

## Articles

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### Islamabad. The Creation of a New Capital

#### Introduction

#### THE SUBJECT

My subject is the problems inherent in the creation of a new capital city and their solutions. My analysis and presentation will be as of a general case of interest to all of us, and by way of illustration I shall 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 question should be examined as a case of more general interest, because in the field of human settlements we are inclined to attach too much importance to some existing example and tend to imitate it, whereas what is important are the underlying principles that have led to a specific solution - a solution in some ways coincidental, as it represents the application of principles of general validity to specific (coincidental) features of nature.

I am taking a specific example also so as 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 there is always the problem of how to present it; how to give a complete and systematic picture of it.

We can present a settlement through its plans, in which case we over-emphasize its two main dimensions and seldom its third, that of height. A much better presentation was that of Medieval and Renaissance cities or of Moghul monuments through three-dimensional plans, either as perspectives of the settlements or as geometric two-dimensional projection of the third dimension on the same plan. But even then what is missed out completely is the fourth dimension - that of time - which is inherent in 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 other aspects: 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 impossible such a task is here. Apart from that, using the method I suggested can be boring even with a two-dimensional subject; when dealing with as many dimensions as those of a new settlement, such use may be indispensable for proper analysis, but is impossible to present.

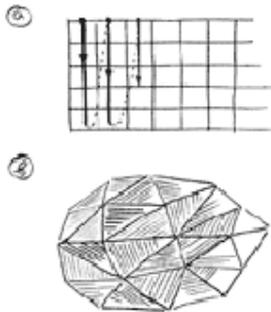


Fig. 1. A Multi-Dimensional Subject

## OUTLINE

As I cannot show all the dimensions or aspects of our subject, I have selected some of the most important ones and presented them in text (one-dimensionally) with plans, drawings and photographs (two and three-dimensional illustrations). I shall take the straightforward course of answering the practical questions:

Why?  
Where?  
How?  
What?

and follow this by presenting the city of Islamabad as it was conceived, designed, and is now entering the phase of construction.

As I proceed I shall mention only certain considerations and just a few dimensions out of the multitude of factors that enter the game at every moment, and give the result in some key plans and photographs in the last part of this article.

## Why?

## GENERAL CONSIDERATIONS

Many countries that have recently become independent have no capital cities, either because the capital now lies beyond their borders (as was the case of Delhi, which became the capital of India), or because there never was a

major city in its territory with the necessary facilities or proper location. This was the case of several regions, such as the Punjab, most of which became part of Pakistan, thus forcing India to create Chandigarh as a regional capital.

In such circumstances, countries or regions must create an entirely new capital city to house their central functions. In the case of Pakistan the question was whether the city of Karachi was the best solution for the capital, or whether a new capital city should be created.

The most important thing to be asked then is: why does the country need a new capital city, and why is the existing one 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 shall outline 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. Yet it happens that a new city often has to be created exactly because of economic considerations.

The functions of the capital city are determined by the size and organization of the country. A capital means so many square feet of office buildings, so many square feet residential space for the various social 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 only has cities that, even though situated in proper locations, lack the necessary facilities, the question can be answered only by making detailed 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 need for investing in buildings, residences and facilities, should these be added to an existing city, or set up in a new area? Investigation showed that there were two main economic arguments in favor of a new city:

a. If such investment were to be made within the existing city, about fifty per cent of it would be for the acquisition of land, widening of streets, and remodeling of facilities to serve the new functions. This meant that the capital expenditure per square foot of administrative building would be doubled.

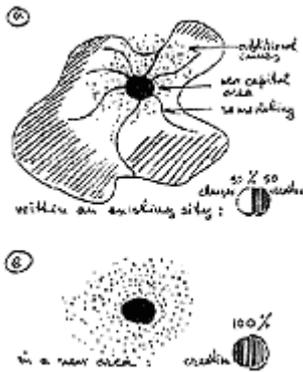


Fig. 2. Economic alternatives

b. If the investment were to be made in a new, non-developed area, the increased land value of the surrounding area would accrue 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 an entirely new capital.(Fig.2)

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

The capital city exercises great influence on the entire country. Its inhabitants should not, therefore, belong to only one social group (economic, political, ethnic, etc), but to as many groups as possible - in ratios corresponding as closely as feasible to the national ratios - so that the population of the capital is the best possible representation of the country or region as a whole Fig. 3).



Fig. 3. Social structures

Since existing cities do not well represent the nation as a whole unless they happen to have served as capitals for extensive periods, we must conclude that from the social point of view a new capital city is imperative.

### TECHNOLOGICAL AND CULTURAL ASPECTS

Existing cities are old cities and as such, both from the technological and cultural point of view, do not represent the future but the past. If their 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 an asset. Seen from this angle, the creation of a capital for a newly independent country must either take place in an existing city (with a valuable past and ample buildings and facilities) or, if this is not the case (and it was not with any city in Pakistan), it is better for it to be set up without any commitments to the past. If it cannot incorporate 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 in national buildings and corresponding facilities it represents the greatest ekistic investment in economic or cultural terms - it is wise to think carefully also about its ekistic future. Don't we do the same when we build a great thermo-electric plant? We do not simply add it on to an existing antiquated power station.



Fig. 4. Towards ecumenopolis

In this respect there are certain trends that are unavoidable. First, the population will continue to increase; and secondly, we must expect this additional population to become almost entirely urban – in other words, there will be an unprecedented increase in the urban population. Countries such as Pakistan are now entering the era of urbanization. We must expect their cities to grow dynamically and many a city to become a metropolis (**Fig. 4a**), then part of a megalopolis (**Fig. 4b**), until it is 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**).

These great urban organisms will never function properly unless we create the proper nuclei for them, and we cannot leave it to 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.

### GENERAL CONSIDERATIONS

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In such circumstances, countries or regions must create an entirely new capital city to house their central functions. In the case of Pakistan the question was whether the city of Karachi was the best solution for the capital, or whether a new capital city should be created.

The most important thing to be asked then is: why does the country need a new capital city, and why is the existing one 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 shall outline below.

### Where?

### CENTERS OF GRAVITY

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

But even if the area is irregular, its center of gravity can



Fig. 5. Centres of gravity of an isolated state

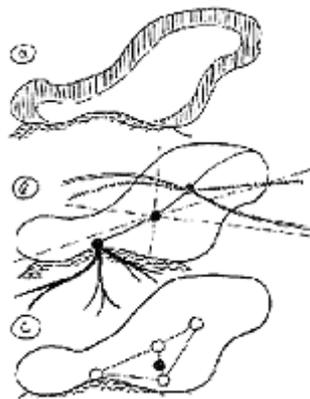


Fig. 6. Centres of gravity of a part of the world

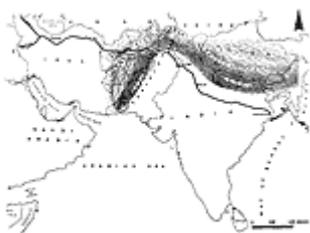
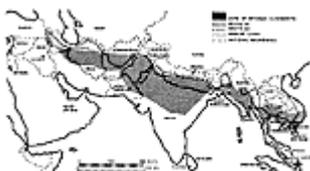


Fig. 7. The capitals of the area



be found (Fig. 5b). However, we cannot assume a uniformity of area. Where this does not obtain, we must decide whether we want the center of gravity to be that of the fertile land (Fig. 5e) or whether we want all factors to be considered as they are now or as they are going to be after due development (). We will then want to find the centers of gravity of all these factors, and finally to decide on coefficients to balance all possible factors and find the ultimate center of gravity (Fig. 5g)

Then we discover that during this whole analysis we have been thinking in terms of an isolated state! To see it as 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 center 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 a synthesis of these views with those derived from the considerations of an isolated state and reach different conclusions again(Fig. 6c).

### THE PAST

Such difficulties force us to try to discover other ways of seeing our problem more clearly and facilitating its solution. One possibility is to consider the history of the area. If the present situation is not so very different (in terms of inhabited areas, economy, transportation, population, etc.) from the past, a study of where successful capital cities have existed before can lead to useful conclusions.

In the case of Islamabad it was quite clear that there was only one belt of land on which most of the successful urban centers had existed for centuries, and this was along the Grand Trunk Road of the Indian peninsula. Teheran, Kabul, 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).

### THE FUTURE

It will be misleading, however, to restrict our considerations to the past, they must also be projected 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

- is likely to lose its importance because of sea transportation.

A study of geographic, economic and other factors showed that it was very improbable that the center of gravity of population, economy, or activity would shift towards the sea. The desert areas and the climate of this part of the

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



Fig. 9. Geographic location

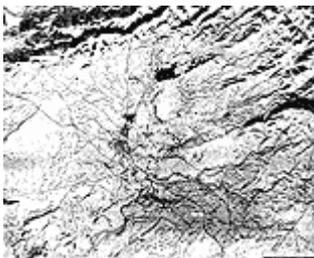


Fig. 10. Photograph of the model showing the topographic location of the metropolitan area.(see also Fig. 27)

Indian peninsula would prevent this. The three forces that will shape the settlements of the future (the universal city or ecumenopolis) – i.e. the existing centers of gravity, the main lines of transportation, and aesthetic-environmental forces - are operating in favor of the internal lines of transportation, as a recent study we carried out for the United Nations on the Trans-Asian highway has demonstrated (Fig. 8).

## THE SOLUTION

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

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

The topographic selection of the specific site of the capital followed the same type of analysis as for its geographic location, but in addition it was also based on many factors related to the 'how' and 'what' of the matter.

On the basis of all of these considerations together, the site finally selected (Fig. 10) best fulfilled the combined requirements of natural setting (climate, views, surroundings, etc), technology of the city (transportation, water supply, sewage, drainage, etc), and aesthetic/cultural aspects, and in a way that is economically within the limits imposed by the present and future financial resources of the country and the city, as well as allowing for 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 to 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 can use the following combination of elements (Fig. 11):

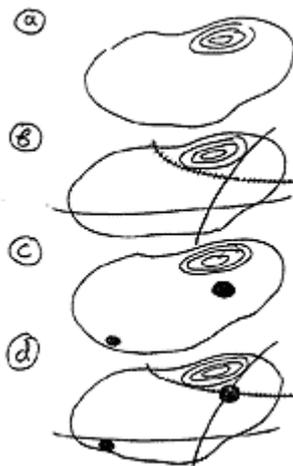


Fig. 11. Combination of elements

- a. Nature alone
- b. Nature with networks
- c. Nature with shells
- d. Nature with networks and shells

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 maximum success, especially when dealing with the economies of developing countries.

### THE FORMATION

Speaking of growth, I have illustrated my point by using concentric circles and assumed that the settlement would expand like waves in air or water. But this is not going to 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 just a few hundred thousand people, and the rate of growth was slow.

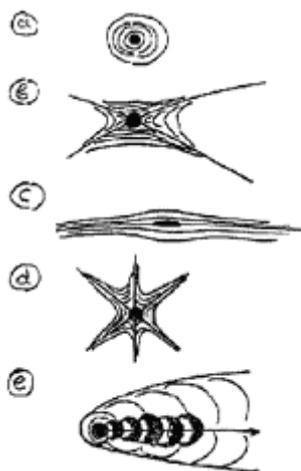


Fig. 14. The formation

Now settlements grow at high speed into populations of 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).

This cannot, however, be beneficial for a dynamically growing settlement, since it puts all pressures on the center, which is strangled to death. Moreover, these star-like forms have the great disadvantage of increasing the average distance between the inhabitants.

The only solution to save a growing settlement from a slow death is a uni-directional 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-coordinated areas, including several with slums (Fig. 15b).

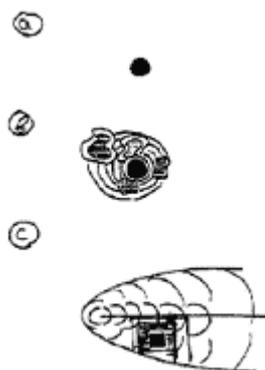


Fig. 15. The process

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 toward real needs, but full recognition that we must start by covering needs, and not by building monuments.

**What?**

**GENERAL CONSIDERATIONS**

We can now face the questions of what we are going to create on the basis of our needs, potentialities and possibilities presented by the previous analysis. As has already been explained, there is almost no chance of following a 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 consideration of size has negatively affected many efforts at town planning and many new or existing cities to fail in the last few generations, because people's minds stuck to the old notion of a static city with a specific size. While this has meaning for a small agricultural settlement or a remote market town in a non-developing area, it is normal in an era for development that size cannot be fixed (unless it is a prediction for a certain given moment in time).

We cannot decide 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 now increasing to hundreds of thousands and will reach the millions; it will be linked with other settlements into major groupings, and then move towards a population of tens of millions.

The only reasonable prediction as to size is the definition of a curve of probable population growth. But this too must be continuously revised so as to allow the capital city to adjust to an evolving humanity in the area of its greatest 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 proceeded to calculate the land required (Fig. 17) and the corresponding investment (Fig. 18). In no type of phenomena is it possible to fix static dimensions, but only curves of

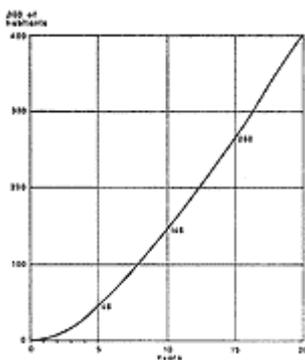


Fig. 16. Federal capital population increase

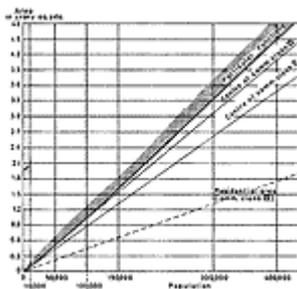


Fig. 17. Land required according to population size

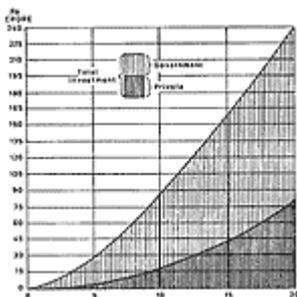


Fig. 18. Government and private investment (Note: one crore = ten million, 1 English pound = 13.33 rupees)

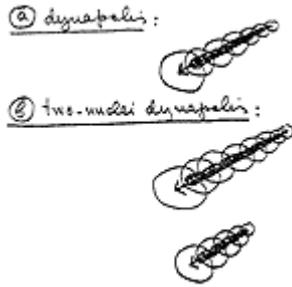


Fig. 19. Towards a dynamic metropolis

growth.

## CHARACTER

Explaining the proper attitude to the question of size has 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; it will continue as a double dynapolis; and will then merge with Rawalpindi into one dynamic metropolis, which in time will become part of the megalopolis along the Grand Trunk Road, on the basis of the theory which explains how our major settlements lead towards the ecumenopolis

We are now witnessing the very beginning of this process, and this fact must influence our role: 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 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

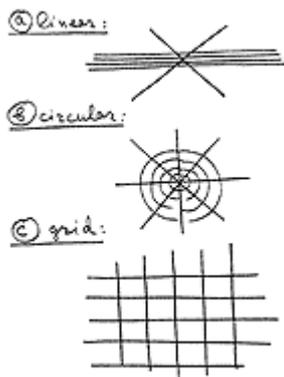


Fig. 20. Basic form

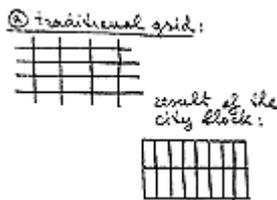


Fig. 21. The form of grid



Fig. 22a. The forms of the past

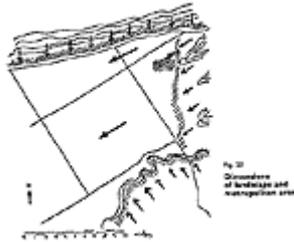


Fig. 23. Dimensions of landscape and metropolitan area

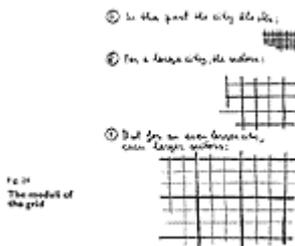


Fig. 24. The moduli of the grid

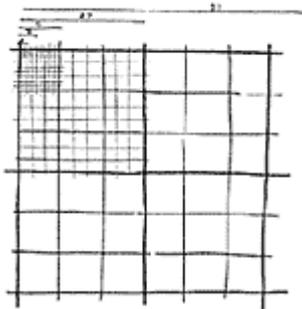


Fig. 25. A multi-moduli grid



Fig. 26a. Athens

grid of squares) are all equal; these are the cells of the city (Fig. 21c).

And now back to history. It is here in the Indus basin that one of the first cities of man was created: Mohendjo 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.

## DIMENSIONS

Having defined the form of the grid, we must define its dimensions. This means defining the city's overall dimensions and the dimensions of the basic grid-square - the modulus - which by continuous repetition will form the whole.

The overall dimensions are defined by the size of the city as well as 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 may well be reached in this century. Such a figure, and the one million forecast within a generation, show that the outline of the overall dimensions will be drawn by the configurations of the landscape. Actually, the physical dimensions of Islamabad are defined by the container - closed to the North, the East and the South-East, and open to the South-West; which is ideal for a dynamic settlement that 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 affected and defined by the size of the whole. Given 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 sub-divisions, and will have to be grouped into major moduli (Fig. 24c).

Another external force is the kind of mechanical transportation we use. We know that the distance between the lines of the grid depend on their accessibility, the

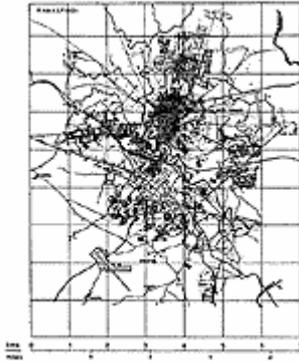


Fig. 26b. Rawalpindi

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.

This can be defined by the internal forces. Unlike the external ones, which are defined by machines, the internal forces are defined by man. And unlike the external ones, for whose dimensions we have no precedent we have thousands of examples of internal forces: almost all cities that have 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 center without walking longer than ten minutes. Whether we go as far back as the ancient Greek city (Fig. 26a) or to the nearest city in the neighborhood of Islamabad (that is, to Rawalpindi, Fig. 26b), the answer 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. 27-38) 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 there is no conflict of man and machine, nor there is any danger of the old city devouring itself in order to grow.

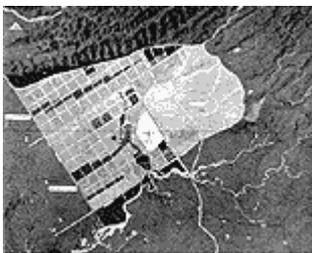


Fig. 27. The metropolitan area of Islamabad



Fig. 28. General view of the metropolitan area towards the east



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 the 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. Model of a community sub-sector class IV (sub-sector G6-1)



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



Fig. 34. General view of sub-sector G6-14



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



Fig. 36. Two streets in communities of lower income housing which are already inhabited



Fig. 37. Two streets in communities of lower income housing which are already inhabited



Fig. 38. Aerial photograph of two communities class V (Sectors G6-1 and G6-2)