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A STUDY OF BRASILIA: FROM MASTER PLAN TO IMPLEMENTATION

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Master of Philosophy
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July 1974
ABSTRACT OF THE THESIS

This thesis examines the processes associated with the creation of Brasilia and appraises successes and failures of the implementation of the Master Plan for the new National Capital of Brasil.

Chapter One deals with the intellectual background of the Brazilian architects who, from 1929 on, energetically put into practice the principles of the Modern Movement, as evolved by the "Congres Internationeaux d'Architecture Modern" - C.I.A.M.

In 1956 President Juscelino Kubitscheck decided to undertake the enterprise of building Brasilia. This decision was the fulfilment of many years of preparation. The historical background of the creation of the new capital is examined in Chapter Two.

Chapters Three and Four cover the competition for the Master Plan for Brasilia. An international panel of judges selected six out of twenty-six entries and appointed winner Lucio Costa's Pilot Plan, which was seen as the only one to combine, within a unity of artistic conception, the utilitarian and symbolic features inherent in a modern capital city.

Chapter Five examines the first four years of realization of the plan and considers also aspects of the decision making and resources allocation which greatly influenced the development of the city.

An unforeseen Brasilia has been developed throughout the years, comprising the planned city, the so-called 'Pilot Plan', and the satellite towns. The ordering principle implied in Lucio Costa's Plan was also upset by the unpredicted community usage of the urban structure so far completed. Both the rise of the satellite towns and the deviations imposed on the planned area are examined in Chapters Six and Seven.

Finally, in Chapter Eight an attempt is made to derive new insights from the observations made in the previous passages, to infer new approaches to the problems of the embryo metropolis, and to indicate some areas where it is considered that further knowledge is required.
CONTENTS

FOREWORD 1

SECTION A - MASTER PLAN FOR BRASILIA 5

Introduction 6

1 THE MODERN MOVEMENT 9
   1.1 CIAM - Athens Charter 9
   1.2 Le Corbusier - Maniere de Penser 18
   1.3 Modern Movement in Brazil 21

2 THE DECISION TO BUILD BRASILIA 30
   2.1 Evolution of the Idea 30
   2.2 The Reasoning for Brasilia 35

3 THE COMPETITION 41
   3.1 Jury 41
   3.2 Six out of Twenty-six Entries 45

4 LUCIO COSTA'S PILOT PLAN 66
   4.1 The Plan 67
   4.2 The Judgement 87

SECTION B - IMPLEMENTATION 91

Introduction 92

5 REALIZATION OF THE PLAN 94
   5.1 The First Four Years 94
   5.2 Decision Making 104
   5.3 Resources 110

6 THE RISE OF THE SATELLITE TOWNS 116
   6.1 Population and Location 116
   6.2 Brasilia = 'Plano Piloto' Plus Satellites 135

7 THE 'PILOT PLAN' 146
   7.1 Development of the Planned Area 146
   7.2 'Monumental', 'Gregarious' and 'Quotidian' Scales 173

8 SUMMARY and CONCLUSION 193
   8.1 Summary 193
   8.2 Conclusion 202

NOTES 212

APPENDIX I - LUCIO COSTA'S PILOT PLAN

APPENDIX II - BIBLIOGRAPHY ON BRASILIA
<table>
<thead>
<tr>
<th>Illustration</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fig. 1</td>
<td>Le Corbusier's La Ville Radieuse</td>
<td>12</td>
</tr>
<tr>
<td>Fig. 2</td>
<td>CIAM Grid</td>
<td>22</td>
</tr>
<tr>
<td>Fig. 3</td>
<td>Reidy's Pedregulho Neighbourhood</td>
<td>27</td>
</tr>
<tr>
<td>Fig. 4</td>
<td>Map of Brazil</td>
<td>36</td>
</tr>
<tr>
<td>Fig. 5</td>
<td>Ney Goncalves and Associates' Plan</td>
<td>49</td>
</tr>
<tr>
<td>Fig. 6</td>
<td>Ney Goncalves and Associates' Plan</td>
<td>51</td>
</tr>
<tr>
<td>Fig. 7</td>
<td>Rino Levy and Associates' Plan</td>
<td>53</td>
</tr>
<tr>
<td>Fig. 8</td>
<td>M.M.M. Roberto's Plan</td>
<td>57</td>
</tr>
<tr>
<td>Fig. 9</td>
<td>Mindlin and Palanti's Plan</td>
<td>60</td>
</tr>
<tr>
<td>Fig. 10</td>
<td>Artigas and Associates' Plan</td>
<td>62</td>
</tr>
<tr>
<td>Fig. 11</td>
<td>Construtecnica's Plan</td>
<td>64</td>
</tr>
<tr>
<td>Fig. 12.1</td>
<td>Lucio Costaps Diagrams</td>
<td>68</td>
</tr>
<tr>
<td>Fig. 12.2</td>
<td>Lucio Costa's Diagrams</td>
<td>74</td>
</tr>
<tr>
<td>Fig. 12.3</td>
<td>Lucio Costa's Diagrams</td>
<td>76</td>
</tr>
<tr>
<td>Fig. 12.4</td>
<td>Lucio Costa's Diagrams</td>
<td>78</td>
</tr>
<tr>
<td>Fig. 12.5</td>
<td>Lucio Costa's Diagrams</td>
<td>80</td>
</tr>
<tr>
<td>Fig. 12.6</td>
<td>Lucio Costa's Diagrams</td>
<td>82</td>
</tr>
<tr>
<td>Fig. 12.7</td>
<td>Lucio Costa's Diagrams</td>
<td>84</td>
</tr>
<tr>
<td>Fig. 13</td>
<td>Lucio Costa's Plan</td>
<td>70</td>
</tr>
<tr>
<td>Fig. 14</td>
<td>Four Urban Scales</td>
<td>71</td>
</tr>
<tr>
<td>Fig. 15</td>
<td>Lucio Costa's Revised Plan</td>
<td>95</td>
</tr>
<tr>
<td>Fig. 16</td>
<td>Works Completed Up to 21st April 1960</td>
<td>99</td>
</tr>
<tr>
<td>Fig. 17</td>
<td>Population Projection and Age Structure</td>
<td>118</td>
</tr>
<tr>
<td>Fig. 18</td>
<td>Settlements in 1958 - Taguatinga</td>
<td>125</td>
</tr>
<tr>
<td>Fig. 19</td>
<td>Expansion of Brasilia - Official Settlements</td>
<td>134</td>
</tr>
<tr>
<td>Fig. 20</td>
<td>Distribution of Population</td>
<td>136</td>
</tr>
<tr>
<td>Fig. 21</td>
<td>Distribution of Income Level</td>
<td></td>
</tr>
<tr>
<td>Fig. 22</td>
<td>Passengers Transported Daily by Bus Between Localities</td>
<td>142</td>
</tr>
<tr>
<td>Fig. 23</td>
<td>Compared Built-up Areas: Brasilia - São Paulo</td>
<td>145</td>
</tr>
<tr>
<td>Fig. 24</td>
<td>Development of the 'Pilot Plan' - 1964</td>
<td>151</td>
</tr>
<tr>
<td>Fig. 25</td>
<td>Development of the 'Pilot Plan' - 1968</td>
<td>152</td>
</tr>
<tr>
<td>Fig. 26</td>
<td>Development of the 'Pilot Plan' - 1972</td>
<td>153</td>
</tr>
<tr>
<td>Fig. 27</td>
<td>Individual Housing Schemes</td>
<td>155</td>
</tr>
<tr>
<td>Fig. 28</td>
<td>Row House and Apartment House</td>
<td>159</td>
</tr>
<tr>
<td>Fig. 29</td>
<td>W3 Avenue - Distribution of Activities</td>
<td>187</td>
</tr>
<tr>
<td>Fig. 30</td>
<td>W3 Avenue to the North</td>
<td>191</td>
</tr>
<tr>
<td>Fig. 31</td>
<td>Patrick Geddes Matrix</td>
<td>205</td>
</tr>
<tr>
<td>Fig. 32</td>
<td>Regiao Geo-Economica de Brasilia</td>
<td>207</td>
</tr>
</tbody>
</table>
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Houses Supply by Sphere of Activity</td>
<td>109</td>
</tr>
<tr>
<td>3.</td>
<td>Evolution of Local Government Incomes (By Sources)</td>
<td>113</td>
</tr>
<tr>
<td>4.</td>
<td>Evolution of Expenditure of Local Authorities</td>
<td>114</td>
</tr>
<tr>
<td>5.</td>
<td>Population of the Federal District</td>
<td>117</td>
</tr>
<tr>
<td>8.</td>
<td>Age/Sex Structure - 1968</td>
<td>120</td>
</tr>
<tr>
<td>11.</td>
<td>Illiteracy Rates in the Federal District - 1964</td>
<td>140</td>
</tr>
<tr>
<td>12.</td>
<td>Potential Housing Types Within the Planned Area</td>
<td>156</td>
</tr>
<tr>
<td>13.</td>
<td>Housing Units Within the Plano Piloto - 1966</td>
<td>157</td>
</tr>
<tr>
<td>14.</td>
<td>Housing Programme 1971-73 : Public Sector Distribution of Housing Units by Locality and Size</td>
<td>165</td>
</tr>
<tr>
<td>15.</td>
<td>Housing Programme 1971-73 : Public Sector Distribution of Investments by Locality</td>
<td>166</td>
</tr>
</tbody>
</table>
So many persons have helped me with this thesis that I shall never be able to express adequately my appreciation and gratitude. Particular thanks are due to my colleagues at the University of Brasilia, particularly at the Institute of Arts and Architecture, for making it possible for me to spend two years in Edinburgh, therefore providing time and opportunity to develop this study; to my Supervisor, Richard Bigwood, for his continuous encouragement, aid and criticism; to Professor Percy Johnson-Marshall for his penetrating contributions; to Marcia and Geraldo Batista, 'pioneers' in Brasilia, for providing new insights and suggesting new material; to my wife, Ritze, and our children, for whom planning and urban design became somewhat monotonous subjects; to Mrs. Catherine Arthur who kindly typed this work, and proved that patience is not a virtue only of the Chinese; last but not least to the staff and students of the Department of Urban Design and Regional Planning for creating a favourable intellectual atmosphere.
Scope and Aims

The purpose of this thesis is to appraise how the proposals of the Master Plan for Brasilia are working in real life, in an attempt to derive lessons from the empirical confrontation to which their underlying principles and ideas have been subjected.

By doing so, a wider objective can be aimed at, that of discussing potentialities and limitations of current principles and practices of urban design, which are energetically publicized throughout the world, and are indistinctively applied within disparate social, economic, political and ecological contexts.

Background

The motivation for this study stems from two major sources. The first is a practical one: the author has been living in
Brasilia since 1968, and his work at the University of Brasilia and in the Institute of Architects of Brazil brought him in close contact with problems of the development of the city. Secondly, an intellectual stimulus should be mentioned: two prominent and opposite attitudes have marked the debate involving the unforeseen evolution of Brasilia. To many, Lucio Costa's Pilot Plan contains the answers to almost the totality of Brasilia's current problems, and incompetent official action is responsible for the unbalanced urban structure so far completed. To others, the plan was utopic in nature, like many other urban 'visions' of the forties and fifties, therefore it does not respond to and reflect social, economic and political needs and opportunities. This debate is in fact a central one for the condition of town planners and designers.

Since reasons for undertaking this study were recognized, a further encouragement should be mentioned: it is that Brasilia offers a unique opportunity for such a study, being a distinguished attempt to comprehensively apply, at city scale, the theories and forms of the Modern Movement, and since, in less than fifteen years, Brasilia is about to reach 700,000 population, the principles which lie behind its proposals have been thoroughly tested.
Methodology

Here the first step is an appraisal of the process of conception of the capital. This is achieved by studying the historical and political backgrounds of the decision to build Brasilia, as well as the intellectual background of its architects, followed by a description of the main features of the competition for the Pilot Plan for Brasilia with a detailed commentary of Lucio Costa's winning entry.

The following section covers important features of the process of implementation of the plan, with the description of major deviations from Costa's initial proposals, in an attempt to identify the main causes and several actors of that process.

Finally, some lessons are derived from this study, and some guidelines for further incursions in the subject are indicated, with the description of issues where further knowledge is desirable.

The information for this work was drawn both from bibliographic sources and from the author's own experience of living and working in Brasilia, complemented by pioneers' telling narratives.
Limitations

The extent and comprehensiveness of the intended study, together with the limitation of time, led the author to the simplification or even to the deletion of some issues, which otherwise certainly would be included or expanded. This is the main reason why the conclusion is somewhat open, prudently calling for further development of some issues which could not be thoroughly examined.

Another limitation for this work was the author's absence from the area of study, which prevented him from checking existing data or even incorporating new information which he learned from brief press accounts.

Finally, it should be said that English being the author's second language, he could not make full use of its extensive resources, although the initiation into its subtle nuances has been an enjoyable intellectual exercise.
SECTION A

MASTER PLAN FOR BRASILIA
INTRODUCTION

The maturing of an old idea led President Juscelino Kubitschek de Oliveira to the decision to build Brasilia. In September 1956 the creativeness of Brazilian architects was challenged by this gigantic enterprise: an entirely new capital city was to emerge, in just a decade, from the designer's board to reality.

Advised by Oscar Niemeyer, leading Brazilian architect, the development corporation - NOVACAP - held a preliminary ideas competition among Brazilian professionals, seeking a conception for the city - Plano Piloto.

Sharing the common concepts and principles of city planning set out by the Modern Movement, the Brazilian professionals produced twenty six expressive entries to the contest, motivated by
the unique opportunity of making their urban visions reality. As an American writer put it:

"They would be doing more than designing a new full scale urban environment. They would be creating for the first time in modern idiom a symbolic national capital. The program of the city provided opportunity for a full range of design - the creation of circulation and transport systems, housing, commercial facilities, and government buildings, ranging from the utilitarian to the monumental. Brasilia remains the greatest single opportunity to be given to an architect of our time."  

This section covers the main features of this process of creation and decision. The first chapter attempts the depiction of the conceptual background for the various proposals of participants in the contest. Therefore we will be looking at the principles and ideas which modern architects and planners shared at that time in respect of urban design, which basically stemmed from the findings of CIAM, comprehensively expressed by the Athens Charter in 1933.

Secondly, we look at the events which led the authorities at that time to the decisions concerned with character, tempo and localisation of the enterprise, since they greatly influenced the nature of the response of both participants and jury.
The latter chapters cover the competition itself. The six plans selected by the panel of judges out of twenty six entries are described, as well as the reasons why the jury selected Lucio Costa's Plano Piloto, which in the words of Mr. William Holford, had indicated 'the direction of advance for a great administrative capital (...) in a masterly way, and the fundamental problems of communication, urban residence, metropolitan character and richness of growth within a unity of artistic conception, had all been recognized and anticipated.'

Finally, greater emphasis will be given to the description of the selected master plan, in order to grasp the principles, ideas and proposals which have been adopted for the realisation of the city.
1.1 Athens Charter

1.1.1 Since the problems of the industrial age overwhelmed the cities of the western world, a process of reaction has attempted to stem their uncontrolled expansion and deterioration. From the social utopias of Owen, Godin, Cabet and Fourier, to the modern concepts of town planning a wide range of theoretical and practical instruments have been developed in an attempt to re-establish human mastery in the process of building the man made environment.

1.1.2 The extensive geometrical beautification of the urban scene apparent in Europe in the nineteenth century - e.g. Haussman's grands travaux in Paris, had soon proved ineffective to cope with the speed, complexity and scale of contemporary urban problems.

1.1.3 A remarkable contribution to the progress of city
planning was the Garden City Movement, founded by Ebenezer Howard in England, at the turn of the century. In his well known book 'The City in History' Lewis Mumford writes on it as follows:

"Though the main value of the Garden City Movement, from Howard's point of view, was to establish the possibility of a more organic method of city growth, which would reproduce, not unrelated fragments of urban order, but unified wholes bringing together urban and rural values, it had still another office: it called general attention to the essential nature of the city itself and promoted examination of the whole process of city development that had hitherto been lacking." 

It has been pointed out that Howard also implied the need for a powerful authority to master the process of growth of the cities to the best results: it calls for "power to assemble and hold the land, plan the city, time the order of building, and provide the necessary services."

1.1.4 Other urban visions have influenced greatly the ideas of urban design of this century. However, paying due respect to those visionaries whose contributions are not mentioned in this work, and leaving Patrick Geddes for a later occasion, as a pioneer of the contemporary streams of town and regional planning, Tony Garnier's Cite Industrielle - 1904, will be registered finally
as being most influential. Lewis Mumford, writing on it, said:

"His Cité Industrielle grew out of a broad understanding of social requirements. The balance of its layout is not destroyed by the concentration on single issues, on specialized problems of traffic or the more or less specialized problems of housing which absorbed the advocates of the Garden Cities. Garnier sought for an organic interrelationship between all the functions of his town." 5

1.1.5 Although the urban vision of Garnier was a really important and vigorous new impulse to the maturing of modern urban design, a further and decisive step would be taken almost a decade later. Professor Percy Johnson-Marshall commented as follows:

"It remained for Le Corbusier, the most famous and imaginative of European architects and city planners to take Garnier's ideas and distil them with a wide range of individual new artefacts, such as the skyscraper and the motorway, and to create therefrom the first comprehensive vision for the city of tomorrow." 6 (See Figure 1)

1.1.6 It was a potent vision, easy to understand and grasp, which joined the technological capabilities of this century with an ordered new way of urban life seeking to create the urban en-
Figure 1
LE CORBUSIER'S LA VILLE RADIEUSE

SOURCE: P. JOHNSON-MARSHALL, REBUILDING CITIES, 1966, P. 136

LE CORBUSIER'S LA VILLE RADIEUSE - 1922
vironment of our age. Industrialism has been accepted as a necessary historical phase, a new physical and social order would raise into reality the promises of the industrial age. As T. Crosby described it:

"Designed for a population of 3 million, the Radiant City marks a threshold in the scale of man's ambition to control nature, his environment and his fellows. Here the possibilities of mass production, of social and physical mobility are confidently resolved in an architecture of poetry and sensitivity." 7

1.1.7 The main principles which emerge from this synthesis - zoning, high building, high densities, open spaces for recreation, and the full use of the capabilities of the transportation system - would give direction for later works towards the establishment of theoretical and practical frameworks to deal with the city of this century.

1.1.8 The next step in this direction was taken in 1928, when protagonists of different architectural developments in Austria, Belgium, Germany, Holland, Italy, Spain and Switzerland associated to form the Congres Internationaux d'Architecture Moderne. 8 In 1928, aiming at the problems of housing for lower income classes, the association started to promote a collaborative work, which moved further on with the conferences held in Frankfurt, and in
Brussels in 1930. In this latter congress the primary concern was for the organization of groups of dwellings into neighbourhoods. As Giedion said, "the congress of Brussels marks the point at which the study of the city planning became an activity of the CIAM". City and regional planning now became the centre of interest.

1.1.9 Finally, the Fourth Congress was held in Athens in 1933, dealing with 'The Functional City'. Thirty three cities were analysed: London, Berlin, Paris, Detroit, Stockholm, Zurich, Athens and others. As a result of this congress a document was formulated summing up the views of CIAM on city planning, explaining the way by which planners and architects should deal with the city of the twentieth century - it was the 'Town Planning Charter' or simply 'Athens Charter'.

1.1.10 Being a comprehensive and synthetical report, it is difficult to summarize. All that can be done is to indicate the passages which can be considered important for the development of this study.

"Every city is part of a geographic, economic, social, cultural and political unit (region) upon which its development depends. ...The basic factors governing the development of the cities are subject to continuous changes. It is the uncontrolled and disorderly development of the Machine Age which has produced the chaos of our cities ..."
The four functions of the city were pointed out—dwellings, recreation, work and transportation."

1.1.11 Dwelling is the primary urban function: after pointing out the problems of dwellings upon a wide range of approaches the charter proposes:

"Residential districts ought to occupy best sites. 'A minimum exposure to the sun should be established for residential structures. 'Modern building techniques should be employed in constructing high, widely spaced apartment blocks whenever the necessity of housing high density of populations exists. Only such treatment of dwellings will liberate the necessary land surface for recreation purposes ..."

1.1.12 Recreation, or more properly, cultiver le corps et l'esprit:

"Open spaces in cities are generally insufficient ... It should be required that the general sanitation of the too densely populated districts be improved by the razing of slums and other buildings, the cleared sites to be devoted to recreational purposes. It should be required that open spaces near kindergartens or playgrounds be used as sites for nursery schools, and that certain sites in parks be devoted to general community purposes, with branch public libraries, small neighbourhood museums, or auditoriums."
The environs of urban zones ought to be converted to weekend recreation centres. Advantage should be taken of those sites near cities whose natural features make them favourable for recreational purposes."

After considering the problems in industrial and business areas - location, communications, land speculation, etc., possible ways to deal with those problems are indicated:

"Industries should be classified according to their character and their needs, and should be distributed in special zones throughout the territory comprised of the city and the region it influences. In delimitating these zones, it will be necessary to take into account the relation to zones intended for other functions. The distances between dwellings and working places should be directly traversable in a minimum of time.

Industrial districts should be independent of residential districts (indeed of other districts as well), and should be isolated by means of green bands or neutral zones. Certain small industries intimately related to urban life and are not source of nuisance should remain within the city, serving its different residential districts."
1.1.14 Transportation: the Chart first makes general statements concerning traffic and street problems: obsolescence of the ancient street pattern, which is not able to fulfil the requirements of modern vehicles and traffic volume; traffic congestion; accidents; shortcomings of traffic management and surgical engineering. Thereby it states a necessary new approach to the question:

"The solutions ... can be reached only by means of new city planning. A new street system, designed for modern means of transportation is required. The speeds to be provided for in each street will depend upon the nature of the vehicles it carries and upon the function of the street."

1.1.15 Streets would be classified into those intended for fast-moving traffic, for slow traffic, and tributary and secondary streets. Streets ought to be classified according to their functions: residential streets, business streets and the industrial ones. Buildings of all kinds, especially dwellings should be isolated from heavy traffic by green bands. By means of efficient traffic organization and a proper coordination of different urban elements, traffic could be reduced and concentrated within arteries.

1.1.16 General requirements: after summarizing the nature and causes of the urban problems CIAM asserts that only through the establishment of an equitable layout with respect to location and
areas, in such a way that the 'daily cycle of activities' may occur with the greatest economy and within which the 'urban unity' should be able to 'develop organically', can one assure 'on both the spiritual and material planes, individual liberty and the benefits of collective action'.

1.1.17 As one can see, the architects and planners of CIAM shared the concept of healthy environment, open space, opportunity of outdoor recreation, similar to those of the Garden City movement. However they disputed that only by building spaced high rise apartment blocks, thus increasing the urban density, would it be possible to combine the quality of the metropolitan way of life, natural to the man of modern times, with the bounties of the contact with nature, sunshine and abundant greenery.

1.1.18 The group also shared the faith that such a vision would become a solution to society's problems. And finally, the city was viewed as a unified problem of design.

1.2 Le Corbusier - Maniere de Penser

1.2.1 Indeed Le Corbusier remains the most influential synthesizer of those concepts of urban design. His new visionary schemes, and his writings impelled still further developments in the art and science of urban design - "Urbanisme".
1.2.2 In his book 'Maniere de Penser l'Urbanisme' he illustrates the fundamentals of the architecture of our age.

"The new possibilities of the structural science, including the introduction of reinforced concrete, which meant the severance with previous traditional practices and building techniques, open an aesthetic argument.

"The evolution of consciousness derived from the struggles against the evils of the early times of industrialism and which appealed for an equilibrium between man and machine.

"The aesthetic renovation, started by the fine arts, which opened the debate on the new attitudes to be taken towards the creation of the environment of the new civilization of the machine: the modern style." 11

1.2.3 In respect to the modern style in architecture Giedion writes:

"The architecture today, for the first time since the barroc period, has got a style, but it is a style of a framework sufficiently large to afford to every country or even region, if they are able to, the opportunity to speak in their own idiom." 12

1.2.4 Le Corbusier says that 'such is the new architecture which can be put at service of urbanisme', thus emphasizing the
unified character of architecture and urbanisme: year after year, themes of urban design and architectural solutions unify themselves to answer to the great questions posed by this age, on the grounds of 'construction'.

1.2.5 The CIAM grid: on the occasion of the fourth CIAM congress, Le Corbusier introduced a grid, first used as the "standard key to a comparative analysis of the previously mentioned thirty three cities prepared by delegates from eighteen countries for the conference."

As he introduced it he stated:

"I am going to talk to you about a sort of poetry - the poetry of classification ... Mountains of paper impede the work of the urbanist. They are his enemy number one. ... I determined to find some visual way to do away with these mountains of paper; for though the eye can register exceedingly quickly, the reading of reports is an extremely slow job. The problem was to create a tool. But though a tool can simplify the work, it can make no fine plans of itself. It can help one set down one's thought more rapidly or with greater precision, but it can never make fools intelligent. ... All we ask of the CIAM grid is that it shall bring the intelligent points of a scheme immediately before the eyes, and that foolishness shall be as quickly apparent."
1.2.6 This grid is assembled over CIAM's four primary functions of land use: habiter, travailler, cultiver le corps et l'esprit and circuler. Figure two shows that grid - along the abscissa there is a "sequence of headings which acts as a check list for the practioner planner". One can clearly see that this grid implies a comprehensive understanding of both the mechanisms of the urban structure and of the planning activities from the designer's board synthesis to the tasks of implementation. The two last columns of the grid also imply the idea of a feed-back from rational and emotional reactions of both consumers and authorities.

1.2.7 A further aspect of Corbusier's theories will be registered finally, in this selection of relevant topics: it is made clear that he did not retreat from the responsibility of imposing on the urban structure the discipline and order in which the architects are skilled. In this manner he anticipated the current argument on order and deliberate pursuit as against informality, spontaneity and flexibility.

1.3 The Modern Movement in Brazil

1.3.1 The ideas and principles stated by CIAM became influential throughout the world. A soundly universal effort towards the
Figure 2
CIAM'S GRID

<table>
<thead>
<tr>
<th>10 Environment</th>
<th>11 Land Use</th>
<th>12 Building Volume</th>
<th>13 Community Facilities</th>
<th>14 Ethics and Aesthetics</th>
<th>15 Economic and Social Aspects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical, Historic and Demographic Data</td>
<td>Rural and Urban, Existing and Projected</td>
<td>3-Dimensional City Structure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Living</td>
<td></td>
<td></td>
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creation of contemporary society's habitat can be seen in several significant applications of those concepts all over the world. There is no country which has not been touched by the new concepts. However, up to the end of Second World War, no opportunity for designing in a wholly urban scale appeared. After the war, and particularly in the 1950s an increasing number of modern architects and planners were requested to apply their instruments of thought and action to the design of major urban schemes. Britain began a keen programme of rebuilding war damaged cities and the building of new towns. The need for reconstructing war destroyed urban settlements, and the rapid urbanization observable throughout the world demanded new urban structures.

1.3.2 In Brazil the first wave of renovation began about 1922, with the so called "Semana de Arte Moderna" (Modern Art Week) event held in São Paulo aiming to stimulate an awareness of and acquaintance with recent international trends in arts, as well as an identification of national potentialities which could provide Brazilian intellectuality with a framework for its production of painting and sculpture, literature and poetry, music and architecture. 17

1.3.3 However, in spite of bright efforts of Gregory Warchavchik and Flavio de Carvalho (who produced in São Paulo the earliest examples of the modern style) 18 it was only from 1929 to 1936 that
Brazilian architecture witnessed any creative surge which stimulated world interest. Norma Emerson writing on this points out that:

"The modern movement, as it was introduced in Brazil, represented the main-stream of theory and form as it had been evolving in the 1920s and 1930s. Like previous artistic movements in Brazil, the modern movement in architecture was initially an importation from Europe. In contrast to other artistic imports, however, it stimulated an unprecedented burst of original creativity, inspiring what was soon recognized as a uniquely Brazilian achievement."

1.3.4 The landmark of this indigenous movement was the project for the Ministry of Education and Health, in Rio de Janeiro. Lucio Costa organized a team including Oscar Niemeyer, Affonso Eduardo Reidy, Carlos Leão, Jorge Moreina, and Ernani de Vasconcelos, to develop the project. This was after the failure of a competition held previously by the Ministry in which all the modern conceptions for the building had been declassified. In 1936 Le Corbusier was invited as a consultant to the team. After setting out several schemes a solution was finally adopted by the group and with minor modifications was built.

1.3.5 This building (which shows clearly the sound Corbusier's influence) and quite a number of others built about the same period,
particularly in Rio de Janeiro, definitely established the opportunity for the architectural renovation in the country. Although it is not within the scope of this study to attempt a full appraisal of both the character and significance of this event, it should be emphasized that from then on Brazilian professionals and schools of architecture and urbanism all over the country devoted themselves to the application of the concepts of the new movement: concepts which were put in practice with great energy, particularly in both cultural and economic capitals of the country - Rio de Janeiro and São Paulo, respectively.

1.3.6 In respect to urban design, however, in spite of the high rate of observable urbanization in the country very little has been done. Nevertheless, some events deserve to be mentioned.

1.3.7 Alfred Agache, a French architect-urbaniste was invited as consultant to the prefecture of Rio de Janeiro. He remained from 1926 to 1930, to publish his report - Cidade do Rio de Janeiro: Remodelação, extensão e embelezamento. Although claiming that city planning is part science and part art and stressing the need for the understanding of urban structures, his conception of urban design was conservative: the underlying concepts which influenced his plan for Rio stemmed from Haussman's works in Paris. What Agache sought was to give Rio de Janeiro the visual attributes of a
major national capital, which were lacking.

"Compared with many of the schematic urban conceptions being developed by modern architects in the 1920s, the Agache plan appears as essentially a nineteenth century vision of the city." 21

1.3.8 In one of his visits to Rio, 1928, Le Corbusier produced a preliminary planning study for the city. His vision took the form of an immense motorway, running throughout the city, 100 metres high, containing apartments and other urban functions within the megastructure created below the freeway.

1.3.9 Brazilian professionals later produced some interesting examples of urban structures, applying concepts of modern urban design. Of the several residential estates planned about that time, it should be mentioned that one was to become well known and influential - Pedregulho Residential Neighbourhood, by Affonso Eduardo Reidy, Rio de Janeiro, 1947. Fig. 3. This residential neighbourhood was built for lower income municipal workers.

1.3.10 Reidy's design attempts the organization of a large area. Apart from the apartment blocks, the scheme also includes social facilities such as schools, health centre, playground, shopping centre and common laundry.
Figure 2 Pedregulho Neighbourhood Site plan

Key:
1 Water reservoirs of the town
2 Flats, block A
3 Flats, block B1
4 Flats, block B2
5 Flats, block C
6 Primary school
7 Gymnasium
8 Changing rooms
9 Swimming pool
10 Playing field
11 Pool
12 Playground
13 Health centre
14 Laundry
15 Market
16 Crèche
17 Nursery school
18 Kindergarten
19 Pedestrian way under road
20 Existing workshop

About it Giedion said:

"It is remarkable how often plans betray an instinct for urban planning, a sense of harmony in difference. The most important ... is the housing development of Pedregulho ... if we pass from building to building ... there can be felt at every point an attractive freedom of imagination, combined with careful consideration of the human factor." 22

1.3.11 Other works of Reidy worth mentioning are such as the plan for a new city centre in Rio de Janeiro, 1948, upon which work has already been done, and the plan for the Aviation Training Centre, in Sao Jose dos Campos, which had been submitted as a competition entry, being awarded third prize. As Giedion described it,

"The plans for a pilots' training centre in São Paulo (1947) contain, from the town planning angle, a remarkable solution in the light but dense combination of the school zone, community centre, and residential zone." 23

1.3.12 Another spectrum of activity, related to town planning, which ensured a national professional exercise was the surgical highways engineering, which attempted to alleviate the pressures of the steadily increasing traffic in the biggest cities. The
well known Prestes Maia plans for a system of radial arteries, which radically changed the previous street patterns of São Paulo are an example. A great part of it has been implemented, considerably changing the face of the capital. Starts were made on tunnels and viaducts around 1935, and some considerations of the appearance of the city were made; e.g. open spaces, parks and gardens. However one could hardly say that they were applications of modern concepts of urban design. Nevertheless, those works attracted at the time public and professional attention to the problems of town planning.

1.3.13 Apart from these leading examples, there were several minor local development plans for housing, tourism, urban renewal, which offered important opportunities for application of modern urban and architectural design concepts. However up to this time they have been insufficiently appraised.

1.3.14 The point is that when Oscar Niemeyer suggested to the President and to Mr. Israel Pinheiro, head of the Development Corporation of the New Capital to hold a competition among Brazilian professionals for the Master Plan for Brasilia, he certainly felt that they had already proved themselves to be able to cope with this demanding challenge.
2 THE DECISION

2.1 Evolution of the Idea

Probably no other national problem was so intensely analysed and discussed as that of the construction of Brasilia. The maturation of the idea, from dream to plan, developed throughout a long period of Brazilian history. Although the basic idea persisted through that time the reasoning for the transference of the capital varied according to national intellectual atmosphere.

2.1.1 It is frequently stated that the idea of a new capital first appeared in 1789, in a manifesto of a group of political revolutionaries who in Minas Gerais pioneered the movement for independence from Portugal. They sought a new governing centre for a new independent nation, and they proposed a symbolic rupture with the traditional spatial framework of the colonial regime.
2.1.2 Ignoring other minor developments, the next reappearance of the idea was in 1823, a year after Independence. Jose Bonifacio de Andrada e Silva submitted to the Constituent Assembly a document proposing the construction of a new inner Capital, with the name of Brasilia or Petropole. The idea was supported for the following reasons: It seemed to be desirable to build a new capital of the empire in the hinterland. Being central it will attract to those lands (sertão) the overspill unemployed populations from the coastal mercantile cities. Being central, a new radial road system will ensure accessibility from the hinterland towns to these coastal cities, therefore creating the opportunity for an internal trade of reasonable magnitude. A further political reason remained in that the Court could establish an impartial contact with other provincial capitals which were not willing to recognize the right of Court to Rio de Janeiro.

2.1.3 The discussions which developed throughout the Imperial Period, from 1822 to 1889, will not detain us here, beyond noting the work of Francisco Adolfo Varnhagen (the Viscount of Porto Seguro) whose writings kept the subject alive. He added further contributions to the idea, taking account of military vulnerability of the coastal capital, favouring the site near to the watershed of basins of the rivers Tocantirus, Parania-Prata and S. Francisco.

2.1.4 However, it was not until the proclamation of the repub-
lic that concrete steps were taken for the realization of the project. The Republican Constitution of 1891 made provisions for the transfer of the capital to an area of 14,400 square kilometers, which would be opportunely plotted in the central plateau, and belonging to the Union.

2.1.5 Therefore, in 1892, President Floriano Peixoto appointed a technical commission to meet the constitutional provision. The Cruls Mission, under Dr. Luiz Cruls, included astronomers, doctors, military engineers, a geologist and a botanist. After developing field studies, the commission demarcated a vast quadrilateral within which the city was to be built, taking into account climate, soils, geology, topography, animal and plant life, water sources, building materials, water power, and finally accessibility and existing settlements.

2.1.6 The publication of Cruls' report revived the idea. However, it was only in 1922 that further steps were taken, when President Epitacio Pessoa approved a law providing for the transfer of the capital. The foundation stone of the new capital was to be laid on the 7th of September 1922 near to the small village of Planaltina, within the Cruls Quadrilateral. It was also recommended that studies for the railway connections from Rio and Santos, major ports in the country, be carried out.
2.1.7 In 1937 Cetulio Vargas became dictator, replacing the constitutional regime by a new statutory framework, known as "ESTADO NOVO" - (New State). No concern with the transfer of the capital was indicated. However, in 1940, in a speech in Goiana, Vargas asserted:

"Your plateau is the belevedere of Brazil. It is an imperative to move powerful forces towards the centre of the country intended to promote and irradiate our future expansion."

2.1.8 In 1945 Vargas was removed from power. A new Constitution was promulgated, and the provision for the transfer restored. This 1946 Constitution stated:

"The President of the Republic, within sixty days of the proclamation of this act, will name a commission of technicians of recognized merit to study the location of the new capital."

"The study provided for in the foregoing paragraph will be directed to the National Congress which will deliberate in regard to it in a special law and will establish the time for the beginning of the delimitation of the area to be incorporated into the Domain of the Union."
"After the demarcation is complete, the congress will set the date for the transfer of the capital." 3

2.1.9 President Dutra accordingly appointed a Commission for the studies of location of the new capital under General Poli Coelho. An expedition was organized to survey the area, gathering information about possible sites for the new capital. Two basic principles guided the decision of the Commission: the primary functions of the capital are administrative and political. Thereby it should be located in the demographic centre of the country, in a site which would allow easy communication with its regions. The Commission finally pointed out roughly the same area recommended by Cruls Mission. After a long debate the Congress took a decision passing legislation which specified a quadrangle of approximately 52.00 square kilometers lying between latitudes 15° 30' and 17' south, and longitudes 46° 30' and 49° 30' west, within the state of Goias.

2.1.10 On the 25th February 1954, the firm Donald J. Belcher and Associates Inc. was contracted to study the area hitherto determined and to determine firm alternative sites of 1,000 square kilometers. They were to be examined in detail with regard to climatic conditions, water supply, topography, accessibility, sources of low-cost electric power, locally available
building material, subsoil conditions for foundations, forest and suitable agricultural areas, landscape and recreation sites, conditions for disappropriation. Following the completion of the studies, in 1954 Marshall Jose Pessoa Cavalcanti de Albuquerque was named to head the commission which finally selected the present site. The approved final boundaries encompassed 5.850 square kilometers. The Federal District lies between parallels 15° 30' and 16° 03' south and it is bounded on the west by the Rio Descoberto and on the east by the Rio Preto and Rio Santa Rita. This site actually includes portions of the watersheds of Tocantines, Paraua and S. Francisco, as advocated hitherto by Varnhagen (Fig. 4).

2.1.11 Behind those serene technical decisions a feverish political process was developing: Vargas committed suicide in 1954. Cafe Filho, Carlos Luz followed by Nefeu Ramos rapidly succeeded. In 1955 Kubitschek appeared as a coalition candidate for two great parties - PTB and PSD. He won the election with the help of the old Vargas political machinery.

2.2 The Reasoning for Brasilia

2.2.1 Kubitschek held his campaign in a rather optimistic mood and the slogan "Fifty years of progress in five years".
The first element of his acknowledged government plan, the so-called "Programme of Goals" was his political testament and platform, which took the form of a book: *Diretrizes Gerais do Plano Nacional de Desenvolvimento - 1955*. The line he took was "developmentism". He worked out the concept that if resources were allocated "to projects which would promote economic growth, then rapid progress could be made in all areas of national life".

2.2.2 It is Kubitschek himself who tells how the enterprise of Brasilia appeared among the priority targets.

"The first question I was asked in the city of Jatai was if the candidate, should he be elected President, would build the new Capital in Goias's Plateau. I want to confess that until that moment I had not considered in all details the problem of transferring the capital ..... I answered that since the transfer was determined in the 1946 constitution ... I would make the first steps towards the building of the new capital.

2.2.3 Therefore, the dream had to become realized as a plan. Much of the rationale for it has been laid throughout the history. However, at that very moment of Brasilian intellectual history a further issue arose among the many. Much of the
middle class regarded Brazil as a country with a great future. The need to soundly state this optimism rose in the country, there being a belief that the construction of the new capital would symbolize the dawn of a new age. As Kubitschek put it:

"The construction of Brasilia was symbolic of our efforts to provide the nation with a foundation on which to build the future." 7

2.2.4 Apart from this psycho-political reason, a product of people's intellectual heritage, many other pro Brasilia arguments were enthusiastically asserted in public pronouncements of its promoters.

2.2.5 The transfer of the capital was a way towards the fulfilling of the continental role of the country, through a planned Marcha para o Oeste (march to the west). This meant the occupation of the national territory, as the construction of the new city would be accompanied by the setting of a huge national radial road system which would ensure accessibility to the forest segments of the territory and its natural resources.

2.2.6 The new capital would free the government from the problems characteristic of the overcrowded and agitated Rio de Janeiro. As Israel Pinheiro phrased it:
"A city like Rio ... obliges the federal government, due to the simple fact of being located there, to permanent preoccupation with matters of purely local import."

"Asphyxiated by the wave of private interests ... the Federal Government is forcibly divorced from those Brazilians who in the interior also build, silently, and often unsupported by any government action, the greatness of the nation.

"Social agitation of a grave nature generally ferments in the great centres, stimulated by elements of indiscipline and disorder which have there the ideal conditions for subversion." 8

2.2.7 Another reason which became a universal belief was that the Federal bureaucracy in Rio was beyond salvation, and this was attributed to the vicious atmosphere of the city. Many believed that the new capital, free from the costumes and traditions of that "parasitical, useless and vain" 9 bureaucracy would attract young, good, willing, well trained servants who would create a new mentality in the new environment.

2.2.8 It was prophesied also that the transfer of the capital would promote a healthy stimulus to the economy, both by leading the spatial and economic reorganization of the inner regions of the country and by freeing the policy-making centres from the
pressures and interests of the coastal metropolis (as opposed to the higher interests of the nation).

2.2.9 But Brasilia had its detractors too, critics who produced a considerable number of arguments against its construction. They charged it as being an unjustified adventure of a "populist" politician, seeking an easy way of building his image before the history and before the world. The plan was criticized as inflationary, wasteful, technically vulnerable, and likely to be ruinous to Brazilian economy.

2.2.10 Nevertheless the pro Brasilia argument caught the imagination of the country. Large segments of middle and lower classes enthusiastically supported the enterprise. The President energetically publicized it, placing behind the project all of his acknowledged wide political skills and personal dedication. It was again the experienced politician seeking the realization of another "public work", the greatest Brazil has ever seen. And it was to be accomplished within his term of office (mandato).
In the previous chapters we illustrated features of both the intellectual background of the Brazilian architects and the nature of the challenge they faced when the President, advised by Oscar Niemeyer, called for a competition for a Master Plan for Brasilia. The President wanted not only to plan the city but to build it in his short time of office. Nevertheless, even though anxious to begin, he took Niemeyer's advice and agreed to allow time for a competition to be held for the "conception" of the New Capital.

3.1 The Conditions and the Jury

3.1.1 The conditions for the competition were publicized in September, 1956. As Sir William Holford commented:

"They were, perhaps, the simplest ever issued for a competition of this size. Competitors
were given a good deal of information and
were asked to visit the site when they had
studied the maps, charts and aerial mosaics
supplied ... But they were asked to hand in
only two essential documents :

"a) A basic layout of the city, indicating
the position of the main elements of
the urban structure, the location and
interconnection of the various sectors,
centres, installations and services,
distribution of open spaces and transpor-
tation networks, to the scale of
1:25.000.

b) A supporting report."

3.1.2 The contestants could, if they wished, and had the
expertise for it, present the elements upon which they based
their plans :

a. Map of land use for the area: forestry land,
rural areas, built-up areas for housing,
industry, etc., natural resources and networks
of roads and infrastructure.

b. Programme of the implementation of the city,
pointing out phases and tempo of the construc-
tion.
c. Provision of a balanced development of the city and region ensuring conditions for a constant supply of employment, goods and services at each stage of its expansion.

d. Adequate distribution of the population in urban and rural settlements envisaging healthy social integration.

e. Provisions for the establishment of a self-sustaining economy, with an adequate flow of employment opportunities and remuneration for the planned investments.

3.1.3 At the time the competition was announced some decisions had already been made. A lake would be created with the construction of a dam in the Paranoa River, as shown in the drawings. The Presidential Palace, the Brazilian White House, and a hotel for tourists, designed by Niemeyer, were already sited close to the banks of the projected lake. The city's airport runways were already under construction.

3.1.4 The panel of judges was determined: two town planners from abroad, Sir William Holford from London, Andre Sine from Paris; two representatives from NOVACAP, Stavro Papadaki and Oscar Niemeyer; a representative from the Institute of Architects of Brazil, Paulo Antunes Ribeiro, and a representative of the
Engineering Society of Rio de Janeiro, Luiz Horta Barbosa. The President of NOVACAP was its non-voting chairman.

3.1.5 As Sir William Holford pointed out:

"It was soon clear that it was the foreign members of the jury who were being asked as the most impartial judges, to tip the balance in favour of one scheme as against another".

Indeed, they held an important role in the Jury's decisions.

3.1.6 Professor Sir William Holford, a most influential British town planner, had lectured on Local Planning since 1935. He greatly contributed to the establishment of principles of comprehensive development on central areas, publishing together with C.H. Holden a 'Handbook of Redevelopment of Central Areas', 1943. His article 'The Commercial Core of London', included in CIAM 8's summary 'The Heart of the City' indicates a "method" for developing the average city block which is clearly linked with CIAM's testament on Urban Design. Being an experienced planner in a wide range of situations he was competent in analysis of plans, as much as their execution. He performed as planning consultant to Cambridge Local Authority, as well as to the Development Corporation of Corby New Town, and as Regional Planning Consultant.
in South Africa. He also planned two English universities: Liverpool and Exeter.

3.1.7 Stavro Papadaki was the Greek delegate to the most influential CIAM conference of Athens, in 1933. At the time of the competition he was living in the United States. Since long before the competition Mr. Papadaki maintained a friendly relationship with Brazilian architects and an attraction for Brazilian architecture. He published two works on Neimeyer's architecture and a 'Report from Brazil', for the Progressive Architecture, New York December, 1956.

3.1.8 Andre Sine was professor of Urbanisme and a practising architect in Paris. For many years he had been consultant to the French Ministry for Reconstruction and Housing. For seven years he was in charge of the analysis of a great variety of projects, and was therefore well used to tasks such as those requested of the judges of the competition.

3.2 Six Out of Twenty Six Entries

The contest was open to architects, engineers and town planners licensed in Brazil. The uniqueness of the opportunity attracted twenty six contestants, many of them distinguished
architects. A study of all the presented schemes shows clearly that they were indeed representative of the universally diffused ideas and principles of urban design which stemmed from CIAM. Sir William Holford phrased this first impression of the totality of the projects as follows:

"I realized as soon as the submissions were handed in that our choice would lie between breadth and depth. There was imagination in plenty, both of the practical and theoretical kind. But whereas some competitors had concentrated on what might be called the ideology of the design, illustrating their idea by sketch plan and some significant diagrams, others had widened their appreciation of the problem to include details of agriculture and manufacture, of building costs and returns, of local government and community organization." 5

3.2.1 The Jury's first meeting took place on the 12th of March 1957 in the building of the Ministry of Education in Rio de Janeiro. At that meeting they decided to pre-select ten out of the twenty-six entries, which were examined in depth. On the 15th of March the judges produced a final report on which they gave account of the criteria upon which they proceeded their judgement, and pointed out the winner, and six other plans for which they distributed the remaining four prizes. 6
3.2.2 At a first stage they selected out of ten entries, the following four: project number two - Ney Goncalves and Associates; project number eight - M.M.M. Roberto; project number seventeen - Rino Levi and Associates; and project twenty-two - Lucio Costa. After a further scrutiny they finally selected the recipients of the five prizes as follows: Lucio Costa was awarded the first prize; Ney Goncalves, Baruch Milman and J.H. Rocha were given the second prize. Third and fourth prizes were combined and equally divided between M.M.M. Roberto firm and Rino Levi, Cerqueira Cezar and C. Franco, for they were considered equally valuable contributions. The fifth prize was shared by the following three teams: Henrique Mindlin and G. Palanti, a group headed by Vilanova Artigas and Carlos Cascaldi and the group Constructecnica.

3.2.3 It should be said, however, that the decision was not unanimous. The representative of the Institute of Architects of Brazil dissented on the grounds that the detailed study of the projects was not given enough time, and the final decision had been achieved in a private meeting held by Oscar Niemeyer together with the three foreign judges. Thereby, Paulo Antunes Ribeiro submitted a separate report, proposing that all the prize money be divided among the ten projects initially selected, to which he added another one. According to this proposal their authors would be invited to constitute a team to produce a collaborative
design for the city. In the following paragraphs six plans will be briefly described and discussed.

3.2.4 The group headed by Ney Goncalves began their report by asserting that their conceived scheme "followed the methods of up-to-date architecture and urbanism, aiming at the doctrines and resolutions established by the CIAM, but always fitting them to the peculiarities and practices of this our country". According to the summary of the appreciations of the jury, the 'basic assumptions' of that plan were unlimited flexibility and a prediction of population for the city based on general Brazilian trends and on an average national household of five people. The projected population would be 270,000 in 1980 and 673,000 in 2050.

3.2.5 The provision for flexibility took the form of a system of roads, housing sectors and a business sector. They were assembled in such a manner that the repetition of those sectors along a major regional artery would cope with the foreseeable needs for expansion.

3.2.6 Their scheme was essentially based upon the principle of zoning (Fig. 5). Drawn upon a somewhat rigid geometric pattern the plan devises a coordinated set of sharply separated zones: the government complex, comprising government and civic sector as well
Plano Piloto n.º 2 - 2.º Lugar
NEY GONÇALVES AND ASSOCIATES' PLAN

Orientierungsplan N.º 2 - 2. Preis

Autores

Autoren
Boruch Milman
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Mitarbeiter
Antonio José da Silva
Carlos Fonseca de Castro
Celso Botta Pinheiro
Elia Kaufman
José Luís Ribeiro
Milton de Barros
Renato Lima
Yvanildo Silva Guma

EXPOSIÇÃO ESQUEMATÍCA

ESCOLA PRIMÁRIA DE 1000 ALUNOS,
DISTANTE DA HABITÂNCIA DE UM
MÁXIMO DE 400 m. 6 MINUTOS A PÉ

TODA HABITÂNCIA COM PROLONGAMENTO INMEDIATO DE
ESPACOS VERDES PARA ASSISTÊNCIA ECONÔMICA E SAÚDE,
PEQUENO COMÉRCIO E RECREAÇÃO. ACESSÍVEIS A PÉ E LIVRES
DO TRÂNSITO DE VEÍCULOS.

PROXIMIDADE

HABITAÇÃO - TRABALHO
HABITAÇÃO - LAGO
DESCENTRALIZAÇÃO PARA CRESCIMENTO
HARMONIOSO DOS SETORES E ACESSOS INDEPENDENTES
ORIENTAÇÃO TOTAL
VARIAÇÃO DE PROGRAMAS DE EXECUÇÃO

as housing for government employees; a business and commercial
centre, and an industrial centre, provided by a third housing
sector, sited between them; the university campus; the sector
for individual housing on the lakeshore; and two sports centres.
These zones were linked by a system of roads classified in accord-
ance with their functions. The main urban arteries would inter-
connect the various zones, and a major regional artery structures
the future linear metropolitan development (Fig. 6). The city
was designed primarily for automobile circulation, with separate
systems for pedestrian and motor traffic.

3.2.7 In the appraisal of this project the jury criticized the
rigid series of equally sized superblocks which compound the rather
isolated commercial centre; they considered uncertain the possi-
bility that a centre for a 750,000 population can be extended for
an unlimited population figure. They criticized the existence of
too many roads in open space, which would make extremely expensive
the provision of the networks of services. Otherwise, they prais-
ed the "pleasant dwellings on the lakeshores", and considered the
"overall density about right". 10

3.2.8 An interesting feature of that project which deserves a
commentary, is that in a sense designers anticipated some of the
current discussions involving the future development of the city,
when devising a system for its future expansion. The group stated
SOURCE: MODULO 8, July, 1957. NEY GONÇALVES AND ASSOCIATES' PLAN
that "in a country of astonishing progress as Brazil it is unacceptable to leave to chance future developments." (Fig. 6)

3.2.9 Rino Levi and Associates devised a 'creative vision' for the city taking the opportunity that the contest offered for a most speculative approach, rather than accept the limitations of a more practicable conception (Fig. 7). The basic principle of their vision stemmed from Le Corbusier's "La Ville Radieuse" the vertical Garden City. Their plan devised an assembly of high-rise buildings for housing, standing within a wide green area, in a rather compact city, in which most of the inhabitants would live within walking distance from either the community facilities or even from the city centre.

3.2.10 The huge building blocks, called 'intensive housing' by the designers, are an impressive feature of the plan. Each building, 300 m high, would lodge 16,000 people in four units of 4,000. Four footpaths were devised for horizontal circulation throughout, the building being shared commonly by the inhabitants of each unit, and along which were located a health centre, creches, and a nursery. Three of those super-buildings would comprise an urban district for 48,000 people. This district would be provided with a low-rise district centre with shopping, socio and cultural facilities, two primary schools, a secondary school, a health centre, a church, a cinema and playgrounds. Six of those districts would
Plano Piloto n.º 17 - 3.º L

(O Júri reuniu os 3º e 4º lugares e atribuiu aos de n.º 17 e 0 de n.º 8)

Orientierungsplan N.º 17 - 3.

(Die Jury legte den 3º u. 4º Preis zusammen und sie den Entwürfen N.º 17 u. 18 zu.)

Projeto

Rino Levi
Roberto Cerqueira Cesar
L. R. Carvalho Franco

Projeto Estrutural

Statik

Paulo Fragoso

Figure 7

RINO LEVI AND ASSOCIATES’ PLAN

BRASILIA

L AR XO PILOTO - 1.25.000

Projeto - Rino Levi
Roberto Cerqueira Cesar
L. R. Carvalho Franco
Arquitetos

Projeo Estrutural - Paulo Fragoso
Engenheiro

Ouando de Habitação Intensiva
E 4.000 h atantes

Ouando de Habitação Extensoa
E 8.000 h atantes

SCTEJUFEI ALI.

Conselho de Arquitetura e Urbanismo

Arq. L. R. Carvalho Franco

Projeto: Rino Levi

Roherto Cerqueira Cesar

L. R. Carvalho Franco

Projeto Estrutural: Paulo Fragoso

Engenheiro

SOURCE: MODULO 8, July 1957.
be disposed around the city centre. The scheme also provided areas for extensive housing made up of neighbourhoods of 15,000 people, sub-divided into units of 5,000. They consisted both of individual housing and low-density apartment blocks.

3.2.11 The urban centre was sited near to the lake and would comprise buildings for local government, offices of Federal Government sections, ministries, together with business centre and cultural and recreational facilities. However the national political centre was not located there. A complex of monumental buildings was designed to incorporate the already sited Presidential Palace, close to a point on the shores of the lake. It would house the three main bodies of Federal power - the executive, the legislative and the judicial.

3.2.12 For such a compact city a rather simple road system could be devised. The roads would be classified according to their functions. Again the principle of separation of pedestrian and motor vehicles was adopted. A heavy duty system of lifts would cope with the required vertical circulation.

3.2.13 In their appreciation of the project the judges pointed out the lack of a transport centre and objected to the unnecessary height of the buildings, which would raise problems related to wind resistance. They also objected to the undue concentra-
tion of the city. They also criticized the unbalanced visual nature of the housing blocks as against the inexpressiveness of the civic centre. However they did praise its "high visual quality" and "technical competence" demonstrated by the designers. One could say that this plan epitomized a largely difused vision of the city of this century which finds fertile grounds in the most overcrowded area of the globe e.g. Kenyo Tange's Tokio bay project.

3.2.14 As Sir William Holford stated, some of the projects "widened their appreciation of the problem to include details of agriculture and manufacture, of building costs and returns; of local government and community organization". As he said the best of those was the entry by the firm M.M.M. Roberto, which was awarded, jointly with Rino Levi, the third and fourth prizes. He commented on that entry as follows:

"I can only say, for my part, that I have never seen anywhere in the world a more comprehensive and thoroughgoing master plan for a new capital city on a cleared site. We all realized, at the same time, that if the development corporation adopted this plan they would take on board more than a pilot. They would have a quarter-master and bo'sun, a complete ship's company from cabin boy to captain, and a Director of the line as well. The principle of the plan is to break
3.2.15 The seven urban units were designed as complete towns, with all the elements needed in a modern urban community to accommodate a population of 72,000. Government and cultural activities would provide functional nuclei around which the other urban activities were organized. The Units would lodge the following functions: Unit one - regional administration; Unit two - communications and transport; Unit three - the centre of finance; Unit four - arts, comprising theatres, art galleries, art schools, etc.; Unit five - letters and sciences, education and culture; Unit six - social welfare; Unit seven - production, economic development, natural resources. It had not provided a sector for the university campus, as the university activities would be dispersed throughout the urban Units, according to their specialized areas of study. The population target for the unity
M.M.M. ROBERTO'S PLAN

was thought to be an ideal size for ensuring a rich community life and a suitable living environment.

3.2.16 Adopting the idea of small units the authors sought also to reduce the problems of urban traffic, as the distances within the Unit would be easily made by foot. Thereby, it was assumed that the motor car was mainly used for leisure and movements between the Units and other urban functions. Large-scale transport would link the Units with each other and with the government complex.

3.2.17 The Presidential Palace, together with the legislative, executive and judicial buildings would occupy the "Federal Park", which would include the ministries of defence, economics, labour and foreign affairs. This complex would be located within a park area close to the lake shore.

3.2.18 The judges objected that "although this is a plan for a welfare city, it is inhuman in the degree of which all positions and all circulation is controlled and restricted. The ideogram of the Urban Unit of 72,000 is valid for any city with a flat site; it is not special to Brasilia; it is not a plan for a capital; the relationship between the Units is not metropolitan: the head remains the same, the seven bodies grow to ten or fourteen, and have distinct lives of their own." Finally they praised the land
use study, the designed farm and village types and the realistic programme for construction and finance. 15

3.2.19 Mindlin and Palanti emphasized the long term nature of urban development, introducing their plan as an outline of future development of the metropolis which they believed would grow well beyond the 500,000 population required by the programme. Like Lucio Costa's, their scheme is developed over two crossing axes. The east-west one would structure the civic, bureaucratic, city-centre and embassy complexes as shown in Fig. 9. Four different schemes for housing were provided, with associations, in different proportion of ten-storey apartment blocks and single-family houses. Type one would house 7,200 people in thirty apartment blocks at a net density of 576 hab/ha; Type two, with eighteen apartment blocks and eighty-eight single-family houses, lodging 5,200 people at 412 hab/ha.; Type three with twelve apartment blocks and 132 houses, accommodating 4,200 people at 333 hab/ha.; Type four, employing only semi-detached single-family houses with a population of 3,420 at a density of 232 hab/ha.

3.2.20 The jury praised the scheme as economical in land use, considering its size and density as "about right". However they objected to the segregation of industrial workers' housing. The whole of the east-west complex was criticized as being illogically organized; "the housing would be formless in practice and would
Figure 9
MINDLIN AND PALANTI'S PLAN

Orientierungsplan n° 24 - 5. preis

Antoeres

toren

Henrique E. Mindlin
Giancarlo Palanti

Colaboradores

Mitarbeiten

Walmir Lima Amaral
Marc Demetre Founhoukas
Anny Sirakoff
Olga Verjovsky
Gilson Mendes Lages
André Gonçalves

not sit very well on the site", but the road system was viewed as "quite simple and direct". It also criticized the architectural layout of the ministries and embassies as being "not as interesting as in some other schemes". 17

3.2.21 The plan devised by Vilanova Artigas, a noted Brazilian architect, and his team, was one of those which aimed at a detailed study of many features of the future development of the city and its region. They established population projections for the next twenty years, up to 550,000 people, and produced detailed studies of the educational system, health and social welfare policies, administration and economic aspects of both the region and the city. Their entry was praised for its direct and clear presentation, and by its study of rural economy, enlightened by a devised leasehold system.

3.2.22 Based upon an even grid pattern of roads the city extended from the lake towards west. This road pattern determines the quadrangular neighbourhoods for individual houses, which are disposed along cul-de-sac lanes. The neighbourhood is provided with an inner band of greenery throughout, along which the school and community facilities are arranged. Other housing zones for apartments were sited to the north and to the west of this extensive sector. The civic centre and business centre were placed in between the residential areas and the lake, along a spine road. The
Plano Piloto n.º 1 - 5.º Prêmio

Orientierungsplan n. 1 - 5. preis

Autores
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Maria José Garcia Werebe
Odair Porqueo Pedroso
Ouscilio Pouca Sene

Besondere
Rathgeber
Rodolfo dos Santos Mascarenhas

university was situated near to the lake, and the lakeshores were reserved for sports and recreation purposes. The industrial sector was sited at the west end. (Fig. 10).

3.2.23 The jury objected to both the extreme uniformity of the residential zone, and the bad circulation between home and work places. They commented also that "although the approach by train and air seemed good, by road it was considered doubtful". They pointed out as well that the "Government centre did not use the lake", topographical opportunities were missed, and that it constituted an "enormous built-up area" with densities which were too low.

3.2.24 Also sharing the fifth prize, the entry of Constructecnica advocated the need for regional planning and the need for "planning to be oriented to human values". Starting from the study of the rural region surrounding Brasilia, the designers ended by devising a scheme for the city, which was planned for a gradual and radial development.

3.2.25 Four quadrangular residential sectors were grouped around a similarly defined central zone (Fig. 11). Those residential sectors were sub-divided into neighbourhoods. Like many of the other entries, they devised an inner green band in each neighbourhood, for recreation purposes and containing community facilities.
Figure 11
CONSTRUTECNICA'S PLAN
The city centre was a complex containing the Federal Government buildings, a cultural centre, business and commercial complexes. A monumental characterization of the civic centre was not attempted.

3.2.26 This project was criticized for its enormous length of road in addition to the main grid, and the oversimplification of zones, with three zones in the centre and the remainder being the same type of low density housing. The jury commented that it did not have the character of a capital city. Finally, they praised the "charming model of an agricultural village".
Lucio Costa, one of the pioneers of modern architecture in Brazil, is the most influential of its thinkers. Due to an impressive production as a writer he became known as the most energetic master and defender of Brazilian architectural heritage.

Sir William Holford introduced his conception for the capital as follows:

"Here was an idea and the skeleton of a metropolitan form — and practically nothing else ... Without a line of mechanical drawing, no models, no land-use schedules, and no population charts. ...And yet, at the first reading of his report, one realized that here was a thinker, an urbanist of the first order. On second reading one realized that there was not a single unnecessary word in the report, and not a single unnecessary line in the sketch plan or diagrams: yet everything essential was said. And on further reading this member of the jury, at least, became more and more
convinced that the direction of advance for a great administrative capital had here been indicated in a masterly way, and the fundamental problems of communication, urban residence, metropolitan character and richness of growth within a unity of artistic conception, had all been recognized and anticipated."  

4.1 The Plan

4.1.1 In respect of the relationship between the city and its region, which so much attracted the attention of many of the competitors, Lucio Costa noted:

"Since there were no restrictions in the way of entering the competition, the consultation has been reduced on the most important feature, which is the urbanistic conception of the city itself. As for the city, it will not be the outcome but the cause of regional planning. For this is a deliberate act of possession, the gesture of pioneers acting in the spirit of their colonial traditions: and each competitor is, in effect, being asked how he conceives of such a city."  

4.1.2 In depicting the character of the capital city, he asserted:

"Brasilia should not be envisaged, I believe, as
Figure 12.1
LUCIO COSTA'S DIAGRAMS

SOURCE: CADERNOS DE ARQUITETURA 3, IAB-DF, 1970
an organism capable of fulfilling the vital functions of any modern city, not merely as an 'urbs', but as a 'civitas', possessing the attributes inherent in a capital city. For this to be possible, the planner must be imbued with a certain dignity and nobility of purpose, for from that fundamental attitude will spring the sense of order, fitness and proportion which will confer desirable monumental character to the devised scheme."

(Figs. 12, 13)

4.1.3 The urban structure has been conceived of as an articulation of three different scales: the 'collective and monumental', which is expressed through the drama of the visual conception of the east-west axis - Eixo Monumental; the 'quotidian and residential scale', which is achieved in the line of residential superblocks disposed along the curved axis - Eixo Rodoviario (Motor Axis); the concentrated and gregarious scale is found in the arrangement of the city centre at the crossing of the two structural arteries - it comprises the business centre, and shopping and entertainment sectors. Additional to these scales, one may also perceive an ambient 'bucolic' one offered by the natural surrounding landscape (cerrado) and which participates very
Figure 14

Four Different Scales

ORGANIZATION OF THE URBANSCAPE

much of the urban scene. (Fig. 14)

4.1.4 The Monumental Axis was designed essentially to create the desired 'drama', through the combination of traditional principles of composition with contemporary concepts and devices of urban design: "Being unconcerned with taboos and indifferent to the fashionable, it is easy to integrate the 'old' principles of the Congres Internationaux d'Architecture Moderne with the beloved reminiscence of the centred perspectives of Paris, in an organically articulated globality." 6

"The most outstanding buildings are those which will house the governmental powers and, because these are autonomous and three in number (...), a terraced triangle was created (...). One of the buildings was placed at each angle of this square - Praca dos Tres Poderes, as it might be well called (...). The Executive power and the Supreme Court occupying the base of the triangle, and the Congress the apex; the latter faces a broad esplanade set out on a second terrace (...). Along this esplanade, equivalent to the English Mall, broad sweeping lawns to be used by pedestrians and parades, the various ministries and Autarquias (government autonomous agencies) were placed. The Ministries of Foreign Affairs and Justice occupy the lower corners near to the Congress (...) and the others are organized in sequence (...) The last in the line is the
Ministry of Education and Culture, which is thus next to the cultural sector conceived as a park, which is the better frame for museums, library, planetarium, academies, and scientific institutions that it contains. This sector also borders the broad area designed for the university (...) The cathedral, too, has been given a location on the esplanade but has a plaza of its own, disposed laterally to it.

4.1.5 At the crossing of the Monumental and the Motor axes a platform was devised for traffic exchange, to be developed as bus station, entertainment centre, as well as to articulate the adjacent bank, business and commercial centres. As Costa described that area:

"On the platform (...) where only local traffic is permitted, we find the entertainment centre, an appropriately chosen mixture of Piccadilly Circus, Times Square and Champs Elysees (...) On the front face of the platform the cinemas and theatres have been concentrated, the pattern chosen being low and uniform so that they form a single, harmonious and continuous architectonic whole; they have galleries access, wide pavements, terraces and cafes and the full height of the respective facades can serve for the installation of illuminated signs and advertisements. The various theatres will be interconnected by lanes barred to motor traffic, in
Figure 12.2

LUCIO COSTA'S DIAGRAMS

SOURCE: CADERNOS DE ARQUITETURA 3, IAB-DF, 1970
the traditional manner of Rio's Ouvidor Street, Venetian alleys, or by covered galleries (arcades) and will be articulated to small patios containing bars and cafes, with 'logia' overlooking the park (...) The sector is planned to have upper floors, glassed on two sides so that the restaurants, clubs, tearoom, etc., may have a good view (from the) lower level esplanade and (from) the slopes of the park along the extension of the main axis, where the luxury and tourist hotels are located, and beyond them the Radio-TV tower, which is treated as a plastic element in the urban scheme. 8

4.1.6 The Monumental axis extended westward, containing a central band of parkland, containing the proposed T.V. Tower. Along one side of the extension of the Mall would be lined the stadium, pavillions, and the botanical garden, and on the opposite side the racecourse, grandstand and the zoological gardens. The central parkland was conceived of as the 'lungs' of the new city.

4.1.7 At the west end of this axis was placed the Municipal Square, where the Town Hall, a local Court, Public Welfare Secretary and Fire Station were sited. Finally, in a road extension of this axis, the Barracks and Rail Station were located. Lucio Costa thus concludes the description of the monumental axis:
Figure 12.3
LUÇIO COSTA'S DIAGRAMS

"Now that we have travelled down the monumental artery from point to point, it can be seen that the fluency and unity of the layout from the seat of government at one end to the Municipal Square at the other, does not preclude variety and each sector forms what could be called an autonomous plastic unity within the whole."
(Figs. 12.5, 12.6)

4.1.8 The residential areas of the city were conceived of as apartment superblocks lined along both sides of the Motor axis, in double or single lines. These superblocks (Super Quadras) would be surrounded by rows of large trees, and the ground would be carpeted with grass, punctuated by bushes and shrubbery to protect the privacy of the residential area on all sides. In describing these "super quadras" Costa wrote:

"The residential buildings themselves could be designed in many ways provided that two general principles are always observed: a maximum uniform height (possibly six storeys raised on 'pilotis'); separation of motorized and pedestrian circulations, particularly near to both the primary schools and the local shopping, which were devised for each superblock." 10 (Fig. 12.4)

4.1.9 Beyond the superblocks placed to the west of the Motor axis, a service road was devised for heavy commercial traffic.
Figure 12.4
LUCIO COSTA'S DIAGRAMS

SOURCE: CADERNOS DE ARQUITETURA 3, IAB-DF, 1970
Along this road were disposed buildings for garages, repair shops, and wholesale warehouses. Beyond this road a long strip of land was reserved for flowers, vegetable gardens and orchards.

4.1.10 A group of four superblocks would constitute a neighbourhood, provided with local shopping (opening onto the blocks) with a rear access service road, church, secondary school, and a youth club with playing fields, swimming pools and recreation hall. A cinema was also proposed for each neighbourhood, and near to the Motor axis.

4.1.11 Costa did believe that the usual undesirable manifestations of the "social gradations proper to the current regime" would be alleviated by effective planning provisions. As Costa put it:

"Social gradations can easily be dealt with by giving a higher value to certain squares, as, for example, the single blocks bordering on the embassy sector (...) On the other side of the Motor axis (west side) the superblocks closer to the artery will naturally be valued more highly than the inner ones, which will permit social gradation. However, the grouping of them, in sets of four, will lead to a certain degree of social coexistence and thus avoid undue and undesirable class distinctions."
Figure 12.5
LUCIO COSTA'S DIAGRAMS

Furthermore, big differences in standards between one square and another will be neutralized by the urban scheme proposed, and will not be of such a nature to affect that degree of comfort to which all members of society have a right.

Any differences in standards will spring from a greater or lesser density, a larger or smaller living space allocated to each individual or family, or from the quality of building materials and the kind of finishing adopted.

And since such problems are being raised, the growth of slums, whether on the city outskirts or in the surrounding countryside, should at all cost be prevented. The Development Company should, within the scope of the proposed outlined plan, make provision for decent and economical accommodation for the entire population."

4.1.12 In addition to the apartment housing devised, two other provisions were made for individual housing. The first took the form of isolated sectors, surrounded by trees and open countryside, and to be sold in plots for private homes. (Fig. 12.7). The second was a wide estate, where "individual houses with a high architectural standard", (which does not necessarily mean they should be sumptuous) spaced at least a kilometer from each other, to accentuate the exceptional nature of such provision.
Figure 12.6:

LUCIO COSTA'S DIAGRAMS

SOURCE: CADERNOS DE ARQUITETURA 3, IAB-DF, 1970
4.1.13 The land along the lakeshores was thought of as preserved parkland, designed for bucolic promenades containing recreational facilities such as sport centres, restaurants, fishing spots, etc. The Golf Club was placed at the eastern end next to the President's Palace, and the Yacht Club on a nearby cove.

4.1.14 Lucio Costa was aware of the conflicts between the traditional urban structures and the growth of motor traffic. Therefore he conceived an urban form in which "the principles of modern road building techniques - including elimination of intersections" would be harmoniously combined with modern principles of urban design.

"With the creation of three complete clover-leaves in each arm of the residential artery, and of a number of underpasses, car and bus traffic will flow unimpeded through the central and residential districts, and with no road intersections. An independent and secondary traffic system has been worked out for heavy vehicular traffic; it has crossings marked by traffic lights, but does not communicate with the first system except beyond the sports centre. It has basement level access to buildings in the city centre, and it skirts the civic centre at lower ground level, with approach galleries tunnelled through the terraced embankment (...)

Figure 12.7
LUCIO COSTA'S DIAGRAMS

SOURCE: CADERNOS DE ARQUITETURA 3, IAB-DF, 1970
Independent paths for local pedestrian circulation have to be organized. This separation of automotive and pedestrian traffic will not be, however, carried out to an unnatural extreme, since we must mind that today the car is no longer man's irreconcilable enemy; it has been domesticated and is, so to speak, a member of the family. It only becomes dehumanized and reassumes its hostile, threatening attitudes when it is reintegrated into the anonymous mass of traffic. Then indeed, Man and Motor vehicle must be kept apart, although one must never lose sight of the fact that, under proper conditions and for mutual convenience, coexistence is essential.  

Lucio Costa concludes his report by summarizing as follows:

"To sum up, the solution presented is easy to understand for it is characterized by the simplicity and clarity of the original design (Fig. 12.1) — which, however, does not prevent variety in the treatment of the component parts, as has already been shown. Each component has been conceived according to the nature of the function involved and thus creates harmony between apparently contradictory needs. Thus, while monumental, the city is also comfortable, efficient, welcoming and homelike. At one and the same time it is spacious and neat, rustic and urban,
imaginative and functional. Vehicular traffic is processed without intersections and the ground is returned, as far as possible, to the pedestrian. And, because the framework is so clearly defined, it is easy to execute: two axes, two terraces, one platform, two broad highways running in one direction, one super-highway in the other. The latter can be built in sections: first, the central lanes with a clover-leaf turnoff on either side, then the lateral lanes which could be built as the city spreads; there would always be room for the installations in the strips of greenery bordering the highways. Initially the residential 'super quadras' would only be levelled off and scenically defined and their surroundings planted immediately with grass and trees; no paving of any kind would be put down nor any streets marked. Briefly, then, we have an efficient highway system on the one hand and, on the other, landscaped parks and gardens.

Brasilia, capital of the highways and skyways, a park and a city - the Patriarch's century-old dream.
4.2 The Judgement

4.2.1 In their final report the jury elucidated the primary assumptions upon which they based their judgement. They were emphatic that a Federal Capital, primarily meant to "express the grandure of a nationwide wish", should differ fundamentally from any other city of half a million inhabitants. Furthermore, it should exhibit a unique architectural expression. Its main character is based on its function as a Governmental and administrative centre and all remaining activities should be organized converging upon it.

4.2.2 As it has been noted, the desire for monumentality was expressed many times throughout the appraisal of the six entries hitherto described. In respect of Lucio Costa's entry the jury made it clear that they were "(...) seeking a well built project which would give the city grandeur through the clarity and proper ranking of its components; in the opinion of the members of the jury, the project which best integrated the monumental elements into the city's daily life, and which is presented as a rational, essentially urban composition - in fact a work of art, is the number 22, submitted by Mr. Lucio Costa." 15

4.2.3 The judges praised the project's attributes in their notes used in the assessment, pointing out the following:
1. The only plan which is for an administrative capital city for Brazil.

2. The elements of the plan can be seen at once: it is clear, direct and fundamentally simple, e.g. Pompeii, Nancy, Wren's London, Louis XV Paris.

3. After ten years the plan is complete while still growing.

4. The town is limited: further growth after 20 years
   a) by peninsulas
   b) by satellites.

5. One centre leads to another, so that the plan can be easily comprehended.

6. The character of the plan is of the 20th century; it is new; it is free and open; it is disciplined but not rigid.

7. The method of growth - by tree planting and a few roads and the mall is more practical than any other." (sic)

4.2.4 Through previous appraisal of both the prize winning entries and the judgement of the competition, one can see that all were essentially most influenced by the principles and ideas of modern urban design, which at the time were well publicized and energetically applied throughout the world: functional
zoning; circulation systems essentially designed for the motor
vehicle, with segregation of motor traffic from pedestrians;
green belts; open spaces for recreational purposes and greenery;
neighbourhood principle; high rise housing.

4.2.5 It has been widely recognized, even by many of the com-
petitors, that Lucio Costa's plan was the one which best synthe-
sized those principles. Exhibiting an impressive ability to
utilize his broad intellectual background Lucio Costa devised a
plan which can be seen as a legitimate representative of contem-
porary visions of urban design. Although many of the competi-
tion schemes have been influenced by Le Corbusier ideas, "Costa's
scheme represented the most complete realization of the French
architect's visionary urban designs". 17

4.2.6 Another important feature of Costa's plan is that the
city would be born as an "adult skeleton". Instead of "a pattern
of growth and expansion" the plan devised a complete image of the
city. The shape, extension and architectural character would be
defined from the beginning. Costa's plan provided a complete
road network, which could readily be laid out in its entirety,
thus ensuring against the jeopardy of future misled deviations.
This characteristic of the plan certainly was most influential
on the jury's decision, for the devised project would achieve the
desire of the President of transferring the capital during his
term of office. As Costa put it, in a figurative way: "we have to finish in five years, or the forest will return". 18

4.2.7 Finally, it is worth remarking that one of the features of the competition was the importation of concepts and devices of urban design. At that time they were evenly applied in every country and region in the world, for sharply distinct societies, within disparate ecological and technological conditions. Perhaps the intellectual attitude of seeking for monumentality, newness and environmental order, led both competitor and jury to neglect, to a certain extent, the national and local conditions, i.e. the nature of Brazilian urban societies, the geographical, economic and technological framework.
SECTION B

IMPLEMENTATION
INTRODUCTION

It appears that a conflict of loyalties overwhelmed the builders of Brasilia: that of seeking monumentality, rationality and tidiness, which are inherent in the idea of the symbolic city, and, at the same time, being obliged to respond to the legitimate demands of a typical Brazilian urban society, which seeks spatial provisions manifesting its own nature in forms that are not always 'pleasant' or 'rational'. This conflict greatly marked the realization of the city.

The monumental areas of Brasilia followed to a large extent the precepts of Lucio Costa's Pilot Plan, which were further stressed by Niemeyer's architecture. However, contrary to the recommendations of Costa, the housing provisions within the planned area do not cater for the entire population, which is widely distributed throughout the rarefied urban structure comprising the
'Pilot Plan' and the satellite settlements. Similarly, some of the initial propositions of the master plan were upset by an unforeseen community usage of the urban structure.

In this section we will be looking at some features of the realization of the city, paying particular attention to some of the most relevant deviations from the plan.

Chapter five covers aspects of both the realization of the city up to 1960, and the evolution of the system of decision-making and resources allocation, highlighting also facts which greatly marked the future development of the city.

Chapter six deals with the creation of satellite towns and other official settlements, showing how the practice of eradicating 'squatter settlements' influenced the shaping of the expanding Brasilia.

Chapter seven describes some deviations from Lucio Costa's Pilot Plan which were either the result of incompetent official action, or were created in response to the natural demands of the population. Although these deviations are severely condemned by many local architects and planners, it is the author's contention that from them lessons may be derived about the relationship between the spatial organization of the city and the social life that goes on within it.
5.1 The First Four Years

5.1.1 On the basis of the preliminary project submitted to the competition, Lucio Costa prepared a final plan in which the city was positioned nearer to the lake. New provisions were incorporated. An additional row of superblocks was disposed along both residential wings on the east side of the motor axis. The land strip, previously designed for horticulture, flower and tree nurseries, was finally designated as a sector for 'popular housing'. A sector for service industry was also created. Although the lakeshores adjacent to the city had been maintained as recreational area, the areas on the opposite side were allocated for individual housing. The previous provision for an expanded housing sector for houses of 'high architectural order', took the form of a large area subdivided into 100 x 200 meters 'suburban plots'. Nowadays they are known as Lotes de Mansão (plots for mansions). (Fig. 15).
5.1.2 Subsequent to the approval of the plan, 36 months remained in which to 'build the city', for it had been decided that the dedication of the capital would take place on the 21st April, 1960. The limitation of time together with the referred political goal (that of transferring the capital within Kubitscheck's term of office) plus the desire to make it an irreversible step, provided the context within which construction works were conducted. Several sectors were tackled simultaneously, ranging from the monumental axis to the residential sectors. By doing so another goal would be achieved, that of determining a pattern for both the architectural and urban development of the city thus preventing future deviations. The works were undertaken at an astounding pace.

5.1.3 For such an enterprise to be successful, it would demand the dedication of capable professionals. As had happened before in Belo Horizonte, Kubitscheck reckoned on the skills of Oscar Niemeyer, the imaginative and fertile architect who provided the forms which would make the plan a reality. Lucio Costa would act essentially as consultant town planner (urbanista). The president involved himself in the administration of the works together with Mr. Israel Pinheiro, head of NOVACAP. They energetically impelled the construction of the city, providing the necessary human, institutional material and financial support. Both politics, administrators and architects were enthusiastically supported by a corps
of professionals and workers who converged on the site, seeking the honour, privilege and excitement of pioneering Brasilia. They were motivated by a variety of aspirations: hope of making a new life; desire to get a job or to become rich; or to escape the lack of satisfaction with their previous situations. In January, 1957, there were already 2,500 workers on the site.

5.1.4 The works were conducted in an atmosphere of enthusiasm and creativity. The writings and statements of pioneers tell of the existing individual sense of responsibility and the democratic spirit prevailing on the site. As Niemeyer put it:

"That human solidarity .... gave us the impression of living in a different world, in the new and just world we had always wished for. At the time we lived as if in a great family, without prejudice and inequality. We lived in the same houses, ate in the same restaurants, frequented the same places of amusement. Even our clothes were similar. We were united by a climate of fraternization resulting from identical discomforts." 2

5.1.5 Important steps in the implementation of the city had been taken before Costa's plan was approved. NOVACAP was created in September 1957. A provisional Presidential residence was built in ten days, in October, 1956. The road link between Brasilia and Anapolis was started in the same month. This 135 kilometer
road would connect the site with the nationwide road network, extending towards the Sao Paulo region. On the 18th February, 1957, some 77,000 hectares of land within the Federal district was transferred to the Union. NOVACAP was given full powers over this land, comprising distribution of uses and control of sale. The Presidential Palace, the first hotel and Airport runways were under construction in March, 1957.

5.1.6 Other important works were started immediately after the delivery of the working plan: The bulk of the main road network devised by Costa was laid down, as well as some of the regional arteries. The road connection with Belem, 2500 Km to the north, was undertaken in December, 1957. Oscar Niemeyer, accompanied by a team of young architects, provided a number of impressive designs in a remarkably short time, aiming at the completion of a group of selected buildings which would indicate that the city had begun, and in readiness for dedication day. Indeed on the 21st of April, 1960, the city was recognizable, exhibiting most of the Monumental axis and parts of its various urban sectors. (Fig. 16). The houses of the 'three powers', Congress, Presidential offices and Supreme Court, were built in their spacious square (Praça dos Tres Poderes). The mall with the eleven Ministries, the Cathedral's structure and the exchange platform were accomplished at this stage. Several superblocks were built, as well as the bulk of the 'popular houses' in the south wing. In the city centre one could see three
18 storey office buildings within the commercial district, plus the Bank of Brazil building and the complete structure of the National Hotel, a private development. A district hospital, partially finished, was already in operation. Community facilities were provided in some areas. A major shopping development was permitted - even encouraged - in the sector previously designed for warehouses and workshops. This deviation from the plan would prove a strong influence in the use of the planned urban area.

5.1.7 Although at that period the bulk of thought and energy was directed towards the achievement of architectural and civic design goals, some sectional plans were developed for three major activities; Education, Health and Food Supply. To a certain extent these plans influenced the preparation of the briefs for early local and rural developments. The Educational Plan had been prepared by a team of experts, among them the acknowledged scholar, Anisio Teixeira. According to the plan, education would be offered at three levels: the first, Kindergarten for children under six years; the second, primary education, would be provided for children from seven to twelve and through two specialized schools - the "lesson school", which would perform the functions of basic education, and the "park school", which was designed for artistic, social and physical development of the children (arts, metalwork, sports, literature and theatre). There would be a "lesson school"
for each superblock, and a park school for each neighbourhood (a group of four superblocks). Secondary education, the third level, would be performed by educational centres (*centros de educação media*), one per each population group of 45,000, and catering for 2,700 to 3,500 students. It would be similar to the British comprehensive secondary schools, providing the students with a wide spectrum of opportunities in the field of arts, sciences, technology, sports, literature. This plan would be applied both in the planned area and satellite towns, without preference.

5.1.8 The health plan envisaged a system of medical attendance evenly distributed throughout the city. A District Hospital would serve each group of four neighbourhoods (45,000 people) providing a similar spectrum of service to the British Health Service.

5.1.9 The food supply plan was prepared by the Department of Land and Agriculture, a section of NOVACAP. This Department had hitherto devised a scheme for the distribution of rural plots, to be grouped in community units, coined 'regions' and defined by size, geomorphological factors and accessibility. The plan envisaged a system comprising three levels: 1 - Rural units, which would promote social and economic development of rural communities; 2 - Food supply centre - performing the functions of storage, trade centre, finance, technical assistance, planning and control
of both production and supply; 3 - Super-markets, which would be distributed throughout the urban areas. The author of that plan, which should aim at the provision of industrial activities within the area and which would cope with both the consumer and employment demand of the population. 3

5.1.10 The migrants flocked to Brasilia as work became increasingly available. The bulk of the migrants provided the manual labour for the building tasks. The remarkable pace of the construction provided opportunities for overtime work, thereby the pay was good compared to other places in the country. Figures for population in the period show clearly the intensity of that migratory process.

Table 1

<table>
<thead>
<tr>
<th></th>
<th>POPULATION OF THE FEDERAL DISTRICT, 1957-1960</th>
</tr>
</thead>
<tbody>
<tr>
<td>June</td>
<td>1957</td>
</tr>
<tr>
<td>April</td>
<td>1958</td>
</tr>
<tr>
<td>May</td>
<td>1959</td>
</tr>
<tr>
<td>September</td>
<td>1960</td>
</tr>
</tbody>
</table>

SOURCE: IBGE (Census data 1959, 1960 and estimates 1957, 1958)
5.1.11 The problem of accommodating these workers would challenge authorities and architects throughout the history of the capital. It was a prominent factor in the make-up of current expanding urban pattern. In the early stages NOVACAP provided a temporary service centre for the drive to construct the city—the so-called Free-Town (cidade livre). Provisional concessions of plots were allocated for Banks, shops, warehouses, hotels, housing, and amusement facilities. In May 1959 this town comprised 11,600 people. Besides the Free-Town other construction camps were settled, e.g. Velhacap, built by NOVACAP, and Vila Planalto the largest ones. Another provisional Town, Vila Amauri (housing 6,000 people in 1959) was established on the north side of the city, in an area which was later flooded by the artificial lake.

5.1.12 Apart from the permitted camps and provisional towns, spontaneous settlements appeared everywhere near to the most dynamic nuclei. They are called 'invasions' as in Salvador, as they invade state land (later to be called 'squatters'). The concern with the growth of those squatter settlements led the authorities to the creation of the first satellite town, Taguatinga, 28 Km. from the planned city. It was the beginning of an important process, which is further studied in chapter six.
5.2 Decision Making

5.2.1 In the early years the President, Architects and NOVACAP exercised a centralized command of the works. The circumstances dictated the pace and mode of running the enterprise. Since the establishment of the city was mainly as an architectural realization as opposed to a planning operation, Lucio Costa and Oscar Niemeyer performed a prominent role in the decision making at the time. The development of the city, however, depended heavily on the personal involvement of the President, whose dedication and administrative support greatly contributed to the success of the task.

5.2.2 NOVACAP was given wide ranging power to perform its role: massive financial support and virtual ownership of land. It was ascribed a wide scope embracing the functions of a Development Corporation with those of a Prefecture. It was in charge of the design and supervision of the main buildings through the Architecture Department, headed by Oscar Niemeyer. Through congressional appropriations, land, trade and other minor sources, the company was provided with the funds for financing infrastructure works, roads and main Government buildings. It was also responsible for construction management as well as the supervision and control of private development. It had specialized subdivisions dealing with Education, Health, Social Welfare and Food Supply. There
was also a working group in charge of settling newly arrived officers.

5.2.3 In 1960, after the dedication, a Prefecture was created and subsequently held by Mr. Israel Pinheiro, Brasilia's first Mayor. No local council was created. The senate was assigned to deal with legislative matters concerning the capital. A council for Architecture and Urbanism was created - CAU. It was entrusted with top level decision making regarding the physical development of the city. Four specialized agencies were created: three foundations, for Education, Health and Social Welfare, and a Department of Land and Agriculture. NOVACAP still remained an influential agency, dealing with urban design, architecture and construction. From 1960 to 1964 no substantial changes were observed, both in the administrative and in the physical development of the city. The works were conducted at a slow pace during these years.

5.2.4 In 1964 the Government of Marshall Castelo Branco faced a dilemma, that of undertaking the "folly of finishing Brasilia" or the "crime of abandoning her" (words attributed to the President himself). It was then decided that the construction of the city would be carried on; however, not in the same pace of the first years. Plinio Catanhede was appointed Mayor. Administrative reforms were set about and unfinished works started by previous
administrations were completed. NOVACAP was then absorbed by the newly created Government of the Federal District, under the Secretary for Public Works. The working committee G.T.B. was transformed into an autonomous agency for housing development, CODEBRAS (Coordenação do Desenvolvimento de Brasilia). It's assigned tasks were planning, the design and construction of houses and apartment blocks for federal civil servants. Another housing agency was created to cope with the needs of low income segments of population - SHIS (Society for Housing of Social Interest).

5.2.5 General Costa e Silva took office in 1967, bringing with him the intention of transferring important Government bodies still settled in Rio de Janeiro, to the capital. The appointed Governor, Engineer Wadjo Gomide, supported by a new technical staff, tackled important works such as the extension of networks of infrastructure and services. Building programmes were undertaken, mainly for schools and housing. The agricultural sector was given new drive through additional financing and technical assistance. During his time of office a planning body was created - CODEPLAN (Companhia do Desenvolvimento do Planalto Central), 1967. Although conceived of being in a much broader context, this agency promoted studies mainly on social and economic aspects within the Federal District area, paying little attention to physical planning and to the regional implications of the capital.
5.2.6 President Garrastazu Medici, Costa e Silva's successor, took office in 1969. He also came to office with the firm purpose of transferring all major government activities to Brasilia. A deadline was set for the establishment of all heads of Ministries and other government agencies in the capital — 21st of April, 1970. Foreign embassies were informed that from 7th September 1972 onwards diplomatic accreditation and prerogatives would be ensured only for diplomats residing in Brasilia. Those decisions were accompanied by some administrative changes and renewed activity in construction.

5.2.7 The government organization devised for the Federal District (Governo do Distrito Federal - GDF) is split into two distinct groups: the 'Central Administration' and 'Indirect Administration'. The first group embodies the Governor's Cabinet, nine Secretaries (Education, Administration, Finance, Health, Agriculture, Social Welfare, Transport and Works, Public Services and Public Safety), and three special bodies (Military Police, Fire Brigade and Accounting Tribunal). 'Indirect Administration' comprises Government agencies, more executive in character. They are designed for a more active role in the development of the capital: NOVACAP remains still as the most powerful agency for designing and supervising works. CODEPLAN still is the only agency fully involved in survey and analysis of social and economic aspects of the Federal District; however, it has made some incur-
sions into planning, with emphasis on economic aspects. SHIS remains the agency most concerned with low income housing. Besides those agencies involved with physical development there are three foundations carrying out programmes of their own: Social Welfare Foundation (FSSDF) Cultural Foundation (FCDF), and Zoobotanic Foundation (FZDF). Apart from these agencies, which are linked to the Federal District Government, there is still CODEBRAS, now subjected to the Federal Government and having large responsibility for the provision of housing for Federal civil servants.

CoAU (Coordination of Architecture and Urbanism), a technical body, has the role of coordinating the somewhat overlapping activities of the above mentioned agencies, attempting also to establish overall development policy. There is also the top level Council for Architecture and Urbanism (CAU), constituted by Lucio Costa, Oscar Niemeyer and Israel Pinheiro as lifelong members, plus the actual Governor, Secretary of Works and heads of agencies involved in physical development.

5.2.8 Apart from official agencies, private developers do undertake some developments in the area, although in small scale projects. Nevertheless, the private sector is responsible for the bulk of building activities, representing 96% of total investment in construction. The public sector is responsible for the remaining 4%. The participation of private sector in the supply of houses, although being virtually negligible in the first years, experienced an increase
between 1968, 1969 and 1970. 5

Table 2

HOUSES SUPPLY BY SPHERE OF ACTIVITY

<table>
<thead>
<tr>
<th></th>
<th>Public</th>
<th></th>
<th>Private</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Units</td>
<td>%</td>
<td>Units</td>
<td>%</td>
</tr>
<tr>
<td>1968</td>
<td>7,648</td>
<td>90.3</td>
<td>821</td>
<td>9.7</td>
</tr>
<tr>
<td>1969</td>
<td>4,739</td>
<td>78.5</td>
<td>1,294</td>
<td>21.5</td>
</tr>
<tr>
<td>1970</td>
<td>5,386</td>
<td>71.8</td>
<td>2,115</td>
<td>28.2</td>
</tr>
</tbody>
</table>

SOURCE: CODEPLAN, 1971

5.2.9 To conclude this brief description of the processes of 'planning' and decision making in Brasilia five relevant issues should be pointed out. Firstly, Lucio Costa's Pilot Plan is still the only document upon which decisions are based. This does not mean, however, that the plan is always complied with. The master plan offers the basic criteria upon which one of three courses of action are taken: to follow its propositions, to push out of the planned area whatever is incompatible with the plan or to promote piecemeal mutilations to the plan to cope with unforeseen pressures.
The second observation is linked to the first, being that comprehensive planning has not yet been undertaken. Thereby, the development of the city is the result of pragmatic responses to emergent crucial pressures, e.g. the creation of satellite towns. Another feature worth remarking, is that most plots have been sold, thus diminishing state control over potential developments within urbanized areas. Finally, it should be noted that there is not a local council in the administrative structure of Brasilia, the Senate still acting as a collegiate to the Federal District Government on matters concerning the city's development and life. CAU remains a top level body for coordination and planning, but it has been proved to be extremely susceptible to political influences.

5.3 Resources

5.3.1 The main structural material in Brazil is reinforced concrete. There are many reasons for this. Steel remains an expensive and scarce material, owing to crescent demand of the emergent industrial complex. The labour intensive technique of reinforced concrete ensures the opportunity for a wider participation of unskilled workers in building activity. Brazilian structural engineers proved themselves extremely skilled, incorporating the most advanced concepts of reinforced concrete, including provisions for design in an ultimate strength basis. In Brasilia
the employment of reinforced concrete found another ground: its plasticity allowed Niemeyer the freedom to express his lyrical and inventive temperament. Therefore, although the ministries, a few office buildings and Brasilia Palace Hotel have steel frame structures, the bulk of the constructions were of reinforced concrete.

5.3.2 With the exception of brick, gravel and sand which could be found in the region, the bulk of building materials were transported great distances. Steel, cement and manufactured goods were supplied by the industrialized areas of the country — Sao Paulo (1,300 Km.), Rio (1,500 Km.) and Belo Horizonte (800 Km.). Wood was transported from Parana (2,000 Km. to the south). In fact these flows of materials are still going on, although some industries were settled within the region, providing steel and aluminium frames, timber joinery, fibre-cement tiles and pipes, pre-cast concrete pipes, poles and sanitary equipment. It is true that some building materials were flown to Brasilia in the early days, a fact that some times is used to stress the pioneering character of the period, but otherwise fed the detractors of 'Kubitschek's adventure'. However, since road connections were established with Sao Paulo (1958), Belo Horizonte (1960) and Belem (1960) the accessibility of the area was ensured.

5.3.3 There is a contention about the estimate of expenditure
made in the first years with the construction of Brasilia. A figure of £250 million is given by H. Mindlin. However, C. Lafer gives the figure of Cr $ 250.000.000.000 (in prices of 1961) which would equal some £375 million, which is estimated as being 2.3% of the G.N.P. To the opponents of Brasilia, the costs were their main objection, accusing the city of being 'a crime against the country's economy'. To the defenders of Brasilia, it represented an expansion of the scope of the economic system, constituting a growth point, whose long term benefits would largely gratify the initial national investment.

5.3.4 Financial support was provided by many government agencies. NOVACAP was provided with grants to finance infrastructure and main Government buildings. However, the bulk of the housing provided at the first stage was financed by other agencies. The National Pensions Institutes (IAP's) constructed several superblocks in the south and north wings (SQS 407, 408, 409, 410, 411, 412 and SQN 403, 404, 405, 406) (Fig. 16). Three superblocks were undertaken by the Bank of Brazil (SQS 308, 114, 714). The Foundation for Popular Housing carried on the construction of a large sector of row houses in the south wing (superblocks numbered 700). Part of the development cost was recouped through the sale of plots within the urbanized area - 13,769 plots, out of 18,018, had been sold at a value of Cr $ 4,755,803 (some £23.8 million). If one contemplates the cost of development of the city this was effectively
a gift to the buyers.9

5.3.5 The Federal District is still today, to a high degree, dependent on Federal Government policy in relation to Brasilia. This dependence is related to both the programmes of expenditure and money supply. The following table illustrates the degree of participation of the Central Government in the total income of local administration.12

Table 3

EVIOLUTION OF LOCAL GOVERNMENT INCOMES (By Sources)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Own Sources 1</td>
<td>45,300,000</td>
<td>49,500,000</td>
<td>58,200,000</td>
<td>50,300,000</td>
</tr>
<tr>
<td>Transfer Payments 2</td>
<td>215,500,000</td>
<td>103,200,000</td>
<td>194,200,000</td>
<td>207,800,000</td>
</tr>
<tr>
<td>ICM (WHEAT) 3</td>
<td></td>
<td>87,000,000</td>
<td>95,000,000</td>
<td>107,600,000</td>
</tr>
<tr>
<td>Financing</td>
<td>3,500,000</td>
<td>10,500,000</td>
<td>18,400,000</td>
<td>3,400,000</td>
</tr>
<tr>
<td></td>
<td>264,300,000</td>
<td>250,200,000</td>
<td>365,800,000</td>
<td>369,100,000</td>
</tr>
</tbody>
</table>

1 Taxes, rents, interests, others
2 Basically Government Appropriations
3 Tax on Circulation of Goods

SOURCE: CODEPLAN
Recent trends indicate some changes in this picture. Income from 'local sources' increased considerably in the last years, owing to improvements in the taxation system, as well as to the increase of activities within the Federal district. As for the ICM wheat is programmed to be phased out. The last government instigated a new drive to transfer government bodies and respective civil servants to Brasilia. Thus the programme of expenditure of local administration experienced an increase, as shown below:

Table 4

<table>
<thead>
<tr>
<th></th>
<th>Crs. $ 100 (1970 prices)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1969</td>
</tr>
<tr>
<td>Administration</td>
<td>78,700,000</td>
</tr>
<tr>
<td>Public Safety</td>
<td>52,500,000</td>
</tr>
<tr>
<td>Education</td>
<td>71,600,000</td>
</tr>
<tr>
<td>Housing and Urban Development</td>
<td>75,400,000</td>
</tr>
<tr>
<td>Health</td>
<td>81,000,000</td>
</tr>
<tr>
<td>Others</td>
<td>49,200,000</td>
</tr>
<tr>
<td>TOTAL</td>
<td>408,400,000</td>
</tr>
</tbody>
</table>

SOURCE: CODEPLAN
5.3.7 The investment programme for housing in the period 1971-1973 anticipated the expenditure of Cr. $658,032,855 (some £42 million) to be distributed as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1971</td>
<td>198,597,430</td>
</tr>
<tr>
<td>1972</td>
<td>241,323,287</td>
</tr>
<tr>
<td>1973</td>
<td>218,112,138</td>
</tr>
</tbody>
</table>

This investment is derived from four sources: Federal District Government - Cr.$4,500,000, the National Bank for Housing (BNH) - 135,827,532, Federal Government bodies, through CODEBRAS - 177,990,088 and the Federal Savings Bank (CEF) - 339,715,235. The programme proposes the construction of houses and apartments ranging from small units of 24.00m², mainly in the satellite towns, to 150.00m² units within the 'planned' area.
6.1 Population and Location

6.1.1 The population of Brasilia grew at a high rate throughout the early years. The attraction exerted by building activities and the transfer of some government bodies to the capital stimulated migration towards the city. The incoming population migrated from the nearby regions but also, in large numbers, from the depressed areas in the North-east of the country - a thousand miles away. During the period between 1960 and 1969 the annual rate of population growth steadily decreased from 32.03% in 1961 to 8.79% in 1969, persisting around the same level for the subsequent years. About 80% of Brasilia's present population is immigrant.
**TABLE 5**

**ESTIMATE OF POPULATION ON 1st JULY OF EACH YEAR 1960-69**

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
<th>Increase</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960</td>
<td>134,992</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1961</td>
<td>178,228</td>
<td>43,236</td>
<td>32.03</td>
</tr>
<tr>
<td>1962</td>
<td>222,727</td>
<td>44,499</td>
<td>24.97</td>
</tr>
<tr>
<td>1963</td>
<td>266,899</td>
<td>44,172</td>
<td>19.83</td>
</tr>
<tr>
<td>1964</td>
<td>313,290</td>
<td>46,391</td>
<td>17.38</td>
</tr>
<tr>
<td>1965</td>
<td>350,749</td>
<td>37,459</td>
<td>11.96</td>
</tr>
<tr>
<td>1966</td>
<td>388,202</td>
<td>37,453</td>
<td>10.68</td>
</tr>
<tr>
<td>1967</td>
<td>438,442</td>
<td>50,240</td>
<td>12.94</td>
</tr>
<tr>
<td>1968</td>
<td>487,284</td>
<td>48,842</td>
<td>11.14</td>
</tr>
<tr>
<td>1969</td>
<td>530,122</td>
<td>42,838</td>
<td>8.97</td>
</tr>
</tbody>
</table>

**SOURCE:** CODEPLAN - 1970

6.1.2 The rural population was 5% of the total population in 1968, against 11% in 1960. This is due to the high rates of population growth in urban areas, while the rural areas experienced a lower pace of expansion.
Figure 17
POPULATION PROJECTION AND AGE STRUCTURE

POPULATION PROJECTION

SOURCE: CODEPLAN, I PLANO DE DESENVolVIMENTO INTEGRADS - 1970

AGE STRUCTURE
TABLE 6

URBAN AND RURAL POPULATION - 1960 AND 1968

<table>
<thead>
<tr>
<th></th>
<th>1960</th>
<th>1968</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>120,564</td>
<td>462,928</td>
</tr>
<tr>
<td>Rural</td>
<td>14,428</td>
<td>24,356</td>
</tr>
<tr>
<td>TOTAL</td>
<td>134,992</td>
<td>487,284</td>
</tr>
</tbody>
</table>

SOURCE: CODEPLAN - 1970

6.1.3 The population projections for the Federal District are subjected to a high degree of uncertainty owing both to the uncertain behaviour of migration and governmental policy. CODEPLAN 3 established in 1970 the following pattern for population expansion (Fig. 17):

TABLE 7


<table>
<thead>
<tr>
<th></th>
<th>Minimum</th>
<th>Average</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1971</td>
<td>582,454</td>
<td>603,915</td>
<td>625,376</td>
</tr>
<tr>
<td>1972</td>
<td>609,265</td>
<td>637,965</td>
<td>666,665</td>
</tr>
<tr>
<td>1973</td>
<td>633,454</td>
<td>670,890</td>
<td>708,286</td>
</tr>
<tr>
<td>1974</td>
<td>655,124</td>
<td>702,629</td>
<td>750,134</td>
</tr>
<tr>
<td>1975</td>
<td>674,331</td>
<td>733,242</td>
<td>792,153</td>
</tr>
<tr>
<td>1976</td>
<td>691,111</td>
<td>762,710</td>
<td>834,309</td>
</tr>
<tr>
<td>1977</td>
<td>705,482</td>
<td>791,033</td>
<td>876,584</td>
</tr>
<tr>
<td>1978</td>
<td>717,454</td>
<td>618,209</td>
<td>918,964</td>
</tr>
<tr>
<td>1979</td>
<td>727,038</td>
<td>844,241</td>
<td>961,444</td>
</tr>
<tr>
<td>1980</td>
<td>734,237</td>
<td>889,126</td>
<td>1,004,015</td>
</tr>
</tbody>
</table>

SOURCE: CODEPLAN - 1970
6.1.4 The age structure of the incoming population corresponds closely to the average for regions of low income level. Therefore Brasilia's population is dominated by young groups (47% in the 0-14 years age group), or 57% in the 0-19 years age group. Such an age structure produces a large school population (4-14 years age group), and also a heavy financial burden on the adult population. (Fig. 17) 

TABLE 8

<table>
<thead>
<tr>
<th>AGE/SEX STRUCTURE - 1968</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 4</td>
</tr>
<tr>
<td>5 - 9</td>
</tr>
<tr>
<td>10 - 14</td>
</tr>
<tr>
<td>15 - 19</td>
</tr>
<tr>
<td>20 - 24</td>
</tr>
<tr>
<td>25 - 29</td>
</tr>
<tr>
<td>30 - 34</td>
</tr>
<tr>
<td>35 - 39</td>
</tr>
<tr>
<td>40 - 44</td>
</tr>
<tr>
<td>45 - 49</td>
</tr>
<tr>
<td>50 - 54</td>
</tr>
<tr>
<td>55 - 59</td>
</tr>
<tr>
<td>60 - 64</td>
</tr>
<tr>
<td>Over 65</td>
</tr>
</tbody>
</table>

SOURCE: CODEPLAN - 1970
6.1.5 As mentioned earlier (5.1.11) NOVACAP provided provisional locations for the masses of migrants: Free Town, Vila Amauri, Vellacap. Other building camps were permitted. These accommodations, however, were insufficient to cope with the expanding demands. Therefore, as occurs in many other Brazilian cities, squatter settlements appeared, being the only possible solution for the lower strata of the incoming population. Settlements grew in several places, near to the working sites or near to the more active centres which had been either sanctioned or built by government. They were accepted by the authorities and welcomed by the building companies, as they housed the workers required for the construction tasks. This practice can still be found in Brasilia. A considerable number of single people and sometimes families live attached to building sites, in wooden shelters, for the duration of the works. They are tolerated while the works are carried out, being essential labour. As the construction is finishing they move away, often carrying the old shelter with them.

6.1.6 The squatter settlements inevitably cause concern to the authorities and community - they constitute a political embarrassment to government, threaten public order and cause visual disarray. The government usually resorts to expediency which has varied in nature throughout the history of the city, according to the prevailing circumstances, but all policies have commonly
shared the principles of 'removal'.

6.1.7 In 1968, the largest and most threatening of the squatter settlements developed adjacent to the Free Town and across the São Paulo road. As the Free Town was the main activity area in the Federal District, it offered opportunities for the development of small trade, menial work, etc. - the 'popular informal growth system', as enunciated by Patrick Crook NOVACAP then decided to create a satellite town, primarily to cope with the problem of spontaneous settlements. Squatters would be shifted from the 'invasions' to Taguatinga, as it had been christened. It is Ernesto Silva who describes the events involving the foundation of the town as follows:

"It was a Saturday, Juscelino was visiting Brasilia, and had been invited to dine in the J.K. Restaurant, in the Free Town. At the sunset a mass of about 4,000 people were gathered near the restaurant holding signs saying "we want to stay where we are", "Viva President Juscelino", "we founded Vila Sarah Kubitschek". (Dona Sarah was President's wife). The excitement was intense. Israel Pinheiro asked me to go to the place, which I did. I climbed onto a wooden box and addressed the demonstrators. I told them that NOVACAP had already arranged for the creation of a satellite town, 25 km. from the Pilot Plan, and in this place each worker would have his own lot and could acquire it for a reasonable price over a long term."
"(...) I arranged with the committee of representatives of Sarah Kubitschek Town, a meeting for the next day - Sunday, at 7 a.m., when the plan of the new town would be shown and the way by which the transfer would be carried out could be examined.

"As combined, next morning (...) the meeting took place (...) After exhibiting the plans we promised that NOVACAP would move everybody, put up shelters and take steps to provide medical care and schools." 6

Silva mentions that 'doubt and suspicion' still persisted, and attributed part of the blame for the difficulties to some businessmen in the Free Town "who stimulated invasions because the residents were customers for building materials, and later for food".

6.1.8 Following Monday the moving tasks began with the help of two social workers, nuns Olga e Terezinha, who were in charge of listing the families and assisting the authorities with the tasks of persuasion. However, as Silva said, "the resistance was enormous". In the first day they could move only a single family. That night a hundred people marched to NOVACAP's provisional wooden offices claiming for the night to stay in the place, some proposing to set fire to the offices. During the following days new efforts were made. NOVACAP's working team brought wood, nails and zinc tiles and carried on the operation. Finally, in ten days, four thousand people were moved.
"We dismantled, transported and rebuilt the shacks, moved furniture, squatters' effects, men, women and children. We built about a thousand pit latrines, one for every lot. We put in a provisional water network, God knows how (He will forgive us!) We instituted daily transportation in lorries provided by NOVACAP and building companies. We assured a minimum of medical assistance." 7

6.1.9 The first satellite town had been 'founded'. Authorities and squatters performed a role which would be repeated many times in the history of the city. From the view of the authorities the task had been successful, for the 'invasion' had been removed. However, it was not a planned establishment of a new town. The main locational criterion was to place it outside the watershed of the Paranoa Lake, thus preventing its pollution. The satellite town was sited 25 kilometers further away on the same road towards São Paulo. (Fig. 18). Early in 1959 the first brick and stucco school was built; a hospital and a School of Technology were officially opened later.

6.1.10 Although the initial intent was to introduce a new system of land tenure (inalienable possession of the family) under the control of the local authority, it was soon abandoned. As the town enlarged new activities were attracted to the place (shopping, warehouses, amusement facilities, small industries).
Figure 18
SETTLEMENTS EXISTING IN 1968
TAGUATINGA

SOURCE: AUTHOR’S RECONSTRUCTION FROM SEVERAL BIBLIOGRAPHIC SOURCES
In 1964 it reached a 68,947 population. Squatter settlements held a prominent role in this expansion, for it became an important centre for odd jobs and small trade.

6.1.11 Meanwhile the Free Town expanded. New cessions for plots were made to respond to expanding demands. The planning of the town was not a primary concern, as it would disappear when the planned city could accommodate the bulk of the activities which were located there. Its main aim was to house major retail and wholesale activities, seconded by banking. The presence of these interests proved strong enough to consolidate the settlement. A major effort to remove the Free Town was made in 1961. Paulo de Tarso Santos, appointed Mayor by President Janio Quadros, attempted to move commercial establishments and families to both the North Wing (within the planned area) and Taguatinga. Although the bigger firms did move out, attracted by better opportunities offered in the growing city, small traders and local residents persisted in their intention to stay in the 'town'. They were supported by politicians who had a vested interest in doing so or even sincerely concerned for the people, the Civil Construction Trade Union and obviously the Commercial Association of Brasilia. After a rather agitated period, a law was finally passed, on 20th December, 1961, allowing the rechristened 'Nucleo Bandeirantes' (Pioneer Town) to remain.
"Article one. The so called Pioneer Nucleus in the present Federal District is considered a satellite town of Brasilia.

Paragrafo Unico: The locality treated in the present article may not be moved to any other area. The construction of wooden permanent property is not permitted there ..." 8

6.1.12 It was not until 1964, under the Mayor Plinio Catanhede, that a physical plan for 'Nucleo Bandeirantes' would be prepared. Providing for a population of 12,000, it proposed definite locations for commercial activities and social facilities. Later a large number of 'conjuntos habitacionais' (official housing estates) replaced the previous wooden shanties and the road system was rearranged and partially paved.

6.1.13 Other official settlements were established in the following years. Behind the development of the planned city, today so called 'Plano Piloto', an unforeseen, premature and official urban sprawl was steadily being laid out. Planaltina, an eighteenth century town which in 1959 had a 2,000 population, was expanded by the addition of a spacious enclave, Vila Vicentina, with unpaved roads serving plots for the relocation of people removed from the 'invasions', (4,000 people in 1964, 22,000 in 1970). Many of the previous residents of Planaltina are still involved with the traditional activity - cattle raising - however, the bulk of the
population works in the planned centre, 'Pilot Plan', thus generating substantial community difficulties.

6.1.14 However, not only the problem of the squatter settlements motivated this expansion. An overall scarcity of housing also stimulated similar 'decentralist' initiatives. In 1961 Brasilia's Working Group - GTB - perhaps feeling that the superblocks as originally conceived, did not accommodate a flexible response to the varied housing demands, ordered the construction of a housing estate, the so-called Cruzeiro, outside the planned area to the west, near the railway station and in the Sector for Industry and Food Supply - SIA. It was designed as an enclave of row houses, similar to those conceived by Niemeyer along the W3 Avenue. Lucio Costa strongly protested against the proposal in a letter sent to the President of NOVACAP on July, 1961. In this letter, after emphasizing the adequacy of the housing schemes provided in the master plan, Costa asserted:

"(...) the general mistake of considering the superblock areas destined only to a certain category of tenant, in consequence creating the present problem, artificially, and the resulting proposal for 'economic' solutions that are really an aberration, like this one of spreading in the urban areas
available thousands of little houses, without taking into account how expensive this is (…) and not only expensive but serious (…) for such dispersive solutions counter the original scheme of the plan, conceived exactly with the intention of avoiding the usual problems of rarefied urban reticules (…) No civil servant ought to live outside the residential area concentrated along the residential axis: if he does, let it be caprice and personal initiative, not impelled by the circumstances." 9

After pleading for the abandonment of the proposed project, already under construction, Costa recommended the design of new solutions for the superblocks, containing appropriate proposals for low cost housing, as well as the occupation of the North Wing which remained up to that time almost untouched. However, the appeal had no echo. The project was carried out. Later on that estate would be expanded, and is currently occupied by middle level civil servants.

6.1.15 The same pressures which led to the decisions previously described continuously enforced the creation of similar settlements. In 1960 another satellite town was founded - Sobradinho, (25 kilometers from the Plano Piloto). A superior scheme was prepared for this town, incorporating some principles of modern urban design, such as pedestrian precincts in shopping districts, open
spaces for recreational purposes and greenery. An ordered distribution of housing, community facilities, including a Hospital run by the University of Brasilia, were also provided, although these provisions have not always been used as was intended by the designers. This is the most ordered of the satellites and has essentially become a dormitory town. The bulk of the housing is provided by Government agencies, in the form of 'conjuntos' of isolated individual houses. The great majority of its residents are comprised of middle level civil servants, who, each work day, converge on the 'Plano Piloto'.

6.1.16 A worse fate was reserved for the inhabitants of Gama, the third satellite town to be established, in 1961. 45 kilometers from the 'Plano Piloto', and off the Belo Horizonte-Brasilia roadway, it was intended primarily to relocate squatters removed from the Vila Planalto and other small spontaneous settlements scattered within the planned area. In addition to the problems resultant from the large distance (high transportation costs, an unreliable bus service and time consuming journeys to work) it has also been pointed out that the structure of the town itself made the provision of community and services facilities difficult and town life dull. The constraints imposed on the relocated populations were such that some squatters, in the early times, abandoned their lots, squatting again in some of the remaining invasions.
6.1.17 In spite of the protests of Lucio Costa, Oscar Niemeyer and others, several 'sprawl' projects were undertaken. The schemes proposed for housing in the superblocks did not make any advance in terms of providing for low cost housing. The North Wing remained largely empty, but the outer city did expand. Another neighbourhood was built adjacent to Cruzeiro - the so-called Cruzeiro Novo. In 1969 a large housing estate was founded for a 24,000 population, mainly civil servants - Guara I. It has been placed adjacent to the dual carriageway leading to Taguatinga, near to the SIA. Later another similar development would be undertaken adjacent to Guara I - the so-called Guara II. It has been designed for an ultimate population of 30,000 people.

6.1.18 In spite of the efforts of the authorities the problem of the 'invasions' persisted. The most challenging of these settlements was the so-called Social Security Invasion (Invasão do IAPI). It was initially established for the employees of a hospital run by the Social Security Institute for Industrial Workers (IAPI), and was tolerated for a long time. Official action in the early time was limited to preventing its expansion. Nevertheless, an unsuccessful attempt to remove some of the shacks which had been built on privately owned land was followed by a relaxation of the previous control, and the settlement steadily expanded. It enjoyed the advantages of a suitable location close to 'Núcleo Bandeirantes', adjacent to the main south entrance to
the city, therefore served by abundant transportation. Many of its residents found opportunities for small trade and odd jobs in 'Plano Piloto' and Nucleo Bandeirantes'. It also had a large proportion of its labour force employed in construction.

6.1.19 In 1971, when this 'invasion' reached about 54,000 population, the concern of authorities and community led the local government to take steps towards its eradication. A new satellite town was envisaged to relocate the residents of this settlement and of any other 'invasions' still settled in the planned area. Early in 1972 the last squatters were removed to the new town which had been christened Ceilandia (derived from CEI - Campaign for Eradication of Invasions). This new 'satellite' in 1972 had about 70,000 people. The creation of Ceilandia followed essentially the same scheme adopted in the foundation of Taguatinga, in 1958. Located 35 kilometers from the 'Plano Piloto' the town was located on flat land. The residential areas were arranged around a central open space where community facilities and recreation areas would be located. A network of unpaved roads was laid down, ensuring accessibility to the individual lots, which were allocated to the incoming families. Water was provided in the form of collective taps evenly distributed throughout the settlement. Each family is supposed to build its own shelter, with official support for acquisition of materials. Again the major inconvenience of the town is one of
location. Although the nearby Taguatinga offers increased opportunities for odd jobs and small trade, the bulk of its labour is still attracted by the 'Plano Piloto'.

6.1.20 In July, 1969, 28.41% of the total urban population of the Federal District was living in the 'Plano Piloto'. Taguatinga comprised another 24.77% and 14.81% lived in Invasions. (Fig. 19).

TABLE 9

DISTRIBUTION OF POPULATION - JULY 1969

<table>
<thead>
<tr>
<th>Location</th>
<th>Population</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plano Piloto</td>
<td>143,059</td>
<td>28.41</td>
</tr>
<tr>
<td>Taguatinga</td>
<td>124,729</td>
<td>24.77</td>
</tr>
<tr>
<td>Gama</td>
<td>53,276</td>
<td>10.58</td>
</tr>
<tr>
<td>Sobradinho</td>
<td>31,270</td>
<td>6.21</td>
</tr>
<tr>
<td>Nucleo Bandeirante</td>
<td>18,329</td>
<td>3.64</td>
</tr>
<tr>
<td>Grandes Invasões*</td>
<td>74,576</td>
<td>14.81</td>
</tr>
<tr>
<td>Small Settlements</td>
<td>58,311</td>
<td>11.58</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>503,550</td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

SOURCE : CODEPLAN - 1970

* Social Security Invasion and 'Vilatenorio'
Figure 19
EXPANSION OF BRASILIA
OFFICIAL SETTLEMENTS

1962

1968
6.2 Brasilia = 'Plano Piloto' Plus Satellite Towns

6.2.1 The satellite grouping of communities in the Federal District may give the impression, at a first glance, of being the result of planned action, involving considerations about the regional implications of the new capital, and aiming at the establishment of a balanced urban system where the satellites would play a defined role, having a reasonable level of self-containment. Nevertheless, as it has been shown, the surrounding districts have been subjected to incremental development of a rather random nature. The varied settlements are not adequately interrelated as they do not succeed in achieving a desired balance between population and employment, housing and social services and between utility and amenity. They really keep a strong relationship of dependence with the 'Pilot Plan', and are in fact 'dormitory towns'. Some features of this expanded urban system which are covered in the following paragraphs will illustrate this.

6.2.2 The total urban population within the Federal district is approximately 695,000, with some 240,000 in the 'Pilot Plan' and about 455,000 in the satellite towns and small settlements. The present population within the area is illustrated in Fig. 20. In the last few years very small changes in this distribution have been taking place. If one can see an outward spread of residential development, there has also been a new drive in the
Figure 20
DISTRIBUTION OF POPULATION - 1973

- BRAZLANDIA
- CEILANDIA
- TAGUATINGA
- GUARA II
- GUARA I
- PLANO PILOTO
- N. BANDEIRANTES
- GAMA
- SOBRADINHO
- PLANALTINA

- 10,000 PERSONS
construction within the 'Pilot Plan's' residential areas, as a consequence of the Government policy of transferring Government agencies still settled in Rio de Janeiro to Brasilia.

TABLE 10

DISTRIBUTION OF THE URBAN POPULATION - 1973

<table>
<thead>
<tr>
<th>Settlement</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plano Piloto</td>
<td>240,000</td>
</tr>
<tr>
<td>Taguatinga</td>
<td>140,000</td>
</tr>
<tr>
<td>Nucleo Bandeirantes</td>
<td>15,000</td>
</tr>
<tr>
<td>Sobradinho</td>
<td>50,000</td>
</tr>
<tr>
<td>Gama</td>
<td>80,000</td>
</tr>
<tr>
<td>Ceilandia</td>
<td>85,000</td>
</tr>
<tr>
<td>Planaltina</td>
<td>20,000</td>
</tr>
<tr>
<td>Braslandia</td>
<td>15,000</td>
</tr>
<tr>
<td>Other Settlements*</td>
<td>50,000</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>695,000</strong></td>
</tr>
</tbody>
</table>

* Guara I, Guara II, Cruzeiro, Cruzeiro Novo

SOURCE: CODEPLAN - 1972

6.2.3 A close look at the economic and social condition of the population in the varied urban settlements within the Federal District shows that this disperse urban system became a
analogue to the social hierarchy. It is clear that the 'Pilot Plan' houses the middle class, primarily composed of middle and upper-echelon civil servants, liberal professionals and owners of commercial enterprises. The lower class, basically composed of lower-level civil servants, construction workers, and those who rely on odd jobs, petty commerce and the like, is located in the satellite nuclei. It could be said that Brasilia highlights a common feature of all Brazilian cities, in that the contrast between the totally planned environment of the 'Pilot Plan' and the somewhat randomly built periphery makes the disparities much more perceptible.

6.2.4 Studies on income level carried on by Codeplan in 1970 tell that the average monthly income level per household for all the Federal District equalled four minimum salaries (some £900.00 per annum). The only urban area which produces an income level higher than the overall average is the 'Pilot Plan' (slightly higher than twice the average). Fig. 21 shows the distribution of income per capita by locality within the Federal District.

6.2.5 Correlated with the disparity above there are wide differences in formal education among the various urban nuclei, which confirms the previous generalizations about the distribution of classes in the urban system. Table 10 provides a picture of illiteracy rates in the urban and rural areas of the Federal
Figure 21
DISTRIBUTION OF ANNUAL INCOME PER CAPITA

SOURCE: CODEPLAN, 1970, WITH ADJUSTMENTS TO INCLUDE NEW LOCALITIES
District in 1964.

**TABLE 11**

**ILLITERACY RATES IN THE FEDERAL DISTRICT - 1964**

<table>
<thead>
<tr>
<th>Locality</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pilot Plan</td>
<td>12.3</td>
</tr>
<tr>
<td>Taguatinga</td>
<td>23.0</td>
</tr>
<tr>
<td>Free Town</td>
<td>29.0</td>
</tr>
<tr>
<td>Sobradinho</td>
<td>34.2</td>
</tr>
<tr>
<td>Planaltina</td>
<td>36.1</td>
</tr>
<tr>
<td>Gama</td>
<td>40.4</td>
</tr>
<tr>
<td>Braslandia</td>
<td>40.7</td>
</tr>
<tr>
<td>Social Security Invasion</td>
<td>41.4</td>
</tr>
<tr>
<td>Rural Zone</td>
<td>46.7</td>
</tr>
</tbody>
</table>

EXPRESSED IN PERCENT BY LOCALITY

SOURCE: PDF - SEC 1965

6.2.6 Government is the largest employment source in Brasilia (35.64% of total employment). This sector, in a sense justifies the creation and growth of the city, this being perhaps a common characteristic to other capital cities - e.g. Washington D.C., or Canberra. Secondly, one may find the construction industry as
the main employment source for the lower segments of the urban population (17.36% of total employment). Commerce, transport and communication constitute also important employment sources (15.96% of total employment). The lower classes rely, as we have seen, on menial service jobs, small commerce and domestic work (mainly for women). Most of the employment sources are located in the 'Pilot Plan', which houses the bulk of Government activities. Construction is also mainly concentrated in the 'Pilot Plan' where one may find also the bulk of business activities, major retail establishments, liberal professionals, banking and amusement. Therefore the 'Pilot Plan' is the main attraction point for a wide range of interests, being the convergence point for essential journeys in connection with government activities, business and industry, and optional journeys for pleasure or convenience.

6.2.7 In the peak hours one may see large tidal movements between residential areas in the satellite towns, with places of work within the 'Pilot Plan'. One may see large numbers of people conveyed by an expensive system of public transport which is run by both public and private companies. Fig. 22 shows the daily flow of passengers transported by bus. Although no transportation study has been carried out in Brasilia, the author's own experience indicates that automobiles are increasingly dominating
Figure 22

PASSENGERS TRANSPORTED DAILY BY BUS BETWEEN LOCALITIES

the traffic scene. Car ownership is steadily increasing in the new capital, much faster than in any other Brazilian city. Unofficial sources give the figure of one car per five persons within the 'Pilot Plan' and one car per nine persons for the overall urban and rural settlements, against some 1:10 in São Paulo and 1:14 in Guanabara. Although no traffic assessment has been published yet, one can see that the dual carriageway routes to Sobradinho and Planaltina are already overloaded at peak hours.

6.2.8 Brasilia is not the first planned city in Brazil. In this century two new state capitals were built - Belo Horizonte, capital of Minas Gerais, and Goiania, capital of Goias. Belo Horizonte is nowadays an important centre for banking and industry. Officially dedicated in 1897, its growth has gone far beyond its plan forecasted, so that three quarters of its built-up areas lie outside the previously planned city. Goiania, dated 1930, experienced the same process, although at a slower pace. The city expanded also far beyond Atilio Correia Silva's plan, having an area two times larger than the area initially proposed. Brasilia, a city planned primarily as an administrative capital of 500,000 population, confirms this trend. The locational advantages provided with the construction of the capital certainly would favour the development of the city far beyond the target
initially established. The previous examples certainly have also made it clear that this was very likely to occur.

6.2.9 Objecting against the development of Cruzeiro, Lucio Costa stressed that the plan was conceived of as high density neighbourhoods so as to avoid the "usual problems of rarefied urban fabric". It is worth comparing the expanded form of Brasilia against other Brazilian capitals – see Fig. 23. From a comparison of these maps one can realize the degree of dispersion of Brasilia. Its expanding urban structure poses enormous constraints on the achievement of the desired environmental efficiency, in addition to the already familiar socio-economic difficulties which are common to every city in the underdeveloped world.
Figure 23

COMPARED BUILT-UP AREAS
30 Km BRASILIA/S. PAULO

SAO PAULO

SOURCE: REALIDADE, MAY, 1972

BRASILIA
A comprehensive appraisal of the development of the 'Pilot Plan' would be a tempting theme for a thesis in itself. Therefore this chapter will be limited to the description of some deviations from the master plan which highlight contradictions between the idealized physical organization of the city and the actual usage by the community of the urban structure so far completed.

7.1 Development of the Planned Urban Area

7.1.1 In eighteen years during which Lucio Costa's plan has been implemented the realities of Brasilia have presented some features clearly different from his initial proposals. He himself calls attention to some disappointments:
"One of the characteristics of the plan was precisely the mixing of the various social classes in each one of the neighbourhoods. Those classes would, therefore, coexist within the urban structure, avoiding undesirable stratification (...) Due to lack of vision and administrative incompetence, this fundamental aspect of the city's conception has not been achieved."  

"The administrators, considering this a Utopia, decided to sell all the land for superblocks in advance, under the pretext of making the enterprise self-financing, thus parting with the opportunity of developing the city in a socially acceptable way."  

7.1.2 About the architectural character of the residential schemes Lucio Costa asserted the following:

"CODEBRAS is itself regrettably building in large scale coarse apartment blocks, suburban in appearance and inappropriately coloured, along the motor axis. Considering the large number of superblocks still to be built, there is still time to correct this tendency to 'antiarchitecture' which paradoxically is widespread throughout the city, distorting the image generally acclaimed for it.

"The plan proposed that the superblocks, should be surrounded by a dense green curtain of large
trees, with the twofold purpose of providing local residents with extensive parkways and protecting the buildings from the nuisance of the traffic. It has also an additional advantage, that of hiding partially the buildings, the bad quality of which has unfortunately been confirmed as developments have proceeded."  

7.1.3 Commenting on ways of avoiding the rise of squatter settlements and satellite towns, Lucio Costa says:

"It is an indignity to plan "conjuntos residen- ciais' (housing estates) providing units of 25 or 30 square meters for families of five or eight persons. (...) This minimum ought to be as high as possible, say to about 42 to 50 square meters, even if the mortgage lasts 50 years or more. This is the only true way to ensure national security (internal social order and peace).

"In the case of Brasilia the solution would be partially achieved by building up low cost apartments for low level civil servants, employees in shopping and banking, and the working classes, in the superblocks (...) whoever works in the city should live in the city. It is an aberrance and a waste in a planned city, this daily shift of the working population. It is a mistake to stimulate the development
of those pseudo satellite towns, which on the contrary, should be restrained in favour of rural activities in the neighbouring areas or justified by having local industry developed in them". 2

7.1.4 Lucio Costa's commentary highlights important issues concerning this study of the realization of the planned city. Authorities are blamed for the failure of the housing programmes carried out within the 'Pilot Plan' to provide for low income families. This omission may be the primary cause of the growth of the 'randomly expanding Brasilia'. On the other hand he puts that architectural goals should continue to be emphasized. The housing schemes should exhibit a high architectural value, in accordance with the acknowledged image of the capital city. Finally, Costa states that through a properly designed urban environment and proper provision of home living space, social order and social behaviour could be enhanced.

7.1.5 As we have seen, during the first four years the bulk of residential construction has been concentrated in the south wing (see Fig. 16). Throughout the following period the south side of the city experienced a chequered process of development, which has been intensified in the last five years. The north wing, which remained almost untouched during the first ten years, is now under development although at a slower pace. The sector
plotted for individual housing on the lakeshores to the south is gradually being built up. Some 30% out of the 7,000 plots available are already developed. The evolution of this residential development is illustrated in figs. 24, 25 and 26 which roughly represent the development stages in 1964, 1968 and 1972.

7.1.6 Apartment houses are by far the most common sort of housing within the 'Pilot Plan'. They are to be built in the 120 superblocks and will comprise some 63,000 housing units. Apartments may also be found in the so called "Residential North Wing", an area along the west side of the W3 North. NOVACAP devised for this urban sector a mixed development with row houses and three-storeyed apartment buildings, with shops on the ground floor. Two basic types of apartment buildings may be found in the superblocks - six-storeyed blocks over "pilotis", provided with lifts, and three storey walk-up buildings providing low cost housing units. The six-storeyed buildings are built in the superblocks adjacent to the Motor-axis and in the row of superblocks along the W3 Avenue, while the lower walk-up buildings are located in the row of double superblocks along the L2 Avenue.

7.1.7 Two other major housing types may be found in the planned centre. Single family row houses of either one or two storeys (sometimes with a basement) are located in the residential area opposite to the W3 Avenue - SHIG (Sector de Habitacões
Figure 26

DEVELOPMENT OF THE PILOT PLAN - 1972

SOURCE: AUTHOR'S RECONSTITUTION FROM SEVERAL BIBLIOGRAPHIC SOURCES
Geminadas); two rows of houses fronting a common parkland, with pedestrian accesses. A cul-de-sac road provides motor access to the walled backyards placed to the rear of each house. Large detached houses were provided on the lakeshores opposite the city. The scheme adopted for this development differs slightly from the system suggested by Lucio Costa in his plan for the competition (see Fig. 12.7). In the scheme adopted individual house plots, measuring usually 20 x 40 meters, were disposed along both sides of a cul-de-sac access road, fronting a parkland. (See Fig. 27).

7.1.8 The potential residential building types within the planned centre are indicated in the following table. The figures shown are the author's estimate, since detailed study of housing in Brasilia has not yet been carried out. Less frequent types of housing are omitted: flats above shops (although not uncommon they are being gradually replaced by offices or small workshops) and 'mansion houses' (located in the suburban plots).
Figure 27
HOUSING SCHEMES

INDIVIDUAL HOUSING

SOURCE: AUTHOR'S RECONSTRUCTION

ROW OF HOUSES
<table>
<thead>
<tr>
<th>Housing Type</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apartment Houses:</td>
<td></td>
</tr>
<tr>
<td>Six Storey (Lift)</td>
<td>45,000</td>
</tr>
<tr>
<td>Three Storey (Walk-up)</td>
<td>17,000</td>
</tr>
<tr>
<td>Row Houses</td>
<td>6,000</td>
</tr>
<tr>
<td>Isolated Individual Houses</td>
<td>14,000</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>82,000</td>
</tr>
</tbody>
</table>

The distinction between apartment buildings with lifts and walk-up ones is important, as the latter are built at lower standards aiming at the accommodation of low income population. They are poorer in terms of construction and landscaping. Table 11 shows the numbers of housing types which could be found within the 'Pilot Plan' by 1966, including the row houses in Cruzeiro. Individual houses were not included as they were not numerically relevant in 1966.
TABLE 13

HOUSING UNITS WITHIN THE PLANO PILOTO - 1966

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Apartments</td>
<td>10,259</td>
</tr>
<tr>
<td>Elevator</td>
<td>5,579</td>
</tr>
<tr>
<td>Walk-up</td>
<td>4,680</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Row Houses</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cruzeiro</td>
<td>1,406</td>
</tr>
<tr>
<td>W3 Avenue</td>
<td>2,343</td>
</tr>
<tr>
<td>North Wing</td>
<td>840</td>
</tr>
</tbody>
</table>

TOTAL                  | 14,848   

SOURCE: Mr. Jose Pastore

7.1.9 The schemes adopted for the neighbourhoods and super-blocks followed to a certain extent the initial proposals of Lucio Costa. However, Niemeyer has been most influential in the shaping of the residential areas as he produced several housing designs covering the several types described. He developed for the Federal Saving Bank a two storey row house, and a smaller single-storey row house for the Popular Housing Foundation, in the residential areas along the W3 South. Niemeyer designed
also a three storey low cost apartment building for the same official agency which was adopted for the development of three double superblocks along the L2 South. Finally, to complete the series of prototypes, which would be followed throughout the years, Niemeyer designed four superblocks comprising eleven six storey apartment houses each. Most of the apartments then designed have two or three bedrooms reflecting the predominance of large households characteristic of the incoming population. The layouts for both houses and apartments are similar to those of other middle class housing units encountered in other Brazilian capitals - e.g. Sao Paulo, Rio de Janeiro or Belo Horizonte. (See in Fig. 28 a sample of a typical three bedroomed apartment built for employees of the Bank of Brazil).

7.1.10 Commenting on the design of the superblocks Lucio Costa recalls that "the plan proposed that there should be competitions or that 'qualified' architects be invited to design superblocks not planned by NOVACAP". This has not been done, and neither NOVACAP nor other official developers have introduced any substantial innovations in the layout, provisions and standards of the superblocks planned up to now. There are perhaps three major reasons for this: firstly, it could be said that the 'acknowledge image' of the city inhibits professionals from proposing new approaches to the design of new residential schemes or biases professionals in charge of the control and supervision
Figure 28
ROW HOUSE AND APARTMENT TYPE

SOURCE: AUTHOR'S RECONSTITUTION

APARTMENT-SQS-308
of development towards the repetition of existing designs. Secondly, the absence of an overall housing policy gives the various government agencies the freedom to develop as they wish. And owing to administrative inertia and pragmatism, the repetition of the already traditional schemes is offered as the safest and quickest way of carrying out the construction of the housing units they need. A third important reason is that most of the land available for housing has been sold, either the superblock as a whole or a projection of a building within the superblock. In the latter case the projections to be sold were determined by an 'abstract' internal design of the blocks inspired by the first schemes devised by the pioneering architectural staff.

7.1.11 It has been the opinion of many planners, since the pioneering period of modern urban design, that land ownership should be retained by the government to ensure overall planning and development control. Lucio Costa clearly shares this principle with other contemporary architects. However, in the case of Brasilia a compromise solution has been devised. As he put it:

"I feel that not the land, but shares in the land should be sold. The price of these shares would depend on the location and the height regulations. This would overcome any obstacles standing in the way of present planning and any possible future replanning of the internal arrangement in the superblocks."
Israel Pinheiro, however, favoured the sale of projections or entire superblocks, perhaps according to traditional requirements of land acquisition in Brazil, thus overcoming the legal and administrative difficulties inherent in the strategy proposed by Costa. With the sale of projections the purchaser would buy the right to construct on a designated site within the block. Landscape construction and maintenance would be the responsibility of the city government, since the open space of the superblock is in public usage.

7.1.12 The bulk of housing development in Brasilia has been undertaken by government agencies. Within the planned centre the most common types of official development are in the superblocks and row house estates, and a less frequent sort is groups of individual housing. The development of the 'projections' mentioned above is the only offered to the private sector as do individual houses either on the lakeshore plots or in 'row' developments. As a result of the dominant role played by the official agencies the initial occupants of apartment houses were predominantly civil servants. In the early stages of the housing development, accommodation was made available for the incoming population at minimal costs. The methods of allocation varied widely depending on the government agency involved. However, to a large extent, the principles of non-ownership or ownership without rights of resale were initially commonly adopted. Later, however, due to
the shortage of housing, to the new opportunities made available for individual housing development in the satellite towns and to the familiar desire of the tenants to acquire their own property, government housing was made available for tenant purchase at low cost and long mortgages. This decision led to a considerable number of transactions. The rights to the apartments, or the apartments themselves, were sold by low income civil servants who had the rights previously restricted, and who sought the considerable cash benefit that could be derived from such sales. These civil servants then moved to the satellite nucleii. In 1968 the housing shortage within the 'Pilot Plan' reached a crisis, therefore rents were increased at an astounding rate. A large number of middle-level civil servants put their houses to rent and moved to the periphery. In this way they could obtain an additional 'salary' to meet usual household expenditures or even to buy further consumer durables. Therefore market forces reinforced the process by which mainly elite groups occupied the superblocks and other housing types, even the 'popular' housing, within the 'Pilot Plan'. 
7.1.13 In 1964 the Federal Government created the National Housing Plan in order to meet considerable pressures resulting from a nationwide house shortage which had led to overwhelming increases in rents. An additional reason for the creation of the housing plan lies in the nature of the plan for economic development adopted for the nation - Program of Economic Action. Due to the techniques it uses, the Housing Construction Industry at present employs a large number of unskilled and semi-skilled workers, and the Program of Economic Action proposed that this industry should continue its prominent role in the absorption of the continuously expanding national labour force. The principal agency assigned to execute this plan was the National Housing Bank - B.N.H. Large financial resources (from popular savings) were channelled to the Bank which was to operate indirectly through various agencies in different regions and cities. As we have seen in 5.3.7 the current participation of the B.N.H. in housing finance in Brasilia is as high as 27.2% of the total official housing investment in the area. The Federal Bank contributes the largest part - 31.8%

7.1.14 The first official moves in the field of housing were directed towards eradicating squatter settlements. The most 'attractive' practice in the country was the creation of 'conjuntos habitacionais' (housing estates) some distance from the urban centres, comprising tiny individual houses for the former residents
of eradicated settlements. This practice was widespread throughout Brazilian towns and cities; in Brasilia it has been most influential in the development of the periphery and in the overall supply of housing. However, seeking both the success of the economic operations and the alleviation of the overall shortage of housing still persisting in the capital, the financial agencies widened their scope, further favouring segments of the middle class. The allocation of resources further stressed the physical stratification of Brasilia as the 'Pilot Plan' was given the biggest share of the resources available, aiming at the construction of higher standard housing units, as indicated in tables 12 and 13.

7.1.15 As one can see the 'fundamental aspect of the plan', as Lucio Costa put it, is irreparably lost. The integration of the various segments of Brasilia's society within the 'Pilot Plan' has not been realized. The physical hierarchy between the planned centre and the periphery has been further emphasised by official action and market forces in the last few years. There are those who live 'within the plan' and those who live outside it. This inequality is reflected in expressions such as "I work in the Plan", "Somebody lives in the Plan" or "Only the bacanas live in the Plan". (Bacanas is slang for people who are better-off). These expressions imply that there are those living according to the plans and those not considered by the plans. Peter Grenell
### TABLE 14

**HOUSING PROGRAMME 1971-73 : PUBLIC SECTOR**

**DISTRIBUTION OF HOUSING UNITS BY LOCALITY AND SIZE**

<table>
<thead>
<tr>
<th>Localities</th>
<th>Size in Square Meters</th>
<th>24</th>
<th>42</th>
<th>49</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>100</th>
<th>120</th>
<th>150</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plano Piloto</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>108</td>
<td>2,075</td>
<td>7,036</td>
<td>9,219</td>
</tr>
<tr>
<td>Taguatinga</td>
<td></td>
<td>2,500</td>
<td>1,500</td>
<td>3,570</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7,570</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sobradinho</td>
<td></td>
<td>858</td>
<td></td>
<td>1,850</td>
<td>500</td>
<td></td>
<td></td>
<td></td>
<td>3,208</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gama</td>
<td></td>
<td>3,000</td>
<td></td>
<td>1,620</td>
<td>900</td>
<td></td>
<td></td>
<td></td>
<td>5,520</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N. Bandeirantes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>150</td>
</tr>
<tr>
<td>Brazilandia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>150</td>
</tr>
<tr>
<td>Planaltina</td>
<td></td>
<td>800</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.800</td>
</tr>
<tr>
<td>Guara II</td>
<td></td>
<td>4,500</td>
<td>1,800</td>
<td>1,000</td>
<td>500</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7,800</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>34,417</td>
</tr>
</tbody>
</table>

*Source : CODEPLAN*
TABLE 15

HOUSING PROGRAMME 1971-73 : PUBLIC SECTOR

DISTRIBUTION OF INVESTMENTS BY LOCALITY - IN Cr. 1.00 PRICES OF 1970

<table>
<thead>
<tr>
<th>Location</th>
<th>Investment (Cr.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plano Piloto</td>
<td>466,576,330</td>
</tr>
<tr>
<td>Taguatinga</td>
<td>48,020,000</td>
</tr>
<tr>
<td>Sobradinho</td>
<td>22,313,505</td>
</tr>
<tr>
<td>Gama</td>
<td>42,672,480</td>
</tr>
<tr>
<td>N. Bandeirantes</td>
<td>600,000</td>
</tr>
<tr>
<td>Brazlandia</td>
<td>600,000</td>
</tr>
<tr>
<td>Planaltina</td>
<td>5,200,000</td>
</tr>
<tr>
<td>Guara II</td>
<td>72,050,540</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>658,032,855</strong></td>
</tr>
</tbody>
</table>

SOURCE : CODEPLAN 9
defined the latter group as 'invisible people'. However, whether this inequality is clearly expressed in terms of being included or not being included in the planned environment, there is another segregation which can be seen as the most direct contradiction to Lucio Costa's equalitarian proposals. It is the differentiation between rich and poor neighbourhoods within the 'Pilot Plan'. In fact, the superblocks numbered 100 and 300, on the west side of the Motor-axis, are more valued than those to the east, particularly those adjacent to L2 Avenue, owing to differences of housing types, architectural standards and landscaping. Low income civil servants are housed mainly on the east side of the Motor-axis, on the slope down to the lake.

7.1.16 However, there is another important factor stressing the differences between the western and eastern neighbourhoods. It is that the W3 Avenue, throughout the years, acquired importance as the major shopping sector of the city, with a long strip of banks and shops on its east side. Lucio Costa devised this artery as an auxiliary service road, with warehouses fronting onto it and workshops and garages to the rear, fronting onto the superblocks. However, owing to the concentration of construction in the south wing and to the slow pace of construction in the city centre, NOVACAP allowed banks, shops, bars and offices to be temporarily installed along this avenue, occupying the building types originally designed for warehouses and workshops. Lucio Costa also
called attention to this fact:

"The W3 Avenue was proposed as one of those ordinary service roads; it acquired false importance because the city centre did not exist yet. Now, with the simultaneous construction of both North and South sectors of the city centre, adjacent to the Exchange platform, it will lose this undue prominence."  

Recent trends, however, do not justify Costa's optimism, as the strip is likely to remain as Brasilia's principal centre of street life. Owing to the concentration of activities and people, this avenue is also better served by the public transport system than any other artery. As a consequence of these facts, the symmetry implied in Costa's Master Plan has been upset, and the residential areas adjacent to the W3, particularly in its South segment, acquired a higher value than the remaining areas to the East.

7.1.17 Brasilia is not alone in expressing physically social and economic inequalities. In fact this is a common feature of other Brazilian cities, as well as other cities in the developed and underdeveloped countries. What makes Brasilia noticeable, together with other planned cities throughout the world, is that the physical stratification is still present, and clearly discernible, in spite of the equalitarian purport of its plan. It is worth looking at other examples of planned urban structures to find the extent to which the proposals set out by their planners
and architects have been used or misused by the communities involved. Problems similar to those of Brasilia may be found in Bhubaneswar, India's first planned city, capital of Orissa, as well assessed by Peter Grenell. 12

7.1.18 The plan for Bhubaneswar was prepared by Dr. Otto Koenigsberger who saw in the enterprise the opportunity to "blend modern physical design with indigenous spatial patterns, to infuse new life and vitality in the old temple town, and to build an efficient urban environment". 13 By 1965 the new capital had grown to around 45,000 persons. "The city had an attractive visual character to the western eye, with environmental standards higher than most other Indian cities." 14 Although the most categorized civil servants were provided with suitable housing, there was an acute shortage affecting mainly the lowest levels of governmental hierarchy and private service people, who lived mostly in shanty towns called bustees. These settlements were located on the fringes of the capital and along a railway track crossing the urban centre, and presented the "worst living conditions in the city". Koenigsberger had also envisaged a mixture of housing types in each neighbourhood "to encourage social interaction between different social and bureaucratic strata, and to strengthen ties necessary for effective democratic local government". 15 Grenell asserts that owing to official action the planned capital became a "physical analogue of the bureaucratic hierarchy", and five small
villages which were adjacent to the site, "were now in the path of the capital expansion, (being) (...) crowded with low level civil servants who could not find accommodation elsewhere." 16

7.1.19 Although in both Brasilia and Bhubaneswar official action is accounted responsible for the undesirable developments, a considerable argument has arisen during recent years about a misconception widely spread among architects and physical planners, the so-called "fallacy of Physical Determinism"; the belief that architectural forms can alter social forms. As Leonard Reissman put it:

"The visionary (...) seems to insist on his belief that the individual who is put in a magic house, in a magic setting, and surrounded with what are essentially the trappings of middle class life, will emerge a stolid, socially acceptable human product in the middle class tradition. It is a highly doubtful assumption. Even granting it is truth, one might ask: why establish middle class traditions as the epitome of the good life?" 18

7.1.20 Both Lucio Costa and Koenigsberger believed that the planned neighbourhood would be the basis of social control to effect desired social change. Harold Orlans, in his study of the British New Towns assessed that their planners generally believed that "sociability and community activity could be organ-
ised or, at least, encouraged, by a congenial physical environment and genuine social reform which would counteract the consequences of industrialism, occupational specialization, and class segregation and conflict". Lucio Costa, as most visionaries would, believed that massive social forces, characteristic of the Brazilian society, with the impetus of centuries behind them, could be "contained and redirected toward nirvana" by a newly designed environment and a neatly planned neighbourhood.

"Must Utopia realized, always disappoint?" Orlans asks and answers:

"To be persuasive and practical (to persuade different kinds of people and to be practised in different times and places) a Utopian idea must be relatively simple and generalized. But life is more complicated than any simple idea, and probably than any idea or image one can have of it - "the inexpressible complexity of everything that lives" is how Tolstoy, for all his genius in expressing that complexity, put it. This is the rock upon which Utopia, and reason itself, founders." 22

7.1.21 Disappointment with the reality of Brasilia produced considerable criticism of Lucio Costa's Master Plan. David Epstein's commentary epitomizes the most frequent sort of charges against it, as follows:
"Ten years after the Jury selected Lucio Costa's Pilot Plan, the realities of the city's development presented a picture distinctly different from that foreseen by the planner. It has not in reality been possible to prevent the 'encystment of squatments' or to provide for the coexistence of various social classes in neighbourhood units. Inspired by European ideas and standards, obeying the dictates of aesthetics and symbolism rather than being ground in empirical social and regional reality, the Brasilia plan in practice soon betrayed the gap between the plan's pretensions and the social and geographical reality to which it would be applied." 23

However, as we have seen in the preceding paragraphs, this criticism could fairly be extended to most of the urban visions conceived up to the 1950's or later, throughout the world. In spite of efforts such as those of Lewis Mumford, in the Culture of the Cities, 24 Arthur B. Gallion, in The Urban Pattern, 25 and Percival and Paul Goodman, in Communitas, 26 which "added greater social realism to the visionaries' argument (...) and have shown an understanding of the forces of urban society", the Utopian mentality remained as a characteristic of visionaries' intellectual production. 27
7.2 'Monumental', 'Gregarious', and 'Quotidian' Scales

7.2.1 A considerable debate has been raised, by theoreticians and practitioners of modern urban and architectural design, about the concept of monumentality. Norma Evenson, writing on the monumental character of the government complex in Brasilia says:

"In creating the monumental complex of Brasilia, Niemeyer was entering a realm of design which has been subject to considerable debate in the field of modern architecture. Throughout most of history it has been customary for important human institutions to be symbolized architecturally. Since communal ideals could endure in a way that individuals could not, permanent monuments representing the collective strength of civic, religious, and cultural institutions, have been designed to communicate to man unborn. The survival of such monuments reflects the collective survival of a society and the continuance of a cultural heritage. Thus the Greeks built their houses of mud and their temples of stone. It is not accidental that our architectural legacy from the past has been largely in the form of institutional monuments. Our ancestors meant such buildings to last.

"Monumental architecture presupposes the existence of viable institutions which can be appropriately embodied in architectural form, and it assumes also a general responsiveness to the symbolism of
"monumental building. In the view of many, neither of these conditions is representative of the modern age. To some, the rapid social change of our time has rendered the traditional institutional base of society as essentially fragmented, without strong civic focuses or need for collective symbols. Moreover, the directed communal effort which produced the monuments of the past can be seen as anachronistic and imbued with antidemocratic authoritarianism. It is not difficult, in fact, to interpret every monumental achievement of the past, from the Parthenon to Chartres Cathedral, from the Campidoglio to the United States Capitol, as a symbol of tyrannical power and antisocial waste. One can argue quite convincingly that the modern democratic state has no need of institutional monuments." 29

7.2.2 Miss Evenson's optimism in relation to the modern democratic institutions, however, did not prevent her from making a more realistic appraisal of the issue when describing Chandigarh.

"At the time Chandigarh was built, India was celebrating her new independence; self-government had been hard won, and it was appropriate that governmental functions be surrounded with dignity and drama. As a resurgent nationalism began to make itself felt throughout much of the postwar world, and new nations achieved political identity, it became clear that the desire for institutional symbols was by no means dead." 30
7.2.3 Lucio Costa defends Brasilia's right to grandeur, denying that the city is monumental in a pejorative sense:

"As for the concept of monumentality, I do not see why in Democracy the city must necessarily be lacking in grandeur. In ostentation and emphatic grandeur yes; but in that which naturally results from a simple and functional layout, conceived with high intentions. The more so when dealing, as in this case, with a capital, a singular city no matter how socialized the country. It is not breaking (the city) down into units of provincial rut that one will symbolize this singular role urbanistically.

"One ought not to forget that besides this business of 'welfare' the human condition has, in spite of everything, grandeur, and it is awareness of this that gives us strength to carry life to the end." 31

7.2.4 Oscar Niemeyer further stressed the visual drama suggested in Lucio Costa's plan through a number of distinguished designs, which reinforced the symbolic character of the capital. Niemeyer concentrated his major efforts on the realization of the government complex, which represented a unique opportunity for the application of modern architecture to a monumental urban scheme. Summarizing his design philosophy, Niemeyer re-stated his well known fidelity to formal liberty:
"I am in favour of an almost unlimited plastic freedom, a freedom that is not slavishly subordinate to theoretical determinants or to functionalism, but which makes an appeal to the imagination, to things that are new and beautiful, capable of arousing surprise and emotion by their very newness and creativeness; a freedom that provides scope - when desirable - for moods of ecstasy, reverie and poetry." 32

7.2.5 In relation to his conception of the government complex Niemeyer said :

"My special concern was to find - without functional limitations - a beautiful clear-cut design that would define the characteristics of the main buildings - the palaces, strictly so called - within the indispensable criterion of simplicity and nobility. ( (...) I called to mind the Piazza San Marco in Venice, the Palace of the Doges and the Cathedral of Chartres, (...) Plastic beauty alone is the guiding, dominating spirit, with its permanent message of grace and poetry." 33

"Yet, when thinking out the form for those palaces, I also bore in mind the kind of mood they would impart to the Plaza of the three powers. It should not seem, as I saw it, cold and technical, ruled by the classical, hard and already
"obvious purity of straight lines. On the contrary, I visualized it with a richness of forms, dreams and poetry, like the mysterious paintings by Carsou, new forms, startling visitors by their lightness and creative liberty; forms that were not anchored to the earth rigidly and statically, but uplifted the Palaces as though to suspend them, white and ethereal, in the endless nights of the highlands: surprising and breathtaking forms that would lift the visitor, if only for brief instants, above the difficult and at times overwhelming problems which life poses for all of us." 34

7.2.6 In 1960 the bulk of the government complex had been built. Much has been said and written since about this monumental realization. 35 To many of its intransigent critics it was seen as a "throwback to nineteenth-century concepts of grandeur, the exhibition of civil and military power".36 However, for its lovers, it appears as an exciting stimulus for poetic descriptions of its visual drama, and for literary interpretations of its symbolic character. Andre Malraux thus described the urban achievement:

"Modern architecture was up to now an architecture of buildings: it created houses, that some day such an epic individualism should be surpassed, none of its historians had any doubts. But nearly all of them thought that
"the greatest architecture, that which creates cities instead of buildings, would be born in the Soviet Union - and it is appearing right here." 37

"Which modern city has been concerned up to now, with such dignity, with such nobility of intention? Save! intrepid capital, which reminds us that the monuments are for the service of the spirit." 38

Apart from these intellectual speculations about the symbolic significance of the capital, it should be said that there has been a general popular "responsiveness to its symbolism". Perhaps it has been so because it expresses the gap between the collective aspirations of a country and the realities it is striving to alter.
7.2.7 It seems possible that the greatness of the preceding argument has inhibited the will to enquire into the 'ordinary' needs and aspirations of the daily users of the monumental city, the residents of Brasilia. This inhibition seems to be widely spread among Brasilia's planners and architects, and is perhaps one of the reasons why a user oriented detailed development plan, providing for an orderly development of the urban areas, has not yet been undertaken. This paralysis, characteristic also of Brasilia's planning bodies, attracted a number of bitter criticisms. Joaquim Guedes, lecturer in Architecture and 'Urbanism' at the University of São Paulo, argues quite convincingly:

"Brasilia is so sacred that one cannot 'live' in it. It is remarkably and incomprehensively aesthetically oriented. Men have been making beauty throughout many thousands of years, as a consequence and expression of life. What ought to be solved, now and forever, are the problems of the organization of human life. The important thing, therefore, would be to think about the needs of Brasilia's residents, and not about aesthetics. What has been the result (of this aesthetic oriented enterprise)? A disorganized picture which hides the 'beauty'. Apart from the work of the great masters, all the rest is mediocre."  

7.2.8 Early in 1974 the Ministry of Work and Social Security (MTPS) asked Niemeyer to design an additional building to accommodate some two thirds of its sections which were still functioning
in Rio de Janeiro. According to the press it was proposed that an additional set of round low rise buildings should be built across the service road, to the rear of the existing Ministry's buildings. Some years earlier the National Congress had made a similar request, to cope with its expanding bureaucratic sector. Additional low rise buildings had been designed and built across the roads of the mall on both sides of the axis, being connected with the existing building complex by spacious underpasses. The character of these designs by Niemeyer indicate that the main concern was to avoid an undesirable intrusion of new forms on the hitherto established image of the Monumental Complex.

7.2.9 The facts briefly described above illustrate two important issues. First, that the final form of the city was assumed as a starting hypothesis. In other words, the final form of the city would not be an expression of the varied and changeable aspirations and needs of its residents throughout Brasilia's history but, instead, Lucio Costa's plan provided a clear blueprint for those engaged in the realization of the city, comprising its detailed final visual appearance. This characteristic of the plan for Brasilia is confirmed by Niemeyer as he defended the maintenance of aesthetic control:

"I am not in accord with a permanent censorship in any city, but anyone who is familiar with the level of Brazilian architecture, especially its incomprehensible
capacity for debasement, will understand and accept the purpose which it served in the new capital, as an educative and disciplinary measure to impede the aberrations which are lamentably spread all over the country under the pretext of revolutionary or modern architecture. (...) It is evident that in our urban sectors a certain restriction is indispensable in order to maintain the equilibrium and harmony required by the master plan. One cannot accept that a new planned city should present the same mistakes, the same urbanistic and architectural confusion as existing cities, which expand without control, where each building is treated as an isolated building, without relation to those surrounding it, or to the harmony of the group, which a conscientious architect would know to preserve."

"Of course, this freedom (freedom claimed for his own designs) cannot be used freely. In urban localities, for instance, I am, on the contrary, all for restricting it, or rather, for preserving the unity and harmony of the overall plan by avoiding solutions that do not wholly fit into it, however inspired they may be and however high their architectural level. And with this end in view, in Brasilia, (...) regulations are set up to cover volumes, free spaces, heights, facing materials, etc., in order to prevent the city from proliferating, like other modern cities, in a regime of disharmony and confusion."

7.2.10 The second issue which can be derived from the facts described in 7.2.8 is that Niemeyer set a precedent for similar develop-
ments to take place on empty land still available within the 'Pilot Plan', even on the praised 'open spaces'. Recent trends indicate that authorities and developers consider this opportunity highly attractive. New plots for individual housing have been created in the housing sector on the lakeshores to the south, on areas previously designed as open space for recreational purposes. A number of official buildings were constructed on the west side of the city in the area surrounding the Industrial and Food Supply sector. (See Fig. 15). While these developments have been undertaken on the outskirts of the planned area, justification will appear for developing inner empty land to cope with increasing pressures that the expanding city will certainly exert upon the 'Pilot Plan'. Although very well known difficulties may arise from the misuse of this potential opportunity, it could perhaps be used to advantage.

7.2.11 An important feature of Brasilia is the hierarchical organization of the city into sectors, expressed through a neat compartmentalization of separate categories of urban activity. This has been a rule for modern planned cities throughout the world. This principle stems from Tony Garnier's 'Industrial City', being incorporated in 1929 in the Athens Charter. To many critics there is a fundamental contradiction inherent in this principle: 'How to reconcile a discontinuous urban fabric with the continuity and simultaneity of the activities which take place in the urban space?'
This contradiction is an object of concern of many critics of planned urban structures. Christopher Alexander in his famous article 'The City is not a Tree' inquires into the nature of the organization of the old and of the modern planned cities in order to identify 'which essential ingredient is missing' from the latter that makes it unable to contain the complex fabric of urban life. 'What is the inner nature, the ordering principle, which distinguishes the artificial city from the natural city?' Alexander asserted that the 'artificial' city has, in mathematical jargon, the organization of a tree, and the 'natural' city has a semi-lattice organization, composed of a complex series of connections between the varied 'systems of activities' (activities and the objects they require): "The different systems overlap one another, and they overlap many other systems besides".

"For the human mind the tree is the easiest vehicle for complex thoughts. But the city is not, cannot, and must not be a tree. The city is a receptacle for life. If the receptacle severs the overlap of the strands of life within it, because it is a tree, it will be like a bowl full of razor blades on edge, ready to cut up whatever is entrusted to it. In such a receptacle life will be cut to pieces. If we make cities which are trees, they will cut our life within to pieces." 44

7.2.12 As we have seen (4.1.3) Brasilia has been hierarchically
organized into three major urban sectors, where three different scales would be achieved: the 'collective and monumental' scale, in the Monumental Axis, the 'gregarious' scale, in the city centre, and the 'residential and quotidian', within the superblocks and low rise housing areas. These primary sectors had been split into subsectors to accommodate different categories of activity. These zones would be serviced by a free system of motorways, which would easily convey the users of such an urban system, from activity to activity, from scale to scale. The 'inequability' of the city would stem from the clearness of this hierarchy, as suggested in Fig. 14. However, as the city has materialized, the organization envisaged by Lucio Costa has been upset by an unforeseen usage of the urban structure initially idealized.

7.2.13 The development of W3 Avenue as a provisional shopping sector for Brasilia proved to be the most influential departure from the organization conceived for the city. It is worth enquiring into the content, shape and location of that 'shopping strip' to understand the reasons for its current success as Brasilia's centre of street life. The W3 Avenue and its neighbouring areas contain accommodation for a varied range of activities which make that urban complex a highly attractive meeting place for social life as well as for shopping, business and entertainment. Its elements are shopping: gross and specialized retail; specialized offices: banks, post
offices, government agencies, police station, private and public
clinics; entertainment and cultural facilities: library, cinema,
bars and restaurants, sports centres; churches; housing: apartment houses and row houses; education: primary and secondary
schools, and colleges of further education. Figure 29 gives diagram-
atically the arrangement of activities in a segment of the strip.

7.2.14 Not only W3 Avenue had its scope altered from that origin-
ally proposed by Lucio Costa. It may be recalled that Costa devised
for each pair of superblocks a local shopping assembly in which shops
were designed in a pair of architecturally unified rows fronting the
superblocks' pedestrian ways, having a service road in between (see
Figure 12.7). In accordance with the hierarchical organization of
the city, the shops located in these rows should cater primarily for
the daily needs of the residents in the superblocks, being the major
city shopping located in the city centre, surrounding the road ex-
change platform. As in the case of W3 Avenue, owing to the scarcity
of proper accommodation during the early implementation period, banks,
shops, restaurants and specialized offices were installed in these
complexes. As a general rule, these establishments served catchment
areas wider than the adjacent neighbourhoods, reached by public or
private transport. Therefore these shops turned their entrances and
shop windows to the service roads, which became in fact 'shopping
streets'. Some of the shops have a double facade, with entrances
and show windows on both the pedestrian walkways of the superblocks
and the street. These streets became successful as small scale shopping centres, sometimes housing groups of specialized establishments: e.g. the shopping street between SQS 308 and 309 became the most attractive city centre for up-to-date boutiques, becoming a meeting place for young people. These shopping streets, particularly those closest to W3 Avenue may also be considered part of that complex of shopping and social amenities which, while serving Brasilia as a whole, deeply penetrated the residential areas to the west of the Motor-axis. As such they have been included in diagrams (Figure 29).

7.2.15 The 'shopping strip' is serviced by a large proportion of the total public transport in the city, for bus and taxi routes are of necessity placed where people and activities are concentrated. In fact the W3 Avenue became a busy thoroughfare for vehicles entering the town from the satellite settlements to the south of the 'Pilot Plan'. However, the inadequacy of its design is evident: being conceived as a secondary service road difficulties are experienced in catering for the complex pattern of movements inherent in its current usage. Thereby, parking is also a severe problem of the 'strip' as well as of other concentration areas in the city, e.g. the planned city centre. Nevertheless, as far as parking is concerned, the W3 Complex does present some advantages that other centres do not. Owing to its complex and oblong structure one may find a series of optional parking areas within a reasonable distance from the main artery or even attached to it.
Figure 29

W3 AVENUE DISTRIBUTION OF ACTIVITIES

SOURCE: AUTHOR'S RECONSTRUCTION

RESIDENTIAL AREAS

- 120 hab/ha
- 400 hab/ha

• EDUCATION
• HEALTH CENTRES
Δ CHURCHES
▼ SUPERMARKET
□ SHOPS
■ BANKS AND SPECIALIZED OFFICES
△ CINEMA
▼ ENTERTAINMENT/CULTURAL FACILITIES
7.2.16 Although the 'shopping strip' attracts people from the whole of the 'Pilot Plan' and from the satellite settlements, its commercial activities also have considerable support from the inhabitants of its neighbouring residential areas. Some 110,000 people live around the W3 Avenue within easy walking distance of it, and are able to enjoy its social and commercial amenities without vehicular journeys. (See Fig. 29).

7.2.17 As one can see, the urban scheme which materialized in that part of the city clearly departed from the ordering principle adopted by Lucio Costa. Instead of being part of an urban system which would be organized as a 'tree' as enunciated by Alexander, the physical arrangement and content of that sector of the 'Pilot Plan' favours a series of varied connections between several systems of activities. The housing units are no longer grouped to inward looking neighbourhoods, but are part of overlapping catchment areas, according to different activities and the interests and requirements of each resident. People in the superblocks may walk to the nearest 'activity area' for shopping or social amenities and meet those who come to it from greater distances by public transport or car. Therefore, people can more easily participate in communities which vary and overlap widely, beyond the limitations of the neighbourhoods. This mixture of two 'urban scales', the 'residential or quotidian' with the 'concentrated or gregarious', introduced vitality to this south-eastern quadrant of the city, located on the west side of the Motor-
axis, vitality which is somewhat lacking in the neighbourhoods to the east. Jane Jacobs, in *The Death and Life of Great American Cities* argues that the most alive neighbourhoods are typically areas of mixed uses, industrial, commercial and residential, of different sorts of traffic, and more crowded than is supposed to be healthy:

"It is curious that city planning neither respects spontaneous self-diversification among city populations nor contrives to provide for it. It is curious that city designers seem neither to recognize this force of self-diversification nor to be attracted by the aesthetic problems of expressing it." 46

In the case of this segment of the 'Pilot Plan', a flourishing urban system has been established with a preconceived framework as a basis. A great variety of uses and communications were met within a general building pattern and a system of roads.

7.2.18 There are not many indications that with the completion of the city centre W3 Avenue will revert to its original purpose. On the contrary, if the preceding facts are insufficient evidence that it will be maintained as a shopping street, further reasons may be added to support this belief. First, it is highly uncertain that the city centre, once completed, will provide enough floor space and building types to cope with the increasing needs of the embryo metropolis consisting of the 'Pilot Plan' plus satellite settlements, which is
likely to achieve a 1,000,000 population by 1980 (double the target adopted by the Master Plan). A second reason is that, owing to the considerable investments carried out in the area, many and strong interests are involved in its commercial success. These interests, which have proved strong enough to perpetuate the 'Free Town' certainly will be mobilized in defence of this highly profitable shopping complex. Developers, as well as authorities, are so confident in the future of the area that the building type originally devised for the area has been replaced by newly designed buildings, well adapted for retail trade, with plenty of floor space, suitable arrangement and accesses fronting both the Avenue and the superblocks. The north segment of W3 Avenue, in the North wing has also been redesigned to fulfil effectively its new role: large plots have been devised close to the superblocks to house large firms, liberal professionals, clinics and cultural centres; a mixed scheme comprising shops and houses has been implemented on its west side. (See Figure 30).

7.2.19 One may agree that this unpredicted development of the shopping strip brought up many problems. However, two basic assumptions should be taken if one wishes to deal properly with the resulting difficulties: first, the 'shopping strip' is there to stay, and second, it plays an important role as Brasilia's centre of street life, being important in the organization of the city. The most direct implication of these assumptions respects the unpredicted pattern of movements which resulted from the concentration of people and activities
Figure 30
W3 AVENUE TO THE NORTH

RESIDENTIAL AREAS

- 120 hab/ha
- 400 hab/ha

□ STAIRS WITH HOUSING AND OFFICES IN THE UPPER FLOORS
■ LARGE PLOTS FOR INDIVIDUAL ORGANIZATIONS
along the west artery of the 'Pilot Plan'. What treatment should be given to public transportation in the area? How to cope with unforeseen transverse flows of traffic which are overloading the access roads to the superblocks? How to maintain pedestrian safety and comfort in the busy thoroughfare, with six kilometers of shopfront? The answers to these questions would demand a proper assessment of the factors involved. At this stage the establishment of guidelines for further investigation would be sufficient.
8.1 SUMMARY

8.1.1 In 1956 the idea of a new capital for Brazil reached its maturity. The reasons for building Brasilia had been established for a long period of the country's history. The site had been chosen in the fifties. It remained to Juscelino Kubitscheck to lead the enterprise, which had been included in his programme of government. The construction of Brasilia would be symbolic of the effort to develop the country at an astounding pace, under the optimistic slogan: "fifty years of progress in five years." The shift of massive resources to the hinterland would also widen the scope of national economy, ensuring accessibility to previously almost untouched territories. A new capital city would also provide the government with a suitable environment in which to perform its important functions free from the burdens imposed by the congested and somewhat viciously influential Rio de Janeiro. In spite of the objections presented by its detractors, Brasilia fired the imagination of the country, being supported by large segments of the middle and lower classes.
8.1.2 From 1929 to the forties Brazilian architecture witnessed a creative surge which stimulated world interest. From that period on Brazilian professionals and schools of architecture energetically put into practice ideas and principles of the modern movement. This wave characterized initially by the importation of theory and form as it had been evolved by the CIAM during the 1920's and 1930's gradually stimulated a burst of originality, inspiring what has been recognized as a unique architectural expression. A similar situation existed regarding urban design, which also flourished, although at a slower pace. One may find in the most active urban areas many examples of modern urban schemes, although in small scale developments: housing estates, urban renewal, etc. As was the case in many countries throughout the world, the ideas and principles evolved by the CIAM had great influence on Brazilian professionals, being inherent in their intellectual background.

8.1.3 Juscelino Kubitscheck had faith in the capacity of Brazilian architects and town planners to conceive the new capital for the promising Brazil. A competition was held for the Master Plan of the city. An international panel of judges was appointed, with three foreign participants: Sir William Holford, Andre Sive and Stamo Papadaki, and three Brazilian professionals: Oscar Niemeyer, Paulo Antunes Ribeiro and Luiz Horta Barbosa. An examination of the entries and judges' statements shows that to a large extent both shared internationally accepted principles, ideas and standards of
urban design as synthesized by the CIAM. Although differing widely in emphasis, the placed entries were based upon principles such as public ownership of land, zoning, planning for modern mobility, neighbourhood idea, open spaces for recreational purposes, green belt, high residential densities taking advantage of modern technical resources.

8.1.4 Lucio Costa's Pilot Plan was recognized by the jury as the only one to indicate in a "masterly way" the fundamental features of a modern urban structure within a unity of artistic conception which had the greatness of a capital city for Brazil. Professing his belief in the principles of CIAM, Costa also made clear that his Pilot Plan incorporated traditional principles of urban composition, inspired in European cities such as Paris, London and Venice.

8.1.5 In respect of the relationship between Brasilia and its region, Costa stated that the city would not be the outcome but the cause of regional planning.

8.1.6 The urban structure was conceived as an articulation of three different scales, hierarchically organized: the 'collective or monumental' (Monumental Axis), the 'concentrated and gregarious' (City centre), and the 'quotidian and residential' (Superblocks).

8.1.7 Although social gradations would be easily dealt with by
giving a higher degree to certain superblocks, undesirable class distinctions would be avoided by grouping superblocks of different standards in sets of four to form balanced residential neighbourhoods. The growth of squatter settlements, whether on the outskirts of the city or in the surrounding countryside, should at all cost be prevented. Provision should be made for decent and economical accommodation for the entire population within the planned city.

8.1.8 Owing to well known conflicts between the trational urban fabric and modern mobility requirements, principles of modern road building techniques would be harmoniously combined with modern principles of urban design. In heavy traffic arteries vehicles would be kept apart from pedestrians, 'without losing sight of the fact that under proper conditions and for mutual convenience coexistence is essential'.

8.1.9 While monumental, the city would also be 'comfortable, efficient, welcoming and homelike, (...) spacious and neat, rustic and urban, imaginative and functional'.

8.1.10 In their final report the jury was emphatic that a Federal Capital ought primarily to express grandeur, differing fundamentally from any other city of half million inhabitants, exhibiting its own architectural character. To the judges Lucio Costa's project did achieve the desired balance between the city's daily life require-
ments and its monumental elements.

8.1.11 To many critics, one of the characteristics of the competition was the importation of concepts and devices of urban design, with little regard to national and local conditions.

8.1.12 During the first four years the plan had been feverishly implemented. Since the realization of the city was primarily an architectural task, Oscar Niemeyer, leading a group of professionals, provided the forms which would make the plan a reality. The president himself was involved in the administration of the works, together with Mr. Israel Pinheiro, head of NOVACAP. Many pioneers tell of the sense of responsibility which existed, and the democratic spirit which prevailed on the site.

8.1.13 Up to 1960 a number of selected buildings were built within the Government complex and in other urban sectors within the South Wing. W3 Avenue was permitted as a provisional city centre, with shops, banks, bars and restaurants, and social facilities.

8.1.14 Three sectorial plans were prepared for Education, Health and Food Supply. These plans influenced the formulation of the briefs for early local developments; however they have never been fully implemented.

8.1.15 Initially NOVACAP was given full powers over the develop-
ment of the city, comprising also distribution of uses and control of sale of land. The Federal Government has been the main source of resources and retains also a prominent role in the decision making process. There is no local council, being the Senate of the Republic and the only collegiate to appreciate matters concerning the development of the city. The atmosphere of public involvement and participation experienced in the first four years no longer prevails in Brasilia.

8.1.16 Many bodies are devoted to sectorial aspects of the physical realization of the city; however local and regional planning, providing for the orderly growth of the 'Pilot Plan' and its surrounding areas, has not yet been undertaken.

8.1.17 The works in the site attracted waves of migrants which provided mainly the manual labour for the building tasks. In September 1960 the population reached 141,742. The problem of accommodating the incoming population led authorities to tolerate the establishment of spontaneous settlements (invasions) on the fringes of official provisional ones: Free Town, Velhacap, Vila Planalto, Vila Amaury. However, the concern with the steady growth of the 'invasions' led authorities to create satellite towns to accommodate families which were removed from the eradicated squatter settlements: Taguatinga in 1958, Sobradinho in 1960 and Gama in 1961.

8.1.18 During the period between 1960 and 1969 the population of
Brasilia grew from 134,992 to 530,172. Today the population is estimated as 695,000. Apart from the satellite towns other peripheral urban settlements were officially established to accommodate the increasing population. The Free Town was consolidated. Cruzeiro, Cruzeiro Novo, Guara I and Guara II were developed in spite of protests by Lucio Costa. Planaltina and Brazlandia, two existing small towns, received additional population: former squatters removed from eradicated 'invasions'. In 1972 Ceilandia was founded to house 70,000 persons removed from the Social Security Invasion.

8.1.19 In spite of Lucio Costa's statements about the ways to avoid both undesirable physical discrimination and the realization of a rarified urban structure, the true Brasilia, that which comprises the 'Pilot Plan' plus satellite urban settlements and exhibits both these bad attributes, has been developed. Authorities are blamed for this major deviation from the plan. However, many critics assert that the plan, being utopic in nature, neglected social, economic and political empirical realities.

8.1.20 This rarified urban structure imposes severe burdens upon lower income groups which are located in satellite towns or other peripheral settlements, which are in fact 'dormitories', as they fail in providing a reasonable level of employment opportunities and social facilities.
8.1.21 As Lucio Costa pointed out in 1962, the housing programme carried out within the 'Pilot Plan' failed in providing for low income families. A close look at the housing types provided, even those designed for low income families (popular housing) shows that they, to a large extent, repeat layouts and standards of middle class housing units encountered in other Brazilian cities. In addition to this, market forces stimulated an outward movement of low income people to the peripheral settlements, where they could find the opportunity to build their own houses in a process which better reflected their changing needs and resources: starting with a provisional shelter (barracão) on the rear of the plots and gradually building up a definite stucco building.

8.1.22 Recent housing programmes undertaken by government agencies further stressed the tendency of providing for elite groups within the 'Pilot Plan', while only in the periphery were resources allocated for small housing units, ranging from 24 to 50 square meters.

8.1.23 Contrary to the recommendations of Lucio Costa, within the planned area one may find a distinction between poor and rich neighbourhoods, reflecting differences in standards of housing as well as locational advantages, for some sites are better serviced by the transportation system and other community facilities.

8.1.24 The development of W3 Avenue as Brasilia's centre of street
life upset the ordering principle proposed by the Master Plan. The local shopping deviated also from its initial purpose, having now catchment areas wider than the adjacent superblocks, reached by motor car or bus transportation. This unforeseen community usage of the conceived urban structure, although producing some problems, suggests that a new relationship between residential areas and 'gregarious' urban spaces could enhance opportunities for social interaction within the 'Pilot Plan'. This fact should be considered as one deals with the difficulties which are currently overwhelming the efficiency of the planned city, such as traffic congestion, conflicts between pedestrian and vehicular movements, inefficiency of the public transportation system, and pollution.
8.2 CONCLUSION

The description of both the process of conception and the development of Brasilia which has been attempted in the previous chapters offers a number of interesting issues for a final commentary. Some of these issues will be discussed in the following paragraphs, in an attempt to extract some guidelines for further incursions in the subject, aiming at the understanding of the process of development of that embryo metropolis, which is the primary condition for obtaining effective practical instruments to steer its growth and change.

8.2.1 Brasilia, as a 'vision' of a contemporary city, reflected the theories and principles of urban design which after the Second World War and during the fifties largely influenced similar 'visions' throughout the world. Many authors agree that the 'visionary' has made several contributions to the understanding of the city, since through his practical examples he indicated the multiplicity of factors which create the urban environment.
8.2.2 Often failure in realizing some of the 'visionary's' plans calls attention to the fact that human motivations and human needs ought not to be overlooked or oversimplified, and that the structure of society must be properly considered. Political organizations must inevitably become involved in any planned urban realization. The profit motive and economic structure are also implicated. Brasilia confirmed these lessons. This is not to say that Lucio Costa's Plan was a failure and that its author should be condemned. Perhaps the high aspirations of the plan could not be fulfilled, but they had the virtue of highlighting the actors and actions which shaped Brasilia's current structure.

8.2.3 What one should conclude is that Brasilia, in spite of the high intentions of its planner, will not be freed of the problems and frustrations of a typical Brazilian city. Probably an upper minority of its inhabitants will enjoy the bounties of a pleasant environment, however it will offer very few to the general welfare of the majority of its population.

8.2.4 Although Lucio Costa's Pilot Plan expressed a final output, the 'vision' of an efficient city, Brasilia embarked on an unpredictable process of growth which at all steps will require decisions involving human aspirations and human needs. Recognition of this stimulates speculation about planning approaches that better reflect the continuous development process.
8.2.5 At the turn of this century Patrick Geddes developed a matrix for urban analysis which he called 'thinking machine' - means of checking that everything relevant had been considered. Starting from a basic grid having as ordinates Place, Work, Folk, he developed a four fold diagram that pointed the ways to continuous action upon the environment. (See Figure 31).

"Each quadrant of the diagram expresses an explicit component of the planning process. The first quadrant represents the present urban structure, and he called it 'acts'. The quadrant below it is the survey phase of planning, when the collection of data and its analysis are translated into 'facts'. The third moves to the area of reflective 'dreams', where policies and plans are evolved. Finally, the fourth emerges into executive 'deeds': operative programmes for development. These would reappear as 'acts' in the first quadrant at the start of the following planning cycle. (...) Thus this 'thinking machine' became a tool to express the evolution of cities. Inherent within it was the notion of feedback: that every planned action would affect the following stage in the development of a city." ²

This fascinating contribution, together with other bright Geddes anticipations, would become the most influential of recent developments in the art and science of urban and regional planning.

8.2.6 The understanding of planning as a continuous process,
### Figure 31

**PATRICK GEDDES' MATRIX**

<table>
<thead>
<tr>
<th>PLACE</th>
<th>Place Work</th>
<th>Place Folk</th>
<th>Achieved Policy</th>
<th>Achieved Synergy</th>
<th>ACHIEVEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Place</td>
<td>WORK</td>
<td>Work Folk</td>
<td>Synagized Policy</td>
<td>SYNERGY</td>
<td>Synergized Achievement</td>
</tr>
<tr>
<td>Folk Place</td>
<td>Folk Work</td>
<td>FOLK</td>
<td>ETHNOPOLITY (Love)</td>
<td>Politized Synergy (Wisdom)</td>
<td>Politized Achievement</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Feeling Sense (Home)</th>
<th>Feeling Experience (Mastery)</th>
<th>FEELING</th>
<th>EMOTION (Mysticism)</th>
<th>Emotioned Ideation (Philosophy)</th>
<th>Emotioned Imagery (Poetry)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experienced Sense</td>
<td>EXPERIENCE</td>
<td>Experienced Feeling (Folkways)</td>
<td>Ideated Emotion (Doctrine)</td>
<td>IDEATION (Science)</td>
<td>Ideated Imagery (Design)</td>
</tr>
<tr>
<td>SENSE</td>
<td>Sensed Experience</td>
<td>Sensed Feeling</td>
<td>Imaged Emotion (Symbol)</td>
<td>Imaged Ideation (Mathematics)</td>
<td>IMAGERY (Imagination)</td>
</tr>
</tbody>
</table>

together with the belief that people can play an important role in the making of the urban environment, as well as the trained planner and the politician, seems to be a basic assumption for dealing with the expanding Brasilia. The application of imported urban design devices and standards without regard to regional and social conditions proved to be shortsighted. Empirical realities, changeable in nature, suggest the approach 'planning as a verb', as against the static 'plan'.

"Give a fish to a hungry man,
He will eat once.
Teach him how to fish,
He will eat forever." Chinese saying

8.2.7 In the next paragraphs an attempt is made to delineate some relevant planning issues in which further knowledge is desirable.

8.2.8 Brasilia and regional planning

In 1972 a study of Brasilia's region of influence was undertaken by a team from the University of Brasilia under the scholars Ricardo L. Farret and Monteiro Sant'Ana. The first step of the study was the delineation of the functional region by the process of Flow Analysis. A region of 368,567 square kilometers was delineated, having a population of 2,948,491 (IBGE Census, 1970). See Figure 32. The region's dominating centres are
Figure 32
"REGIAO GEOECONOMICA DE BRASILIA"

LEGENDA:
- ROD. FEDERAL PAV.
- ROD. FEDERAL NÃO PAV.
- ROD. ESTADUAL PAV.
- ROD. ESTADUAL NÃO PAV.
- VPCO

Brasilia, with 600,000 population, Goiania, with 250,000, and Anapolis, with 90,000. After analyzing the problems and potentials of the region an attempt has been made to define a model for the regional organization aiming at the activation of the regional economy. Two main goals were established: to prevent the leakage of resources from the region, which is highly dependent on São Paulo-Rio's industrial complex; to reduce the migratory flow towards Brasilia, through the creation of opportunities of employment and social services evenly distributed throughout the region. Three alternative courses of action were examined:

1. Selection of urban settlements that, in function of their hierarchical position and location, could be strengthened as growth poles.

2. Maintenance of Brasilia as primarily a Government Centre, developing Goiania-Anapolis axis on the basis of secondary and tertiary activities.

3. Strengthening of the interdependences between selected urban settlements, within their associated regions, in order to stimulate their promotion as growth poles.

The study group concluded by recommending the participation of all the authorities involved with the region in the efforts aiming at the development of further studies which are necessary for the establishment of overall regional policy for urban development.
8.2.9 Self-containment of the Satellite Towns

Lucio Costa pointed out that the development of the satellite towns should be conditioned to rural and industrial development, implying that a balance between level of employment and population (the work-place sufficiency) would be desirable. Self-containment was also implied in the British New Towns idea: "...a town deliberately planned and built, a self-contained town: a town which provides in addition to houses, employment, shopping, education recreation and culture - everything which marks the independent satisfying town." An examination of the British New Towns, however, shows that although a certain degree of self-containment has been achieved with regard to some of those aspects, it appears that a certain degree of interdependence between the several satellites, and between them and the dominating centre will remain and is desirable. In the case of Brasilia one can see clearly the need for promoting a certain degree of self-sufficiency in the dormitory satellite towns, mainly because of the low mobility of its population. However one should not lose sight of the limitations inherent in this idea.

8.2.10 The 'Pilot Plan' as Dominating Centre of a Complex Urban System.

The planned centre is no longer a self-contained government city. Instead, it is the dominating centre of an expanding urban system. In spite of efforts to control migratory flows to
Brasilia, it is predictable that the embryo metropolis will grow at a steady rate. Therefore it is predictable that future pressures upon its shopping, social and cultural facilities, as well as upon its business centre, will upset its current provisions. Parallel to this, the predictable increase of motor traffic will severely burden its road network, which is already menaced by an unforeseen pattern of movements. Therefore, here one may find an important issue where further knowledge is highly desirable: what is the degree of adaptability of the urban structure so far completed for future changes, and to what extent are those changes predictable?

8.2.11 The Nature of Brasilia's Housing Developments.

Here one finds a subject central to the current condition in Brasilia. As has been seen the problem of accommodation of low income labourers led authorities to create satellite towns, peripheral housing estates or to overload two existing small towns. Meanwhile the provisions for residential development within the pilot plan were not fulfilled. There is a great deal of evidence to show that the housing schemes allowed by the 'Pilot Plan' do not offer opportunity for dwellers to create their own house through a process which reflects and responds to their changing needs, opportunities and resources: 'housing as a verb'. This process is, to a large extent, a characteristic of traditional housing developments encountered in Brazilian cities and towns. It appears that housing, which has been and will be a prominent factor in the deter-
mination of the unpredicted urban structure of Brasilia, ought to receive permanent attention from planning bodies, university research units, and professional organizations.

8.2.12 Community Usage of the Conceived Urban Structure.

Many authors have indicated a crisis in our knowledge of the relationships between the forms of artificial space we create and the social behaviour that goes on in it. The last two decades have witnessed an increase in the number of studies about human environment and behaviour. Orthodox city planning has been charged with considerable criticism for its anti-urban bias, by giving higher priority to buildings, plans and design concepts than to the needs of people; or even for the pretention of creating new social order through the rearrangement of the physical environment. It seems that Brasilia offers an interesting and clearly recognizable case for studying how the proposals set out by its planners are working in real life. The observation of the community usage of the conceived urban structure, the insights one may derive, and the principles one may infer from this observation may provide an important opportunity to enhance our capability for planning future developments in the city, within a user-oriented philosophy.


4. Ibid.


13. Le Corbusier, *Op. Cit.* p. 42. The connotation of "construction" here is that of a joint effort of architects, engineers and other professionals towards the building of our environment.


18. Gregory Warchavichick and Flavio de Carvalho, two leading architects in S. Paulo who greatly contributed to the introduction of the Modern Movement in Brazil, through a number of impressive designs and also as energetic publicizers of the 'International style'.

19. Norma Evenson, *Op. Cit.*, p. 76. Although the words quoted constitute a fair statement, as far as architecture is concerned, in respect of other fields of art it is lacking in precision - e.g. Villa Lobos, music; Candido Portinari, painting; Carlos Drummond de Andrade, literature.


2 THE DECISION


2. Ibid., p 51.


7. Ibid., p 5.

9. Those adjectives were employed by the Diplomat Meira Penna, one of the leading apologists of the transfer, in a denunciation of Rio de Janeiro's Federal Bureaucracy in Quando Mudam as Capitais. Rio de Janeiro : IBGE, 1958.


3 THE COMPETITION


2. The conditions for the competition may be found in Portuguese in Modulo 8, pp 9-12.


4  

**LUCIO COSTA'S PILOT PLAN**


3. Lucio Costa, Plano Piloto de Brasilia (report to the competition) as worded in a booklet published by Brazil's Ministry for Foreign Relations, Rio de Janeiro, 1959. The full report may be found as Appendix I in this thesis.


7. Lucio Costa, Plano Piloto de Brasilia, 1956, Appendix I.

8. Ibid.,

9. Ibid.,

10. Ibid.,

11. Ibid.,

12. Ibid.,

13. Ibid.,
6. The complete report of the jury may be found in Portuguese incorporated to the minutes (atas) of the "Comissão Julgadora do Plano Piloto de Brasilia. Modulo 8, pp 17-21. It may be found also in E. Silva, Op. Cit., pp 117-121.


8. The complete report of P.A. Ribeiro may be found in Modulo 8, pp 15-16.

9. Illustrations of this plan in Modulo 8, pp 49-55.


11. Modulo 8, p 53.

12. Illustrations of this plan in Modulo 8, pp 56-61.


15. Resumo das Apreciacoes do Jury, Modulo 8, pp 13-16

16. Illustrations of this entry in Modulo 8, pp 76-79

17. Resumo das Apreciacoes do Jury, Modulo 8, pp 13-16

18. Illustrations of this plan in Modulo 8, pp 80-85.

19. Resumo das Apreciacoes do Jury, Modulo 8, pp 13-16


21. Illustrations of this plan in Modulo 8, pp 86-91

22. Resumo das Apreciacoes do Jury, Modulo 8, pp 13-16


   The full report may be found as Appendix I in this thesis.


7. Lucio Costa, Plano Piloto de Brasilia, 1956, Appendix I.

8. Ibid.,

9. Ibid.,

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11. Ibid.,

12. Ibid.,

13. Ibid.,
14. Final report of the Jury, incorporated in the minutes of the judging committee, which may be found in Modulo 8, pp 17-21

15. Ibid.,

16. Resumo das Apreciações do Jury, Modulo 8, pp 13-16


5 THE REALIZATION OF THE PLAN

1. Juscelino Kubitscheck, as Mayor of Belo Horizonte in 1942, invited Niemeyer to design the well known Pampulha development. Those Niemeyer Works may be found in P.L. Goodman, Brazil Builds, 1943.


10. Author's own experience showed that in 1969 the price of some plots for individual housing in the lakeshores was even lower than the costs of developing the area.


12. Ibid., p 124.

13. Ibid., p 125.


6 THE RISE OF THE SATELLITE TOWNS


2. Ibid., p 68.


5. Patrick Crook, Lecture on "Rapid Urbanization" held in the Department of Urban Design and Regional Planning, University of Edinburgh, January, 1974. Crook points out two interrelated economic systems: a formal "official growth system", which operates with resources of Banking, established businesses, administrative offices, etc., and an informal "popular growth system" of squatters, comprising low and small trade and manufacture, under the aegis of local authorities and community.


16. Atilio Correia Lima, one of the pioneers of the Modern Movement in Brazil, left a number of impressive works, e.g. the Hydroplane Station, which may be found in P.L. Goodman, Brazil Builds, 1943.
THE 'PILOT PLAN'


4. The expression "qualified architect" has not the same meaning as in Britain (RIBA), instead refers to architects of acknowledge competence.

5. CIAM, The Athens Charter.

6. Lucio Costa, Plano Piloto de Brasilia, Appendix I.


13. Ibid., pp 98-99
14. Ibid., pp 99-101
15. Ibid., pp 101
16. Ibid.


30. Ibid.; p 203.


35. Comprehensive reports on the realization of the government complex may be found in:


38. Quoted in "Nossas Cidades", special issue of *Realidade*, May 1972, p 244.


44. Christopher Alexander, "A City is not a Tree", Design 206 pp 45-46.

45. Kelvin Lynch, The Image of the City, Cambridge : MIT Press, "(...) imageability is that quality in a physical object which gives it a high probability of making a strong image in any given observer".


8 SUMMARY AND CONCLUSION


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APPENDIX I

LUCIO COSTA'S PILOT PLAN - REPORT
In 1823, José Bonifácio suggested transferring the Capital of Brazil to Goiás, and rechristening it Brasília.

First of all, I should like to apologize to the Directors of the Development Company (Novacap) and to the Jury of the Competition, for the sketchy manner in which I am submitting the idea which I have followed in my suggested outline plan for the Federal Capital; and at the same time, I must justify myself.

It was not my intention to enter the competition—nor indeed, am I really so doing. I am merely liberating my mind from a possible solution which sprang to it as a complete picture, but one which I had not sought.

I therefore come forward, not as a properly equipped expert, since I do not even run an office of my own, but as a mere maquisard of town planning who does not even mean to continue working out the idea offered in this report, save perhaps as a consultant. And if I speak with such candour, it is because I base my reasoning on this simple assumption: if my idea has any validity, my data—although given apparently in such a sketchy manner—will prove quite sufficient, showing that despite its spontaneous origin, I subsequently gave it a great deal of thought before reaching this solution. And if the suggestion has no validity, then the Jury will find it easy to eliminate, and I shall not have wasted my time, nor that of anybody else.

Since there were no restrictions in the way of entering the competition, there was less possibility of consulting the Development Company on what is, in fact, a point of great importance: namely what, from a planning standpoint, they think this city should be—since in this instance it will not be the outcome but the cause of the regional plan. For this is a deliberate act of possession, the gesture of pioneers acting in the spirit of their colonial traditions: and each competitor is, in effect, being asked how he conceives of such a city. It should be conceived of, I believe, not as a mere organic entity, able to function effortlessly and vitally like any modern town; not as an \textit{urbas}, therefore, but as a \textit{scivitas}, having the virtues and attributes appropriate to a true capital city. To achieve this, the town planner must be
imbued with a certain dignity and nobility of purpose—
for it is from this basic attitude of his that must spring
the sense of order, fitness and proportion which will con-
fer real monumentality on his urban scheme. I use the
word not in the sense of ostentation, but as the palpable
and conscious expression of true value and significance.
He must design a city in which orderly and efficient
work may be carried out: but also a city of vitality and
charm, conducive to reverie and intellectual speculation,
capable of becoming not only the seat of Government,
the administrative headquarters of the nation, but also
a centre of culture which will attract to it the finest and
most perceptive intellects in the country.

And now let us see how the plan was born, outlined,
and developed to its present conclusion.

It was born of that initial gesture which anyone would
make when pointing to a given place, or taking posses-
sion of it: the drawing of two axes crossing each other
at right angles, in the sign of the Cross, 1. This sign was
then adapted to the topography, the natural drainage of
the land, and the best possible orientation: the extremiti-
ties of one axial line were curved so as to make the sign
fit into the equilateral triangle which outlines the area
to be urbanized, 2.

Finally, it was decided to apply the free principles of
highway engineering, together with the elimination of
road junctions—to the technique of town planning. The
curved axis, which corresponds to the natural approach
road, was given the function of a through radial artery,
with fast traffic lanes in the centre and side lanes for
local traffic. And the residential district of the city was
largely located along this radial artery, 3.

As a result of this concentration of the city's housing,
it seemed logical to dispose the other important centres
along the transverse radial artery, which thus came to
be regarded as the monumental radial artery. Here, then,
are located the Civil and Administrative Centres, the
Cultural Centre, the Entertainment and Sports Centres,
the Town Hall and other Public Buildings, the Barracks
and the zones designated for warehousing and supply,
local light industries and the railway station, 4. At the
intersection of the two arteries, but functioning essen-
tially as part of the organization of the monumental ra-
dial artery, are the banks, the finance corporations, big
business buildings and offices housing the liberal profes-
sions as well as extensive markets and shopping centres.
Since the monumental radial artery underpasses the re-
sidential radial road, it was necessary to create a spa-
cious platform, to be kept clear of all traffic not specifi-
cally intending to park there. The quiet refuge of this
platform makes it the logical site for the Entertainment
Centre where cinemas, theatres and restaurants are group-
d together, 5.

Traffic heading for the other parts of the city flows
down in a one-way stream to the lower level roofed over
by the platform. It is thus sandwiched as it were be-
tween two platforms, with the sides left open. The 'under-
platform' will also house a large car-park and here too
is the Interurban Transport Centre—a building reached
by passengers from the upper platform, 6. Only the fast
traffic lanes, already underground, dive below the centre
of the 'under-platform' which spreads down the hill until
it reaches the Esplanade on which the Government Build-
ings are located.

Thus, with the creation of these complete clove-leaves
in each arm of the residential radial artery, and of an equal
number of underpasses, car and bus traffic will flow
unimpeded through the central and residential districts,
and with no road intersections. An independent and se-
condary traffic system has been worked out for heavy
vehicular traffic; it has crossings marked by traffic
lights, but does not communicate with the first system
except beyond the Sports Centre. It has basement level
access to buildings in the Shopping Centre, and it skirts
the Civic Centre at a lower than ground level, with approach galleries tunnelled through the terraced embankment.

Once a general network for motorized traffic had been established, an independent grid of safetransit footpaths for pedestrians had to be organized. However, separation of the systems of circulation must not be taken to unnatural extremes, since it must not be forgotten that the car, today, is no longer Man’s deadly enemy; it has been domesticated and is almost a member of the family. It only becomes ‘de-humanized’ and reassumes its hostile, threatening attitude, when it is reintegrated into the anonymous body of traffic. Then indeed, Man and Motor must be kept apart, although one must never lose sight of the fact that, under proper conditions and for mutual convenience, co-existence is essential.

Within the framework of regulated traffic, the separate areas are linked together to make one harmonious system; let us see how. The highlights in the outline plan of the city are the public buildings which house the Fundamental Powers. These are three, and they are autonomous: therefore the equilateral triangle—associated with the very earliest architecture in the world—is the elementary frame best suited to express them. For this purpose, a triangular, terraced embankment (terreplein) was designed: it will be supported on retaining walls of rough stone rising above the surrounding countryside, and can be reached from the ramp of the autostrada running between the President’s Residence and the airport. At each angle of the triangular plaza—the Place of the Three Powers, as it might be called—stands one of the three buildings: the Government Palace and the Supreme Court at the base; the Congress Building at the tip. This building also fronts on to a wide esplanade on a second, rectangular embankment on a higher level, according to the local topography: the entire perimeter of this embankment is also supported on walls of unfaeaced stone. To transfer to present-day usage the ancient technique of the terreplein lends a certain harmony to the pattern and creates an unexpected and monumental strength.

This esplanade—the Mall as it would be called in England—is lined by a wide grass verge used by pedestrians and also for parades and processions; on to it front the Ministries and the Offices belonging to the Public Authorities. The Ministries of Foreign and Home Affairs occupy the lower corner sites adjoining the Congress Building, and they are suitably landscaped; the War, Sea and Air Ministries face a separate square, while the remaining ministries are sited in a row along the Mall, each with its private carpark. The last in the row is the Ministry of Education, making it adjacent to the Cultural Centre which is treated as a park so as to make it more effective as a background for the Museums, Library, Planetarium, Academies, Institutes, etc. Close to these is a wide stretch of land reserved for the University City, its General Hospital, and, later on no doubt, for the Observatory. Along the Mall, space has also been allocated for the Cathedral, but this will face its own piazza, not so much for reasons of protocol, since in Brazil the Church is separated from the State, but more because of the question of human scale and the need to give this building its monumental value. Another reason, even more important, is of an architectural nature: the Mall’s perspective must be unobstructed up to a point beyond the central platform, where the two radial arteries cross each other.

On this platform, as we have seen, traffic is only local; and the Entertainment Centre—which has something, in it of Piccadilly Circus, Times Square and the Champs Elysees—is situated on it. The side of the platform which overhangs the Cultural Centre and the Mall will not be built over, with the exception of the Opera House and a tearoom, reached directly from the Entertainment Centre, or through a lowerlevel passage from
the Cultural Centre. The front of the platform will be lined with cinemas and theatres, all with the same low height regulations, so that if viewed as a whole, they will make an uninterrupted architectural mass, with arcades, wide sidewalks, terraces and cafés. The façades of the buildings provide a fine field for illuminated advertisements, 11. The theatres will be inter-connected by lanes barred to motor traffic, in the traditional manner of Rio's Ouvidor Street, Venetian alleys, or arcades which run into small patios where there will be bars and cafés. Below the buildings, footpaths and lanes will lead to 'loggias' overlooking the park. The purpose of this careful planning is to provide pleasant surroundings for social gatherings and friendly intercourse. The street level of this theatreland complex will be open and unobstructed except for the cores of access leading to the upper floors, so as to maintain an uninterrupted perspective. The upper floors will be glassed in on both sides, so that the restaurants, clubs, tearooms, etc., may look on to the lower esplanade on one side, and on the other may have a view of the hilly park—an extension of the monumental radial artery on which the commercial and tourist hotels are located—and beyond this, of the imposing Radio-TV Tower, which is treated as a plastic element in the composition of the urban mass, 9, 11 and 12. Slightly to one side of the centre of the platform is the entrance hall of the Interurban Transport Terminal with its ticket-offices, bars restaurants, etc. This is a low building connected by escalators with the lower departure hall which, in its turn, is separated by glass partitions from the departure quay proper. One way traffic forces the buses to make a detour leaving the road under the platform; this gives the travellers their last view of the monumental radial artery before the bus enters the residential radial artery, and is a psychologically satisfactory way of saying farewell to the national Capital. Also situated on the platform (which, like the low platform, will house extensive car-parks) there will be two spacious piazzas for pedestrians; one facing the Opera House and the other, symmetrically arranged, looking on to a pavilion overhanging the gardens of the Cultural Centre and consisting of a restaurant, bar and tearoom. In these piazzas the carriage roads are one-way only, and are raised for a good distance of their course, so that pedestrians may cross freely in both directions. They will also have direct access through the piazzas to the Shopping Centre, to the Banks and the Finance Corporations.

To one side of the Entertainment Centre and connected to it are the two great cores of the Shopping Centre, with their smaller shops and department stores, and also the other Centres which are quite distinct from these—the Banks and the Finance Corporations, and the Centre which groups together the big business firms and agencies, and the liberal professions. Here, respectively, are the Bank of Brazil and the General Post and Telegraph Office. These centres can be reached by car via the respective approach roads, and by pedestrians along sidewalks which avoid street crossings. 8. There are also two-level car-parks and basement entrances corresponding to the lower level of the central platform. Both in the Banking and Business Centres, the pattern of the building plan is to be three high-rise blocks and four lower ones, all interconnected by a wide creative area with mezzanines, which will provide covered communication and ample space for branches of banks, business firms, restaurants, etc. In the Shopping Centre the pattern suggested is an ordered row of long buildings followed by one larger building, but all having a uniform height and all interconnected by a similar street-level area of ample proportions, for shops, mezzanines and arcades. Two raised branches of the road ringing this building group will give pedestrians access to each building.

The Sports Centre, with its extensive car-parks, is situated between the Municipal Square and the Radio-TV Tower. This tower is triangular and consists of a monu-
ternal base of un faced reinforced concrete, stretching up to a studio and offices floor, and of a metal super-structure with a lookout section the height of a two storey house. On the ground floor it overlooks the stadium and its pavilions, with the Botanical Gardens behind them; on the other side, it has a view of the racecourse, grandstands, stables and ancillary buildings and, adjacent to these, the Zoological Gardens. The two great green parks, symmetrically laid out in relation to the monumental radial artery, are the 'lungs' of the new city, 4.

The Town Hall, Police HQ, Fire Station and Public Welfare Building stand in the Municipal Square. The Prison and Insane Asylum, though set apart at a good distance from the central built-up area, also belong in practice to the same part of the outline plan.

Beyond the Municipal Square are the City Transport Garages; and beyond them, on both sides of the monumental radial artery, the Barracks. A large area which stretches across the artery from one side to the other will concentrate the warehouses, the local light industries and their own housing schemes; at the far end is the railway station which is also linked with one of the branches of the road for heavy vehicular traffic.

Now that we have travelled down the monumental radial artery from point to point, we can perceive that its flexibility and compactness of pattern, 9, from Government Piazza to Municipal Square, do not exclude variety; and that each part appears to be individually important, forming a living, plastic organism in the overall planning scheme. Since each part is autonomous, it has been found possible to create spatial areas which correspond to a human scale and the inter-relationship between the great buildings does not detract from the contribution made by the architectural characteristics of each area.

As regards the problem of housing, the solution chosen was the arrangement of an uninterrupted sequence of super-blocks, in double or single rows, and with a wide green belt, densely planted with tall trees, round each super-block. Each one will give pride of place to one species of tree; the ground will be carpeted with grass, and shrubs and foliage will screen the internal grouping of the super-block from the spectator who will get a view of the lay-out through a haze of greenery. This will give the two-fold advantage of guaranteeing orderly planning, even when the density, category, pattern or architectural standard of individual buildings are of a different quality; at the same time, it will make provision for the inhabitants with shady avenues down which to stroll at leisure, in addition to the open spaces planned for their use in the internal pattern of the super-block.

The residential building in the super-blocks can be arranged in varying manners, though always in obedience to two general principles: uniform height regulations—perhaps a maximum of six storeys above the pilotis—and segregation of motorized traffic and pedestrian transit, especially near the entrances to the Primary School and the urban amenities located in each super-block, 8.

Behind each super-block runs the service road for heavy vehicular traffic; on the opposite side of this are garages, workshops, wholesale warehouses, etc., while an area equivalent to a third row of super-blocks is given over to flower gardens, market gardens, and orchards. Between the service road and the radial artery are extensive building spaces with alternating approach roads: 11. It is here that the Church, the secondary schools, the cinema, and the retail trade serving each neighbourhood are located, eachaccording its own height category and classificatio n13. The district markets, butchers' shops, grocers', green-grocers', ironmongers', etc., line the first section of the traffic lane which corresponds to the service approaches: and the barbers' shops, hairdressers'; dress shops, tea-rooms, etc., face towards the accommodation road used by cars and buses; here, too, are the servicing and filling stations. The shops have plate-glass display windows, and they form rows along pavements protected by built-out canopies.

They face the wooded belts round the super-blocks which are only used by pedestrians, and also the belt on the opposite side of the road, adjacent to the accommodation road. They are interconnected by lanes and alleys, so that they are really semidetached, although if viewed as a whole they appear to form one single composition, 14. Where each four super-blocks meet there is a church, and behind it the secondary schools: the cinema is a space service road facing the radial artery, so that those who come from other parts of the city may find it easy to reach. The space between these two main roads will be occupied by youth clubs with their sports-fields and play plots.

The social structure of this housing zone can be graded by setting a greater value on specified super-blocks, such as, for example, the single rows which adjoin the diplomatic quarter. This quarter stretches on either side of and parallel to the radial artery. It has a tree-lined accommodation road and a service road later shared with the other residential super-blocks. The treelined crescent which is exclusive to Embassies and Legations will only be built-up on one side; on the other there will be a free and unobstructed view over landscape, with one exception—the most important hotel will be located here, since it is not far from the centre of the city. On the opposite side of the treelined radial groupings thus avoid any undue and undesirable strafication of society. And, in any case, variations in the standard of living from one super-block to another will be offset by the organization of the urban scheme itself, and will not be of such a nature as to affect that degree of comfort to which all members of society have a right. Any differences in standard will spring from a greater or lesser density, a larger or smaller living-space allocated to each individual or family, or from the quality of building materials selected and the degree of finish which these receive. And since such problems are being raised, growth of slums, whether on the city outskirts or in the surrounding countryside, should at all costs be prevented. The Development Company should, within the scope of the proposed outline plan, make provision for decent and economic housing to simulate the entire population.

 Provision is also being made for island sites surrounded by trees and parkland, to be acquired for individual houses. It is suggested that these plots should be stage red; thus the houses on the higher land will make a good pattern against the background of the landscape, since they will be built at a good distance from each other. This arrangement will make it possible for one service road to serve all the plots, 15. Also, the construction of some houses of a high architectural order (which does not necessarily mean that their cost will be exorbitant) has been seriously envisaged. In such cases, the regulations should specify a minimum distance between each house, of at least five-eighths of a mile (1 kilometre); this will emphasize the exceptional character of these private building concessions.

The city's cemeteries will be sited at the extremities of the radial arteries, so as to prevent them from having to turn around the centre of the City. The graves will be fronted with grass lawns and be suitably wooded: the gravestones will be the simple, flat slabs used in England, the idea being to avoid any sign of ostentation.

No housing will be permitted round the lake: the area must be kept unsullied. The lakeshore will be treated as a residential and parkland, and gardening clubs. The citizens may walk and drive to other countryside amenities. Only sports clubs, restaurants, playfields, swimming en-
closeres and fishermen's clubs may operate round the lake. The Golf Club is already located to the east, near the President's Residence and the Hotel, both of which are new under construction; and the Yacht Club will be sited on a nearby creek. Small woods crossing these cloves will run down to the lake, which is ringed by a tree-planted avenue that sometimes wanders inland, and will later be landscaped with flowering plants and dotted with more trees. This ring avenue joins the residential radial artery and the approach autostrada running from the airport to the Civic Centre—a road to be used by famous visitors to the Capital City, although on their return they may with advantage use the residen
tial radial artery. It is hoped that the final location of the airport will be in the near side of the lake, so as to obviate the need for crossing it or driving round it.

Street numbering should start from the intersection of the two axes—using the monumental radial artery as a point of reference to divide the city into two halves, North and South. The super-blocks will be given numbers; the buildings inside each, letters; and finally each apart
cement will be numbered according to usual practice. For instance, one address might be N-Q-3.L apt 201. The buildings will be lettered in a clockwise direction, from the entrance to each super-block.

There still remains the problem of how to dispose of real estate and make it available to private capital. I feel that the super- blocks should not be subdivided, and suggest that not the land, but shares in the land, should be sold. The price of these shares would depend on the vicinity and the height regulations. This would overcome any obstacles standing in the way of present planning and any possible future replanning of the internal arrangement in the super-blocks. Such a plan should preferably be worked out before the shares are sold; but there is nothing to prevent pur.
chasers of a substantial number of shares from submitting their own planning scheme for a specified super-block to the approval of the Development Company. Nor is there anything to stop this Company, in addition to facilitating the acquisition of shares by other corpo.rations, from itself functioning as a building corporation. I think, too, that the price of the shares should include a fixed percentage to cover the expenses of the project. In this way, good architects could be invited to submit designs and competitions could be started for the plan
ning of those super-blocks which are not being developed by the Architectural Division of the Development Com
pany. I would also suggest that two phases should be adopted for the approval of the various planning sche
mes: a pilot plan and a master plan—which would make selection and control of the quality of architectural solu
tions easier for the Company.

In the same way, advance planning should be under
taken before the final layout of the Shopping Centres, the Banking and Financial Centre, and the Big Business and Liberal Professions Centre is proceeded with. It would then be possible to divide them up into subsectors and independent units, without detracting from the har
mony of the overall architectural pattern. The separate parts could then be put up for sale in the real estate market, while the total or partial construction of the buildings would be paid for by the interested parties, by the Company, or by both, working in collaboration.

To sum up—it is easy to grasp the criteria used in this city for a capital city, since its characteristic are the simplicity and clarity of the original pattern. As has been shown, these factors do not exclude variety in treatment of the individual parts, each of which is con
ceived of according to the special nature of its respective function. The result of such treatment should be harmony, despite requirements which are apparently contradictory. Thus, though the city is monumental, it is also conve
nient, efficient, welcoming and intimate. At one and the sa
me time it is spread out and compact, rural and urban—

swiftly, unhampered by road junctions, yet the ground is given back in a fair measure to the pedestrian. And sin
cise the structure of the city is so clearly outlined, its con
structions will be easy: it is based on the crossing of two axes, on two terraced embankments or terrepleins, a platform, two arteries going in one direction and one in another. This one can be built in two phases—first the central traffic lanes with a cloverleaf on each side, then the lateral traffic lanes which could continue their progress simultaneously with the normal development of the city. There would always be space for more buildings in the green belts adjacent to the radial arteries. The super-blocks would be merely levelled off and landscaped, each with its frame of green, planted from the very outset with grass and trees, but not given pavements or curbs of any kind. On the one hand, the use of highway technique; on the other, the technique of the landscaper, planting parks and gardens.

Brasilia, capital of the aeroplane and the autostrada, city and park. The century-old dream of the Patriarch.
APPENDIX II

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