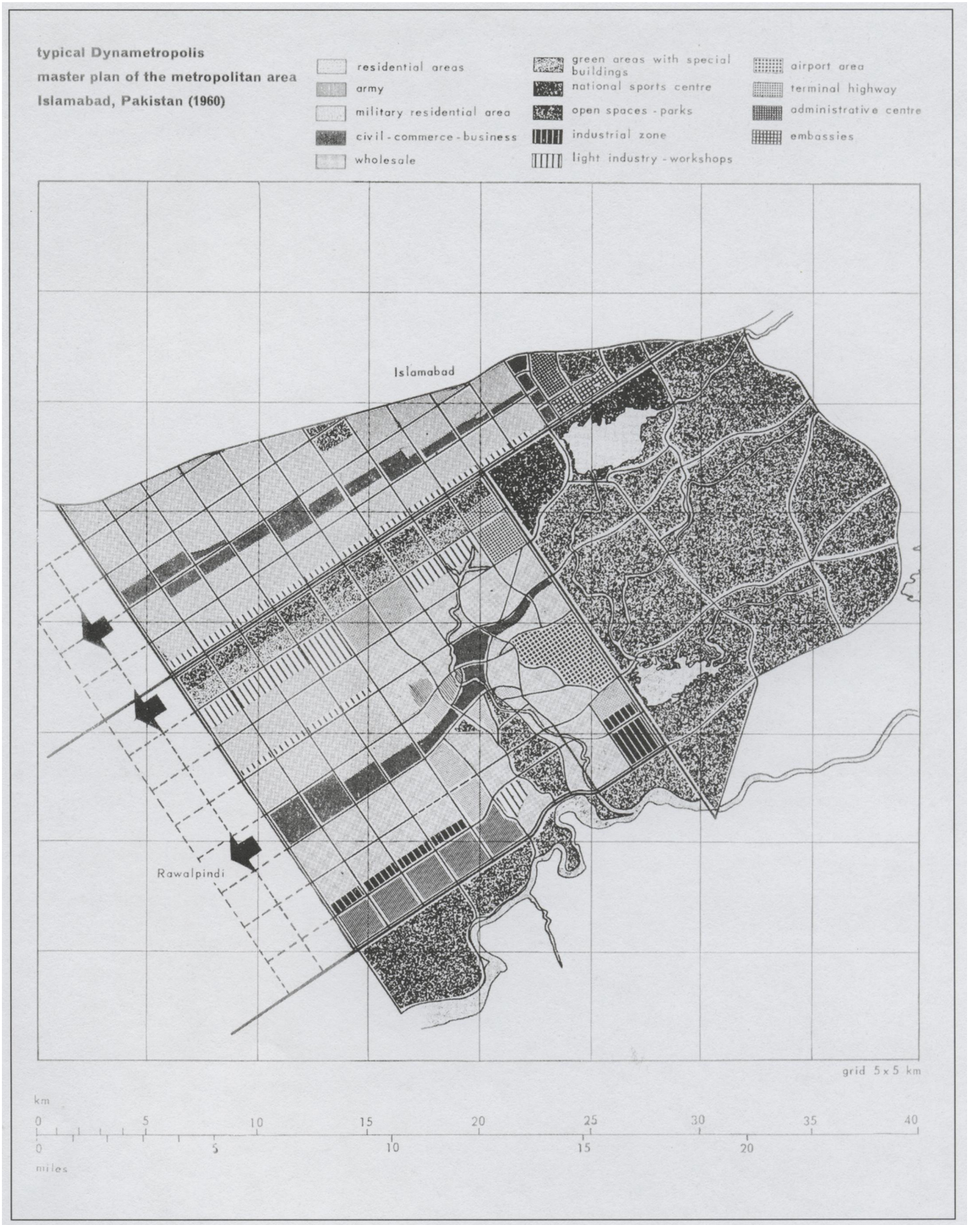

Fig. 28: The metropolitan area of Islamabad.

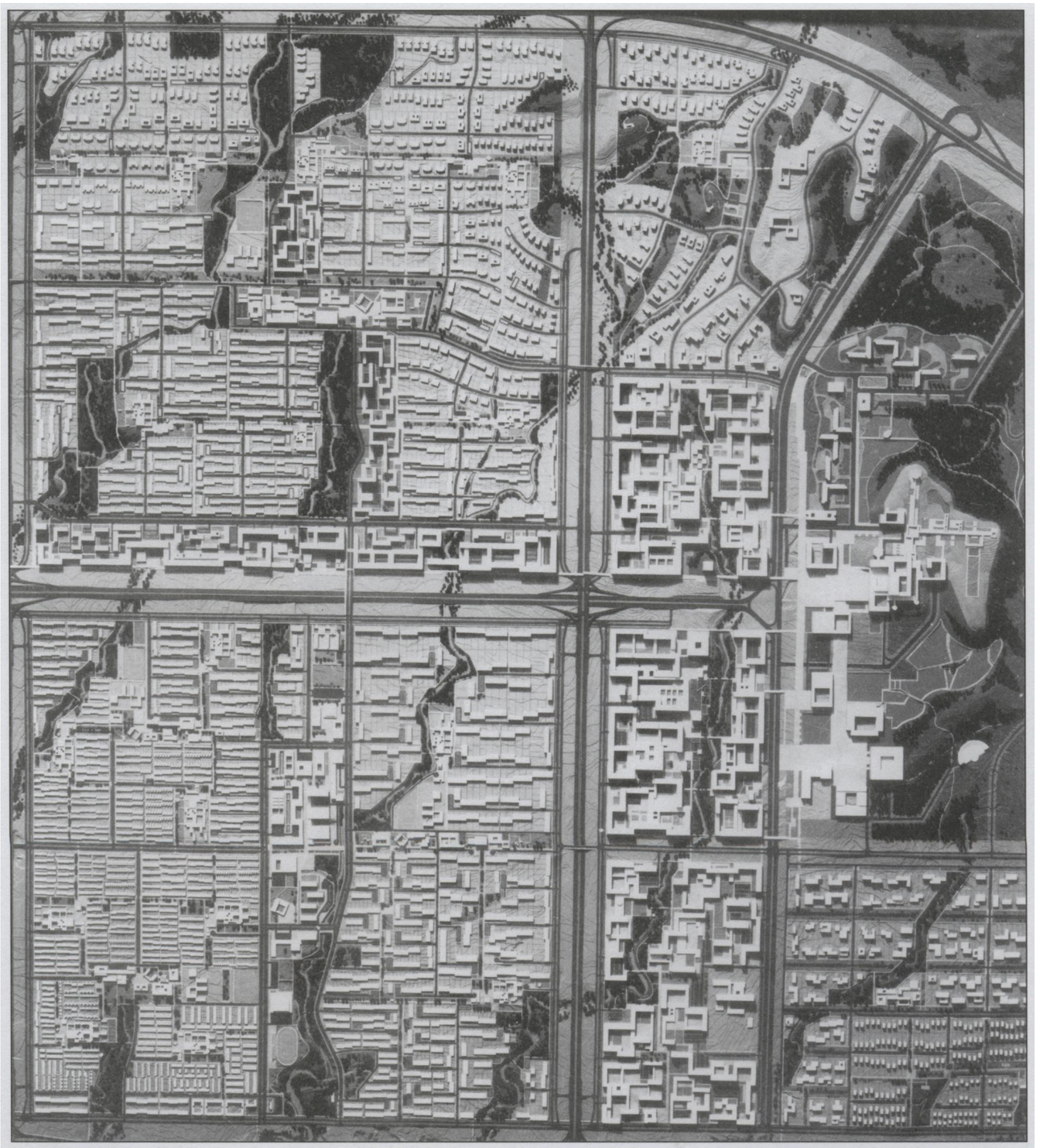

Fig. 29: Model of the central part of Islamabad consisting of the capital area (right centre) and the first two normal sectors-moduli (community class V).

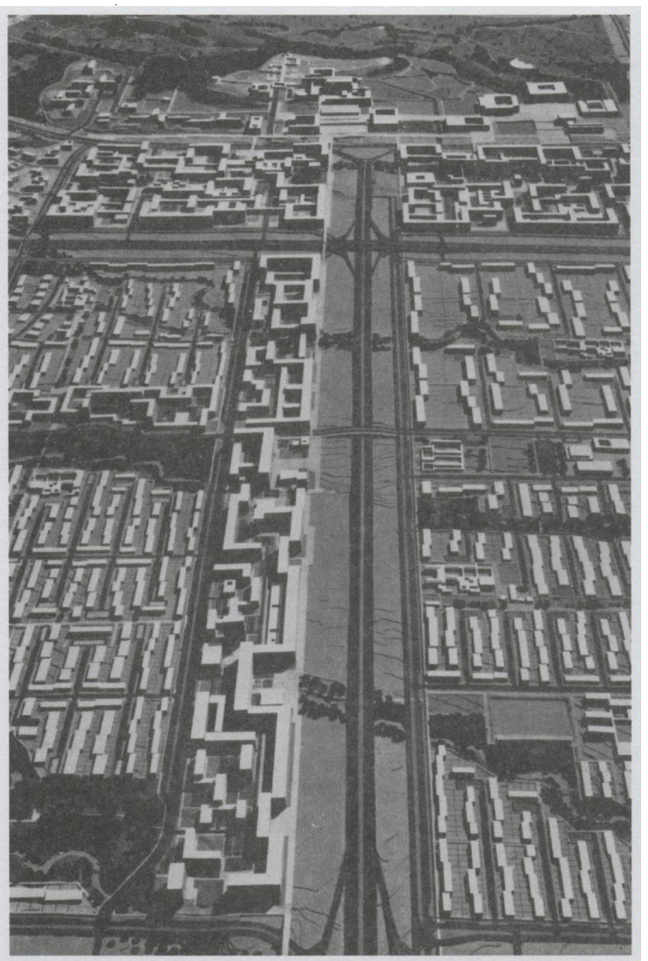

Fig. 30: View of model along Capitol Avenue with the administrative centre in the background and the civic centre to the left of the avenue.

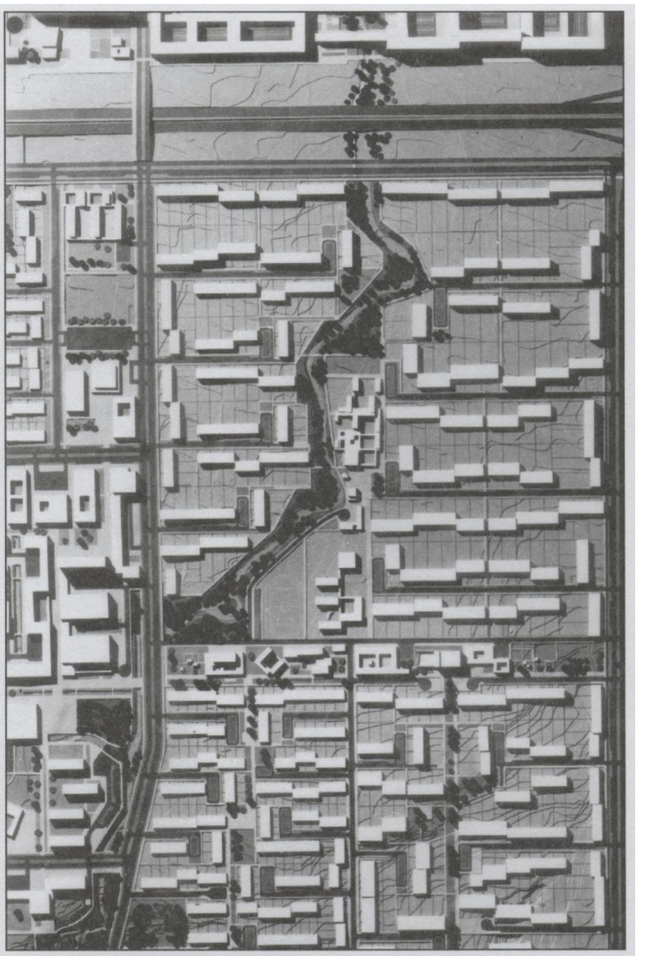

Fig. 31: Model of a community class sector G6.

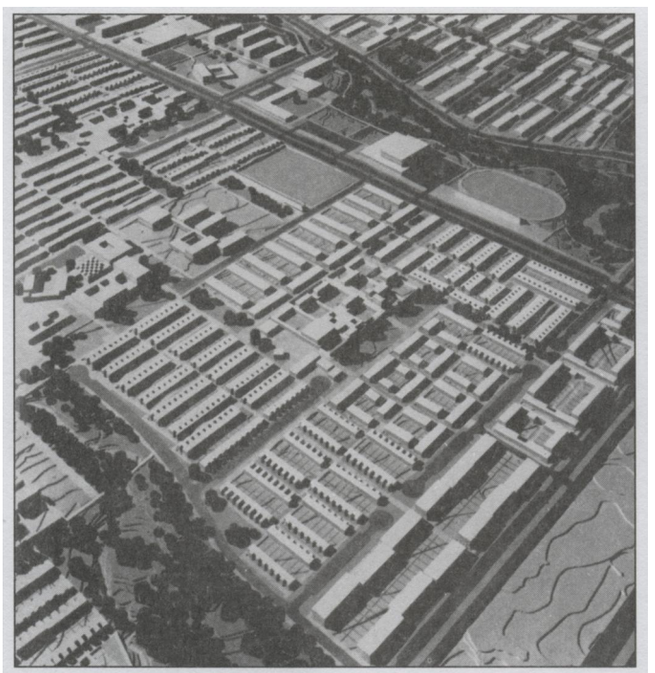

Fig. 32: General view of sub-sector G6-14.

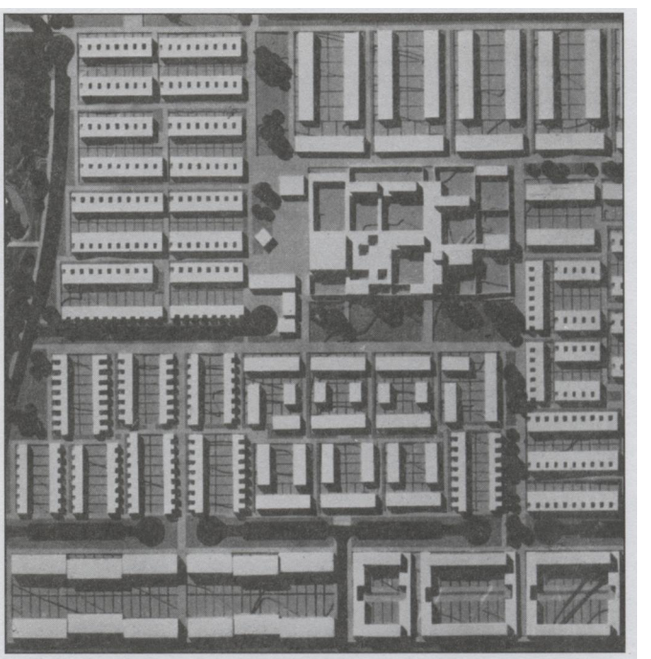

Fig. 33: Model of sub-sector G6-14.

Fig. 34: Aerial photograph of two communities class V (Sectors G6-1 and G6-2).

Fig. 35: First community of lower income housing under construction.

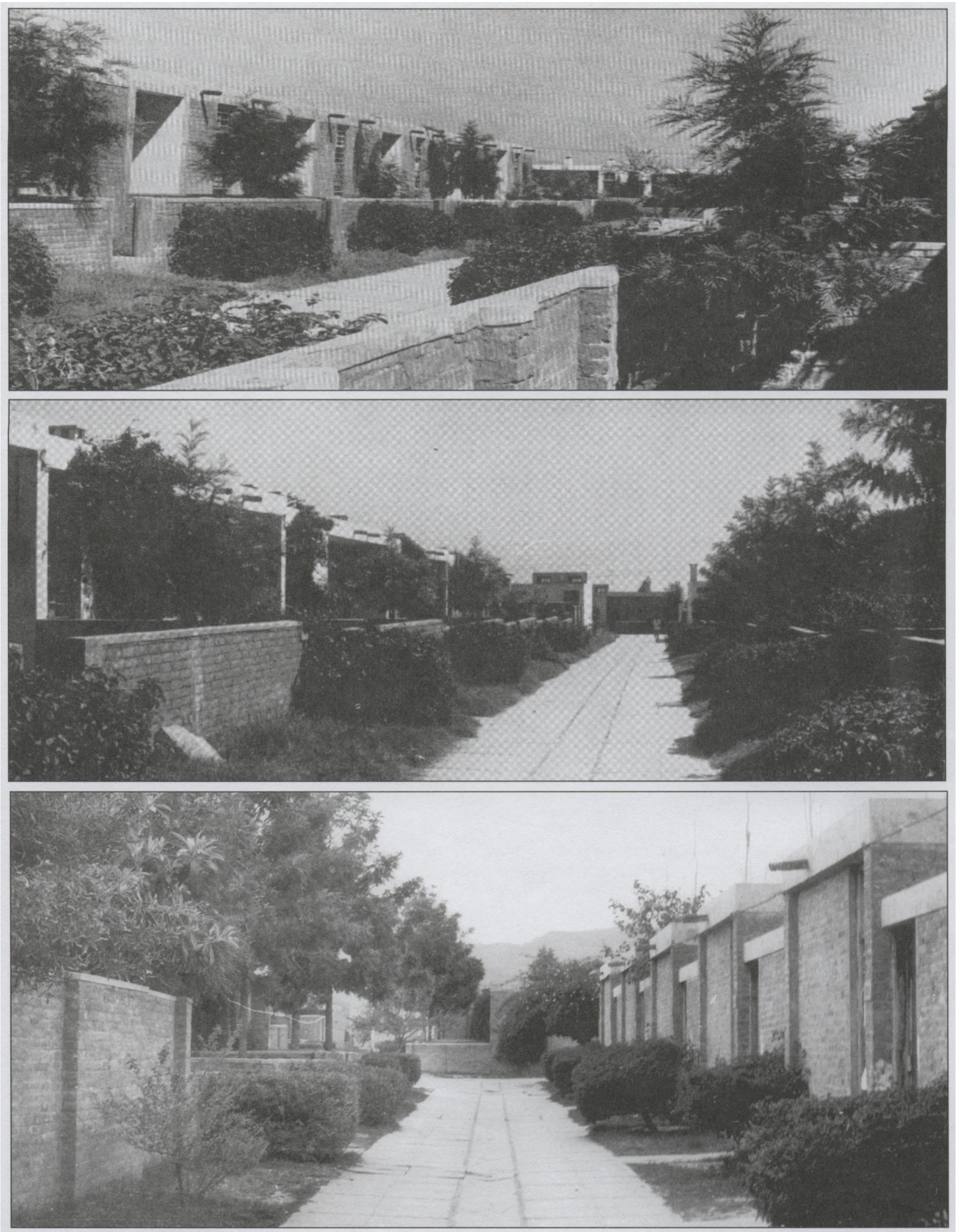

Fig. 36: Streets in communities for various income housing which are already inhabited.