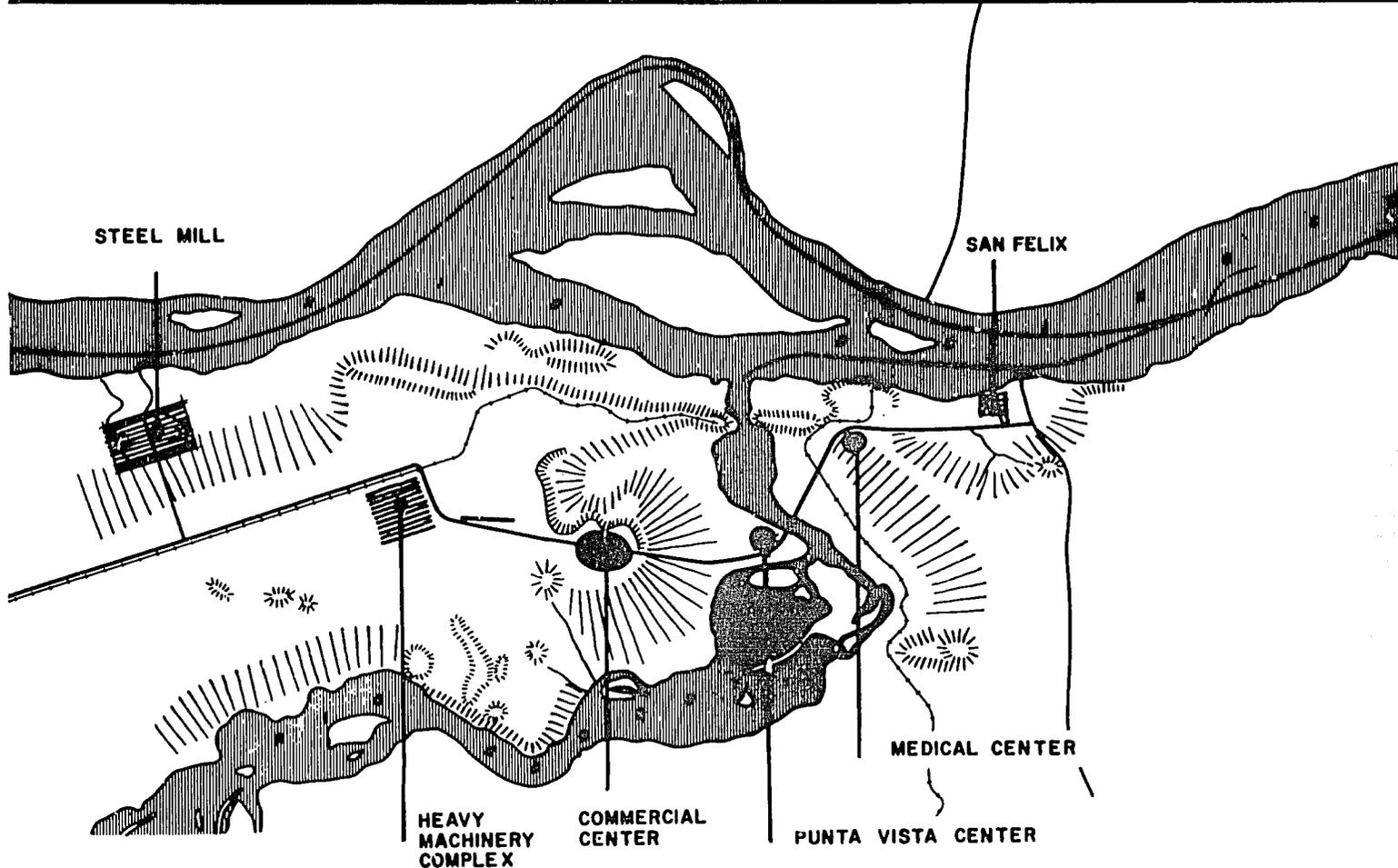


Ideas and Methods Exchange No. 61
301 Urban and Regional Planning



urban planning in developing countries

Prepared for the Agency for International Development

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

Washington, D. C. 20410

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URBAN PLANNING IN DEVELOPING COUNTRIES

by

Lloyd Rodwin

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

Washington, D.C. 20410

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FOREWORD

The purpose of the IDEAS AND METHODS EXCHANGE Series is to present ideas or useful experiences that will help Agency for International Development urban development and housing advisors in assisting government officials, and their professional staffs, in tackling the many problems faced in developing countries.

The most difficult and yet challenging of these are linked to the burgeoning metropolitan areas and the planning for orderly growth in the context of national development goals.

This publication, initiated by the Department of Housing and Urban Development and prepared by Professor Lloyd Rodwin, deals with the problem of urban planning through a case study of the planning of Ciudad Guayana, in Venezuela. Even though it was a rather unique experience, it involved many of the elements which must be taken into account by planners and government officials in other countries, not only in the planning of new communities, but in planning for the growth of existing cities.

The author is uniquely qualified for the task. He is Chairman of the Faculty Committee of the Joint Center for Urban Studies of the Massachusetts Institute of Technology and Harvard University, a Professor in the Department of City and Regional Planning, M.I.T., and has served as an advisor on problems of urban and regional development to the U.N., O.E.C.D., A.I.D., and a number of countries in different parts of the world. He has had principal responsibility for the direction of the Guayana Project since its inception. The ideas expressed represent the views of the author. They do not necessarily express the official position of the Department of Housing and Urban Development or the Agency for International Development.

PREFACE

Natural population increases coupled with heavy in-migration from rural areas are outstripping the provision of urban facilities in most developing countries. The changes pose grave problems for the future. There is an urgent need for efforts to plan the orderly development of the major centers of population, and at the same time in the words of the author, "...to close the gap between the growing points and the lagging regions."

The Agency for International Development attaches importance to urban planning in national development programs. For this reason, A.I.D. contracted with Professor Lloyd Rodwin to prepare this publication in the hope that it would serve as a stimulus and guide to urban planners and to officials who have the responsibility for guiding urban development in their countries.

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Part I

URBAN PLANNING AND DEVELOPING COUNTRIES

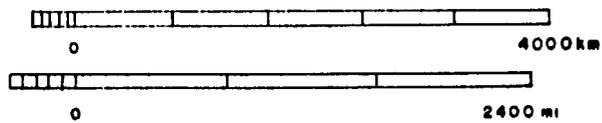
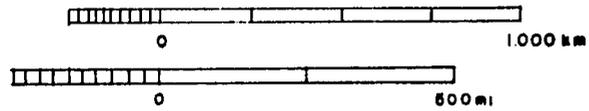
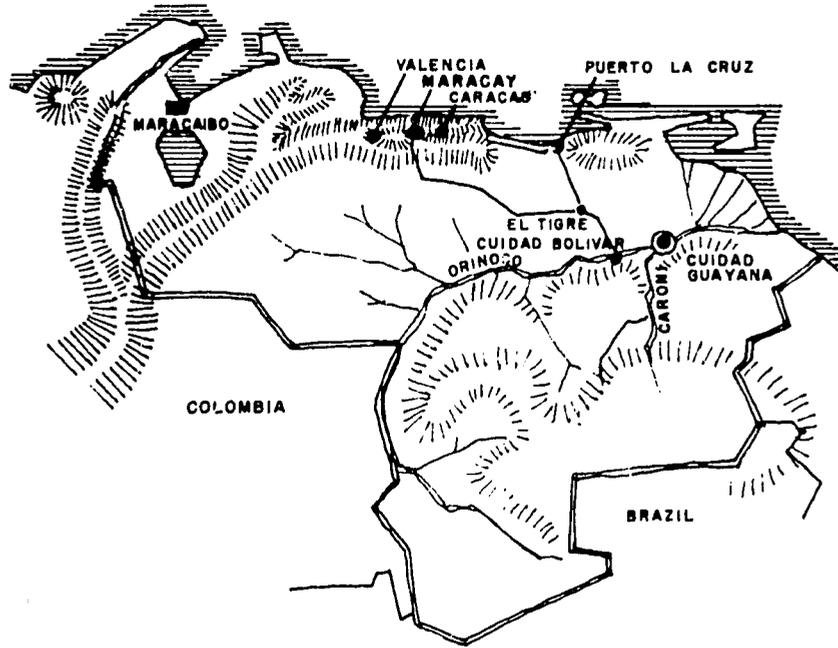
This brochure describes the job of the city planner in developing countries. It does this by examining a single case, the planning of Ciudad Guayana, a city being built in Venezuela, and it looks at this city planning endeavour from two points of view. It examines this still on-going enterprise from the standpoint of urban planning technique - how does the urban planner in such a setting do his work? - and in addition, it tries to suggest something of the functions which such an urban planning enterprise may have in a developing country. For while certain features of the case described are characteristic only of Venezuela, or of the problems of new cities, many of the problems confronted and techniques used are relevant to urban, regional and national programs throughout the world. A review of what was done in Venezuela can give the reader some perspective on the way the goals, the methods, the constraints and the opportunities shaped the programs and decisions for developing Ciudad Guayana, and how similar goals, methods, constraints and opportunities might come to shape the planning of cities in other parts of the world. In addition, the way in which the decisions and programs for Ciudad Guayana evolved in the context of national development goals may suggest how urban planning may be part of the national development strategy.

Until recently city planning has not been part of any such strategy of development. Its role was looked upon as a sort of civic sculpture, and lavish essays in civic sculpture are expendable, if not inexcusable, in poor countries. This was, however, hardly an excuse to neglect the function of cities in the allocation of resources. Development planners often had to learn the hard way that the activities they sought to promote will not occur where, when or the way they should simply by concentrating on national plans or programs for national sectors of the economy. Enough experience now exists to make it clear that regional and urban studies and plans are essential for a variety of reasons: to achieve growth targets, to close the gap between growing points and lagging regions, to increase the efficiency of infra-structure investments, to maximize the beneficial effects of urbanization, and to produce more adequate and less expensive environments in which to work and live.

The following pages begin with a case history of the planning of Ciudad Guayana in Venezuela, focused on problems confronted and techniques used which are likely to be relevant to urban planning in other developing countries. Following this review, we will consider more generally the requirements for effective urban planning in developing countries, and how such urban planning may itself contribute to development. Before we proceed, however, a word or two may be appropriate about the role of the city planner.

I. LATIN AMERICA AND VENEZUELA

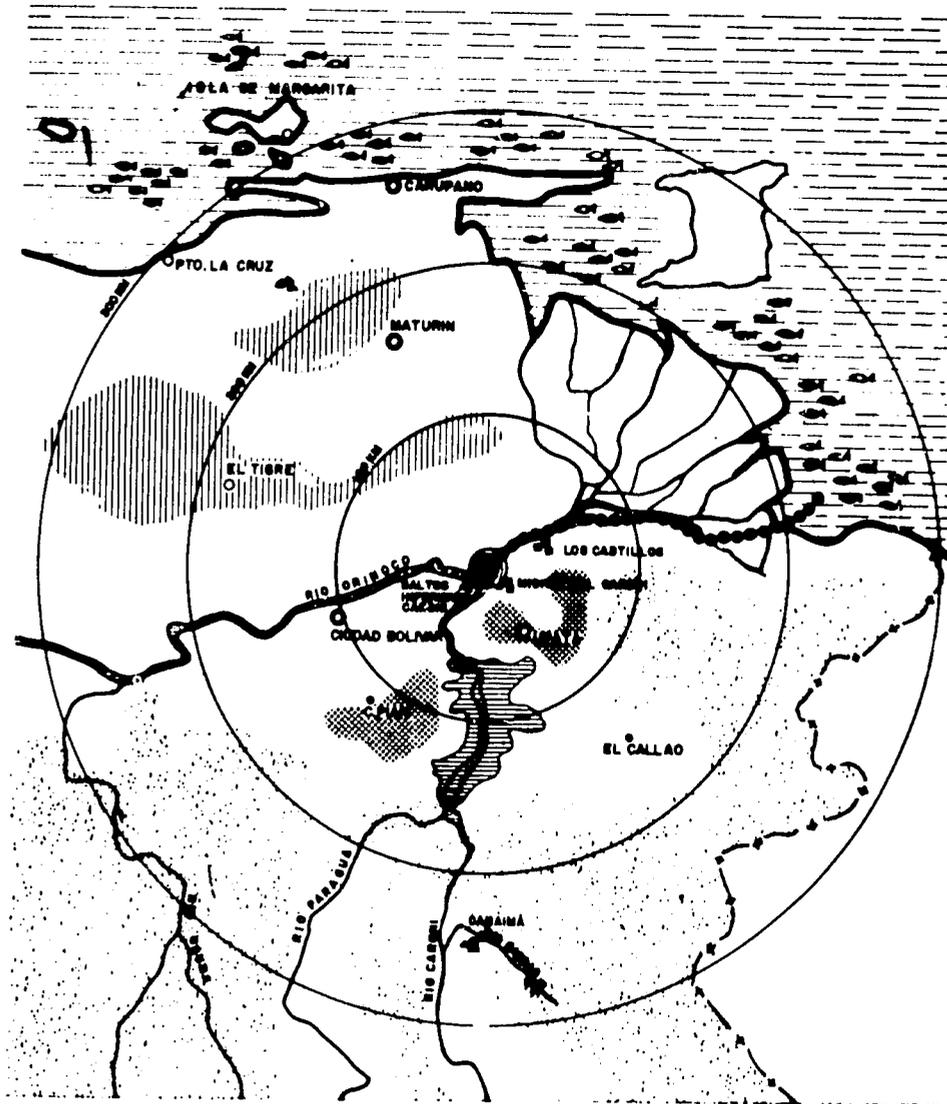
VENEZUELA



Nothing may seem more presumptuous than the idea that a man or a profession can plan a city or region. No individual or profession actually does, any more than an individual or a profession can plan an industry, a foreign policy, or a country. Individuals and sometimes professions may play leading roles; but activities that cut across an entire society require and command a variety of skills. The skill of the city planner lies in his knowledge of land use organization and development in cities and regions. If his education and experience amount to anything, he has had to ponder the purposes and conflicts which might be involved in these efforts. He has also learned to analyze or to work with others who can analyze the kinds of people and activities now in the city or likely to come there, their tasks and needs, and the kinds of systems and services they require. Finally, he has acquired some ability to translate these analyses and ideas into policies, plans and feasible action.

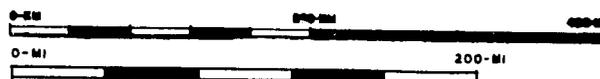
Since the profession is young, there is much that is unknown or done badly. As in other professions more is expected of city planners than they can deliver. Errors are inescapable. Moreover, the reader ought to be warned that a description of planning processes is likely to create an image that is less confusing than is actually the case. Studies and plans are not made by machines but by human beings, thinking, discussing, arguing, testing their ideas. The jobs to be done are always clearer in retrospect. Decisions made bring results and the results help shape further decisions. Moreover, the situation produces pressures for immediate action, and an organization would be unlikely to survive - and perhaps unworthy to survive - if it proved incapable of responding to such pressures. Some staff, possibly a special unit, can serve as "troubleshooters". Their actions, based on provisional judgments, will help shape the course of future policy. The planners are always learning as they go, and the more is this true when they are working in a foreign country, within an institutional framework novel to them. Thus, no strict series of steps can be insisted upon since so much depends on the nature of the work to be done, the number and quality of the staff and the kinds of contingencies that develop. What we have chosen to do instead is to report the sequences of some of the more important studies and actions which occurred in an actual enterprise, the planning of Ciudad Guayana.

II. RESOURCES OF THE EASTERN REGION OF VENEZUELA



RESOURCES OF THE EASTERN REGION OF VENEZUELA

- | | | | |
|---|---|---|---------------------------|
|  | HYDRO-ELECTRIC POTENTIAL |  | DEEP WATER CHANNEL |
|  | DEPOSITS OF IRON ORE AND OTHER MINERALS |  | ZONE FOR FISHING INDUSTRY |
|  | PETROLEUM AND NATURAL GAS |  | HISTORICAL MONUMENTS |
|  | FOREST RESERVE |  | NATURAL SPECTACLES |



Part II

THE CASE STUDY: CIUDAD GUAYANA

FIRST IMPRESSIONS

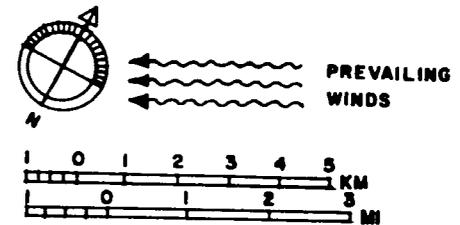
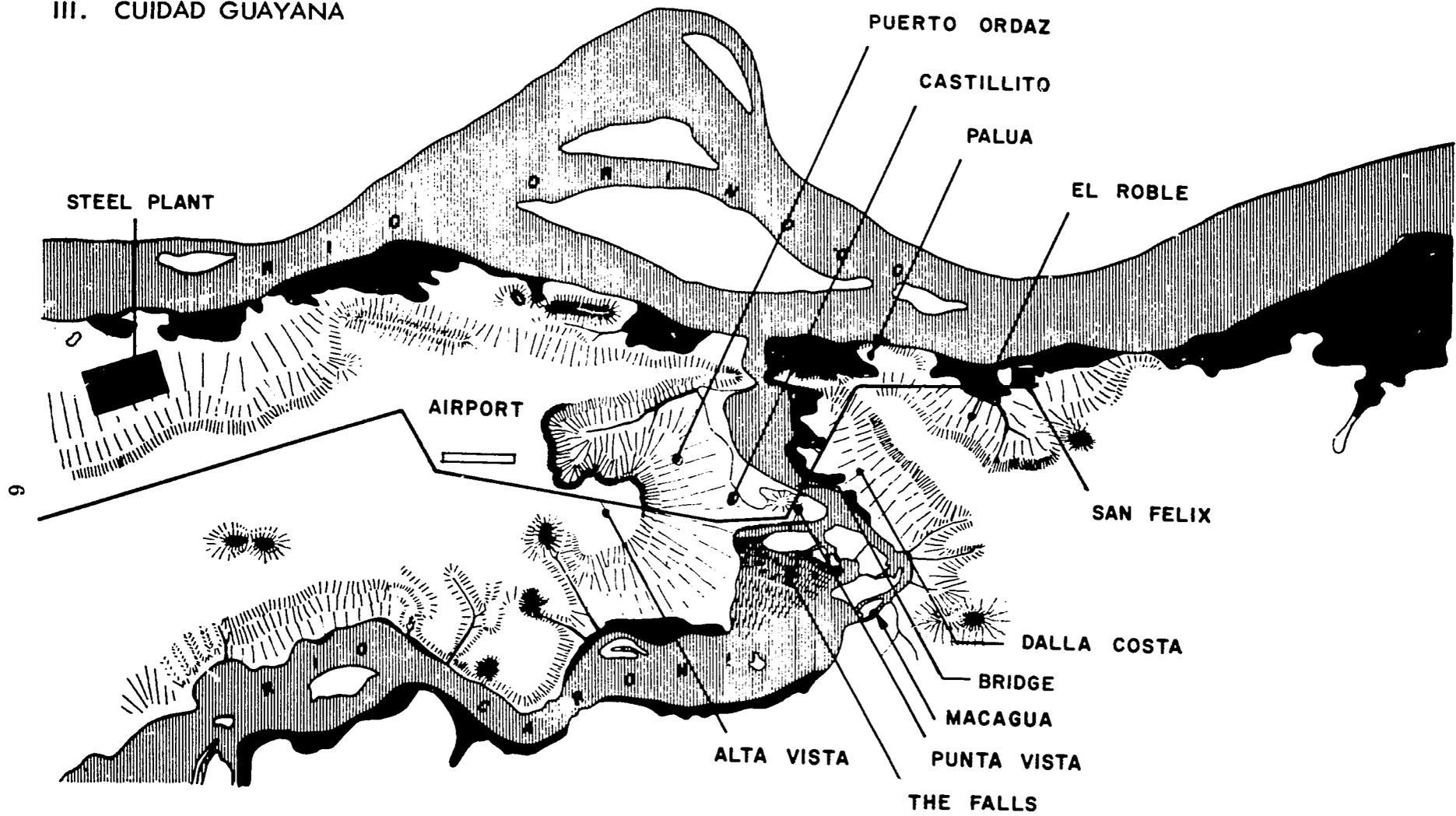
At first blush the lower Orinoco valley would hardly appear to be an inviting place to plan a metropolis. Isolated (500 kilometers from the capital), tropical in climate, and with generally inferior agricultural potential, the region stood still while other regions developed first their agriculture and - since the 1920's - their oil deposits and their industries. Yet the Guayana more than made up for what it lacked, in fact, by what it always was believed to have, in potential. Vast (one-third of the country's total area), it is dominated by expanses of tropical forest broken only by treacherous rivers and low mountain ranges. Sporadic discoveries of diamonds combined with memories of the nineteenth century wealth at the El Callao gold mines created a myth of fabulous riches awaiting the adventurous which still means "Guayana" to most of Venezuela. Perhaps as a result of the myth the region is unmistakably a frontier for those within it as well as those outside.

Coupled with these features is the unique resource endowment, particularly iron ore, power, water and forests. The present Macagua Dam only has an installed capacity of 350,000 kilowatts but the Caroni River has a hydro-electric potential of about 6 million kilowatts in 1967; and by installing additional generators, the capacity could be increased fivefold without any increase in the height of the dam. Within 100 kilometers, the region contains large natural petroleum fields and rich deposits of natural gas and high grade iron ore plus promising possibilities for the exploitation of other minerals, such as manganese, nickel, chrome, industrial diamonds, gold, and possibly bauxite and aluminium laterite. Though now isolated and sparsely settled, the region has reasonably satisfactory road connections with the rest of the country and direct access to the ocean via the Orinoco River.

The site of the future city had already become a center for iron ore processing and shipping by two American subsidiaries (the Orinoco Mining Company and the Iron Mines Company of Venezuela), each of which had there a small planned settlement for its staff. In addition, it was the locus of a large steel plant planned and built by previous governments, and virtually completed by 1963.

The task which the government headed by President Betancourt set for itself was to devise an appropriate strategy for the development of the Guayana region taking into account the goals and norms of the Venezuelan national plan. To unify the political and technical responsibility for this effort, the government created a public corporation, the Corporacion Venezolana de Guayana (CVG). The Corporacion de Guayana took over the Macagua Dam on the Caroni and the general task of electrical power development. It had responsibility for the new steel plant, which it manages now through a subsidiary. It was also entrusted with the job of planning and developing a city to be the focus of the area's development. It has authority to carry out a general program of research, planning and development. To ensure adequate control over development,

III. CUIDAD GUAYANA



it acquired much of the land on the site either through purchase or through transfer of ownership from other government agencies to CVG. However, its powers were vaguely limited by the activities and jurisdiction of other agencies; its capacity to act was handicapped by shortages of skilled staff; and the welding of the city planning, steel production and power development functions into an integrated planning enterprise could only be done over time. It needed technical help. It was largely for this reason that CVG arranged for the Joint Center for Urban Studies of the Massachusetts Institute of Technology and Harvard University to assist its staff on all aspects of planning.

INITIAL EFFORTS

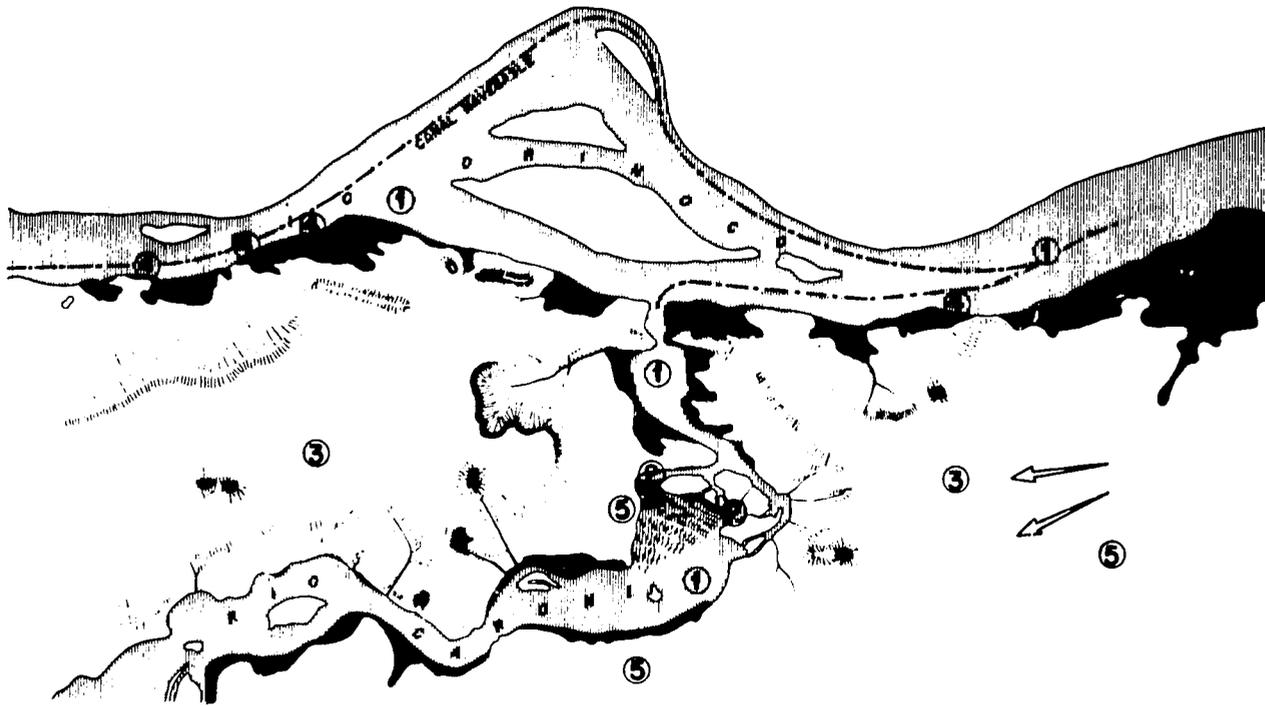
The first task was to redefine the problems and to ferret out some basic facts on the order of magnitude of the job that lay ahead. Rough schemes had been prepared previously by the Urban Planning Office of the Ministry of Public Works. It was assumed, for example, that the plans had to provide for a town of about 200,000 to 250,000 people. When the figures were questioned, however, the estimates turned out to be rough guesses. One could just as easily make a case for a town of 100,000 or 400,000. The CVG and Joint Center staff required a rigorous analysis of the probable sizes of the town in different stages of its development. They needed detailed information on the characteristics and requirements of the economic activities that might be attracted to the region. They had to know more about the needs and preferences of the existing and future population and about the development objectives that were to be pursued. This information was essential to make land use plans and to be sure that they helped achieve the specific development goals.

In the immediate area of the new city there were already a number of heterogeneous and disconnected settlements. The town of San Felix on the southern bank of the Orinoco now has about 45,000 inhabitants. About 28 kilometers to the west, is the new steel plant. Half way between the two is the planned community of Puerto Ordaz, housing about 25,000 people and built by the Orinoco Mining Company for its staff. Between the two is Palua, the other mining town and a number of sprawling unplanned developments fringing the connecting highways.

In anticipation of the job opportunities, migrants were coming to the area in droves. Scattered and concentrated makeshift shanties were mushrooming. So, too, were pressures for public action, hastily improvised though it might be, to provide water, sewers, roads, power, schools, a bridge and housing. The problem was how to provide these facilities and services without impairing too seriously the long range plans for the community, for which the basic studies had not yet started. Whatever solutions were devised had to be worked out in a hurry; and they had to be fashioned with negligible data, a fairly limited staff and the assurance that if things went wrong, as on occasion they assuredly would, the "planners" would be the visible scapegoats for all disaffected elements.

The first Joint Center specialists to arrive on the scene were the physical planners. Together with their counterpart Venezuelan colleagues, they initiated studies to obtain information on topography, vegetation, climate, social characteristics and the existing activities and patterns of development. They examined the situation on the site and hazarded some guesses as to the probable size of the town and the possible location of the major land uses. On the basis of these rough judgments, they reviewed specific projects, planned or in early process of development, to see which, if any, ought to be stopped or relocated. It was a serious business to stop any activity. The aim was to avoid a negative decision unless it was essential to achieve

IV. CUIDAD GUAYANA: NATURAL CONDITIONS

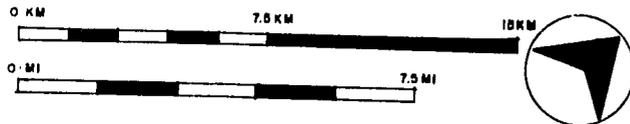


PROBLEMS

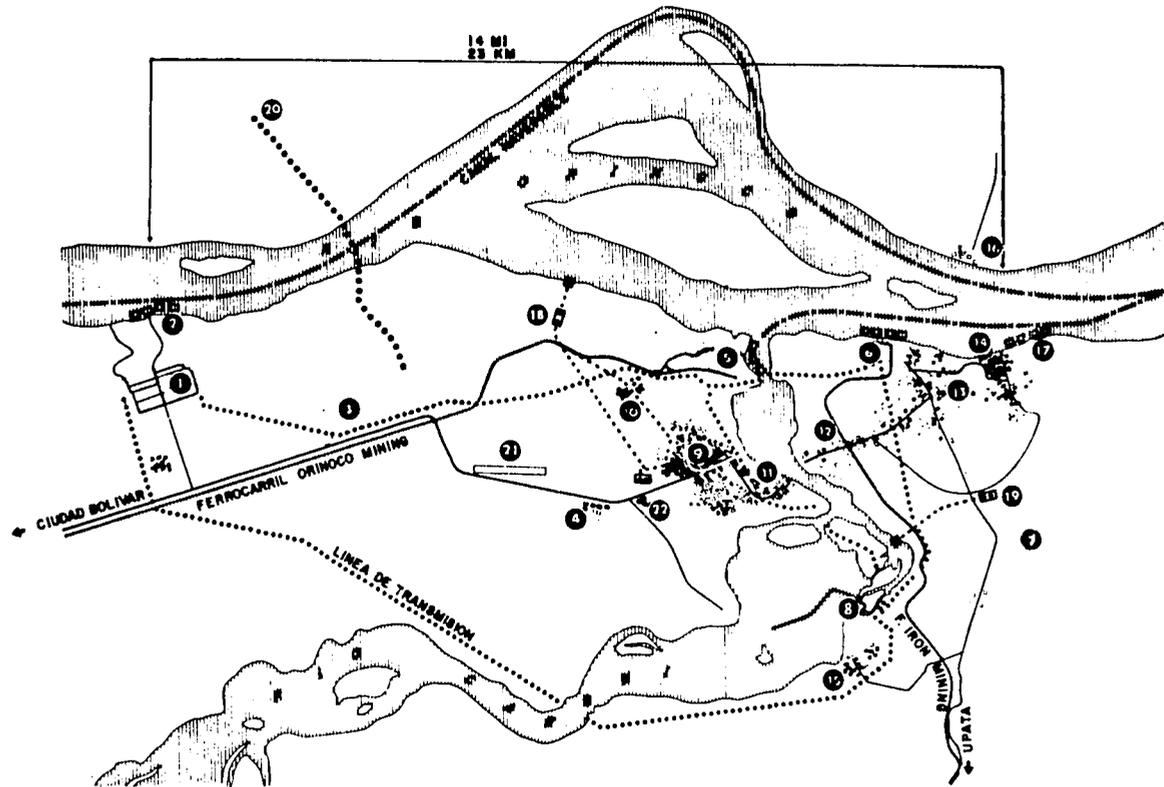
- HUMID TROPICAL CLIMATE
- ANNUALLY INUNDATED FLOOD PLANE
- SOIL EROSION
- Y CONTROL OF NATURAL DRAINAGE
- POOR SOIL
- SPARSE VEGETATION
- TOPOGRAPHIC BARRIERS

OPPORTUNITIES

- == REFRESHING WINDS
- ① ABUNDANT WATER FOR:
 - INDUSTRY
 - NAVIGATION
 - HYDROELECTRIC POWER
 - WATER SUPPLY
 - IRRIGATION
 - RECREATION
- ② UNIQUE NATURAL SITES
- ③ GENTLE TOPOGRAPHY
- ④ SITES FOR PORTS
- ⑤ WOODED AREAS



V. CUIDAD GUAYANA: EXISTING MANMADE CONDITIONS



INDUSTRIES

- 1 STEEL MILL
- 2 PORT
- 3 INDUSTRIAL SUBDIVISION
- 4 SUBDIVISION
- 5 ORINOCO MINING CO.
- 6 IRON MINING COMPANY
- 7 LIGHT INDUSTRIAL SUBD.
- 8 HYDROELECTRIC DAM
MACAGUA

SETTLEMENTS

- 9 PUERTO ORDAZ
- 10 COUNTRY CLUB
- 11 CASTILLITO
- 12 DALLA COSTA
- 13 EL ROBLE
- 14 SAN FELIX
- 15 CARONI CAMP
- 16 LOS BARRANCOS

PUBLIC SERVICES

- 17 SAN FELIX PORT
- 18 PUERTO ORDAZ WATER SUPPLY
- 19 SAN FELIX WATER SUPPLY
- 20 OIL LINE
- 21 AIRPORT
- 22 SHORT WAVE TRANSMISSION
TOWER

PROBLEMS

GREAT DISTANCE BETWEEN SETTLEMENTS
AND EMPLOYMENT CENTRE (23 km or 14.4 mi
STRAIGHT LINE DISTANCE)

SCATTERED DEVELOPMENT

LACK OF CONTINUITY

LACK OF SEWERS AND WATER SUPPLY

OPPORTUNITIES

STEEL MILL, NUCLEUS OF THE INDUSTRIAL
COMPLEX

MACAGUA DAM, ABUNDANT ENERGY

BRIDGE ACROSS THE CARONI

SAN FELIX PORT

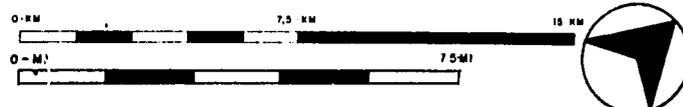
DEEP WATER NAVIGATION CHANNEL

GENERAL HOSPITAL UNDER CONSTRUCTION

WATER SUPPLIES FOR PUERTO ORDAZ AND
SAN FELIX UNDER CONSTRUCTION

HOTEL UNDER CONSTRUCTION

NEW SCHOOLS



a major objective. The bridge, the most important public works that was underway, turned out fortunately to be in an excellent location, and, subject to certain reservations, could move ahead at this location. So too, could most of the housing projects. Only one or two were challenged, and eventually located elsewhere.

Quick action proved essential on a number of other fronts. Immediate help was necessary in locating new sites for low rent housing; in redesigning the site plans of some housing projects; in identifying appropriate locations or "reception areas" where in-migrants might be permitted to settle; in the preparation of subdivisions to permit the rapid selling and development of industrial parcels on both sides of the river. Perhaps the most dramatic issue concerned the bridge which was to cross the Caroni and connect the activities on both sides of the river. The team's evaluation was that the bridge ought to accommodate about twice the traffic and that it ought also to serve pedestrians and people on bicycles more efficiently. But the expansion of capacity was not feasible since the work was already too far advanced. However, it was still possible to adjust the designs to permit separation of bicycle and auto traffic and to allow pedestrians to cross in the shade. The issue was important because the bridge, at the time, was the most valued improvement sought by the community. It was also a critical visual element because of its own appearance and because of the memorable view it would afford of the city of the future. The staff wanted the bridge to become a symbol of service for all the people; and they hoped, if possible, to make this experience as meaningful for the residents of Ciudad Guayana as the crossing of the Ponte Vecchio in Florence or the Galatea bridge in Istanbul. At the price of a short delay of a month or less they thought they could achieve these aims. They were granted this delay.

THE ECONOMIC AND SOCIAL DIAGNOSES

Soon, however, the principal development alternatives had to be assessed. Emergencies were unavoidable. But the delays were jeopardizing the long range perspectives. A more serious price might be exacted if the main land use elements were not planned. The highways, bridges, parks and public transportation routes, and the major commercial, government and residential centers had to be organized into efficient patterns consistent with future needs yet capable of guiding and accommodating current requirements economically. This task called for careful economic analysis. By this time, additional economists had arrived and began to tackle these problems together with their Venezuelan colleagues.

The first job was to gauge the role of the Guayana region in the national economy and then to spell out the implications for the level and character of economic activity that could be developed in the region. Over the past 25 years the growth of the Venezuelan economy had reached the impressive rate of 7% per year. This was largely due to the discovery and exploitation of oil resources. But dependence on petroleum alone was dangerous; and according to the long term trends, the growth attributable to this resource would slacken. A relative decrease could be counted on in public revenue, foreign exchange earnings and overall investment. Since Venezuela's population was increasing by more than 3% a year, it could be demonstrated that Venezuela probably would have to quadruple its output of goods and services in the next 20 years if it was to maintain its past rate of progress. Such growth could be achieved only by substantial and diversified industrialization. ^{1*}

* Footnote citations are listed on pages 55-58.

Examination of existing industry in Venezuela showed that it was characterized by final assembly activities which require substantial imports of basic and intermediate products. An increase in the production of metals, petro-chemicals and heavy and light machinery would not only supply the Venezuelan economy with basic and intermediate products but also contribute to substantial earnings of foreign exchange via exports to other Latin American countries and the world. This evaluation reinforced the justification for the high priority which the national government assigned to the development of Guayana. It also set the framework for the next steps in programming the economic activities to be encouraged in the region.

To screen the industries and industry complexes which might be established, the economists formulated a number of criteria:

"Venezuelan and world demand for each industry's products; minimum economic scale; complementarity between the industries, and the linkages deriving from joint operations; their competitive costs; transportation factors; and the influence upon each potential industry of the existence, in their initial stages of development, of a hydro-power facility, an integrated iron and steel complex, and a basic aluminum smelting project. This preliminary review indicated which of these potential industries would enjoy in Guayana advantages in scale, technology, low cost and high quality resources, transport facilities and economies resulting from linkages and complementarity, and therefore would be likely to have a favorable competitive position which would accord well with Venezuela's targets for national growth and export."²

A number of high priority industrial projects were identified through this exercise. They were mainly activities which required huge capital outlays; they also had to be modern and efficient since most of them would compete in the world market. The most important were: iron and steel; sponge iron; aluminum; other metals and metal products; heavy machinery and equipment; electro-chemicals; pulp, paper and other forest products. Estimates of demand, Venezuelan and world wide, were prepared for the products of these activities. The implications were worked out for several characteristics: volume, value and value added; labor force and occupations; and locational, accessibility and spatial requirements. Next employment was projected in service activities; and then, by analysis of trends in family size and ratios of labor force to population, it was possible to make population estimates. Thus, the economists could supplement demographic projections with estimates of future population based on anticipated levels of economic activity. These data gave the land use planners the information they needed to determine the scale, location and relationship of land uses and the requirements of the systems of transportation, communications, utilities and housing to service these activities.

The results were only first approximations and required elaboration in scope and depth. For example, the long term demand for the products of the principal industries was intensively analyzed. There was also a special investigation of the functions of the Guayana region if Venezuela were to participate in the Latin American Free Trade Association. Since a large proportion of the food for the population is now imported from other regions, a number of agricultural studies and experiments were initiated. The purpose was to assess the possibilities of increasing the share of products which could be economically produced in Guayana, especially in the Orinoco Delta area. A projection was also made of the economic structure of the region. This included an analysis of the region's demand (consumption, investment and exports) and its supply (production and imports). To do this, the economists examined the national and

regional demand for goods and services. The share which the Guayana region could provide was then estimated. Additional calculations provided information on the production of all other goods and services. These data, in turn, formed the basis for estimates of the level and distribution of income.

It was also essential to gauge the long term investment requirements. The analysis took into account the tentative proposals for the development of resources, heavy industry and other manufacturing activities. It included, too, the requirements for housing, transportation, public utilities, the city center, other commercial centers and other service activities. The comprehensive investment program, worked out for the periods of 1963-1966 and 1967-1975, was reviewed by Cordiplan, the national planning office. Following modification of details, it was adopted and became part of Venezuela's National Plan. Finally, on the basis of these projections, a preliminary financing program was established. A very substantial part of this financing is expected to come from sources other than the Venezuelan government including domestic and foreign private capital and public international project loans. Nonetheless, the total investment by the Venezuelan government in the region will approximate more than 540 million dollars for the 1965-1968 period and 1,485 million dollars for the 1969-1975 period, or about 10% of total Venezuelan investment in both periods. The fact that the region might provide one fifth of the country's manufacturing production and of its exports helped to justify the allocation of such vast capital resources for these purposes.³

Much more could be said about the economic investigations required to guide plans for land use and economic development in Ciudad Guayana, but we must stop at this point. Suffice it to say, the results were useful; but they were necessarily tentative and subject to qualification. Fortunately, it may be possible to guard against the more serious errors by periodic review of the assumptions and projections.

But what about the social dimensions of the program? Certainly these, too, required attention. For example, the planners had to know more about the population now living in Ciudad Guayana and some of the problems of adjustment they faced in the transformation process. They had only vague fragmentary notions about the composition of the population, how it was changing and how it was likely to change in the future. They also had to assess the more critical strains which faced the population and how, if at all, the development strategy might be deployed to ease these problems. Not surprisingly, it took far more time than expected to get this basic information because there were difficulties in obtaining skilled staff and in mounting the necessary social studies.

To begin with, a social anthropologist was engaged to live on the site and observe the habits and living arrangements of the rural migrants and their responses to the changes going on about them. An experimental "pilot" program in self-help housing was also initiated. In addition there were investigations of health, nutrition, housing and family expenditure patterns. Still other surveys dealt with the attitudes of the local population to authority and change and the importance they attached to specific public services and physical improvements. At a later stage, a specialist was employed to set up and maintain a current survey of the number and characteristics of migrants to the region. Finally, a novel inquiry was undertaken, the first in a developing area, to determine which elements in the physical environment were perceived or considered important by residents of different backgrounds. The results are expected to test some of the assumptions the planners are making in the visual plan.

These investigations, some of which are still in process, proved helpful in a number of ways. For example, they indicated the population's lack of understanding of the development program and the need for more channels of communication between the staff and the local community. They underlined the prevalence of serious problems in public health, nutrition and broken families. They confirmed some of the differences in the values of the planners concerned with the long range requirements of the future community in comparison with the more immediate concerns of the present residents. They pointed up the limited effectiveness of the existing programs and the increasing importance of the locality's role in development decisions. Finally, they sensitized the staff and focussed increased concern on the problems and requirements of the humbler groups in the population.

THE GOALS OF THE LAND USE PLANS

While these studies were being run, the land use planners had their hands full trying to disengage themselves from some of the operational problems posed by the explosive growth of the city. In 1950, Ciudad Guayana had a population of 4,000; by 1961, it was 42,000; by 1962, 50,000; and by 1964, 70,000. The projected population was close to 100,000 for 1966 and 400,000 by 1975. The need for water, power, sewers, roads, housing, schools, hospitals and communications was obvious. The planners had been occupied in improvising answers to these immediate questions. But they had to concentrate now on devising a development strategy to guide the ad hoc decisions and to assure some orderly integration of the scattered settlement patterns.

This task raised questions concerning the objectives and criteria which the plans should satisfy. The planners knew, of course, that the goals were complex and would have to be periodically re-examined. Over time aims might change. Some were obscure and not easily measured; others were likely to acquire more, or less, importance, with experience. Weighting was rough and ready. Personal motivations were also bound to affect judgment and action. Despite these problems, CVG and the Joint Center had to develop a clearer sense of what they hoped to accomplish.

The most important formal goal established by the CVG was to encourage economic growth and to ensure as a minimum that the development program would not be impeded by inadequate housing and public services. To discharge this responsibility, the needs had to be estimated and timed, a current record of development activity had to be set up, and feasible targets, deadlines, and coordinative mechanisms had to be established. The immediate job, of course, was to overtake the backlog in essential infra-structure, and then later to keep abreast of these requirements to the extent that it was possible to do so. The initial estimates were necessarily first approximations. Revisions were inescapable when more information was obtained and more experience gleaned concerning the capacity and possible improvements in the implementing mechanisms. The scale of the problem and the limited resources also required a principle of stress and sacrifice. Therefore, hard decisions had to be made on which problems were to be tackled first. After much discussion, it was finally agreed that the problems of housing, education and local government were to receive the highest priority because significant failures were likely here and might retard the entire development effort.

A related objective was to provide an environment that would promote, not simply accommodate, the desired economic activities. This was another expression of the goal of encouraging economic growth. One effect of this aim was to push the balance in favor of building a single city that would integrate the scattered

developments rather than create an independent new city to the south of the steel mill. This judgment was influenced in part by the higher estimated infra-structure and other costs of development near the steel plant, by the external economies which would flow from linking the newer with the older settlements, by the probable political opposition to location elsewhere, and by the greater measure of security and flexibility that such linkage gave to whatever development occurred if the projections proved to be optimistic. Still another implication was the need to set a fairly high priority on the provision of facilities which would attract key managerial staff as well as skilled professionals and workers. The calculus of costs and benefits could not be precisely formulated at the time. But the weight of opinion was that good schools, well designed neighborhoods, improved communication, recreation and shopping facilities and an attractive urban setting would help to reduce labor turnover and increase the likelihood that the essential personnel would be encouraged to come and to remain in the city.

There were also other aims. They were secondary, but still influential. The more important were: 1) the desire to minimize the public share of the investment and administrative burden; 2) the intention to produce an economical and flexible arrangement and staging of land uses which would reduce the risk and costs of premature development, minimize infra-structure outlays during the development period, and maximize accessibility in terms of time and costs for all inhabitants of the city after the initial stages of development; 3) the resolution to recapture the increments in value produced by the massive infra-structure investments of the government; 4) the desire to encourage high standards of design and of professional analysis partly to set an example for future regional development programs in Venezuela and partly because of the effect of such standards in attracting imaginative firms and personnel to the region; 5) the resolve to diversify residential patterns and to increase the variety of choice in living arrangements and social facilities for all elements of the population, regardless of income level; 6) the intention to follow rather than reverse market forces, whenever possible (unless the results were clearly and significantly inconsistent with other goals and norms) in order to lend extra momentum to the growth processes.

These goals had to be, and in many cases were, made more specific to guide judgment. They also had to be interpreted and applied in a specific social and administrative environment characterized by shortages of staff and significant differences in work habits and standards of efficiency. In addition, CVG expected Venezuelan and Joint Center staff to respect its administrative style. This meant, among other things, centralized decision making, high standards of honesty, loyalty to the policies and leadership of CVG, and - except for top echelon staff - cautious and limited contacts with outside agencies or groups.

To be sure, in specific cases some of these considerations were more important than others. But in the main these norms generally influenced the basic decisions. They shaped the evolution of the CVG policies on housing and education, the siting of residential areas including reception centers for migrants, the policies on the sale and lease of land, the location, timing and method of developing the business center, the routes and the design of the circulation system and the choice of a linear form as the dominant land use frame of the city.

THE PREPARATION OF THE LAND USE PLANS

The core of a land use plan lies in the proposed relationships between the principal activities in an area and its physical environment. These relationships

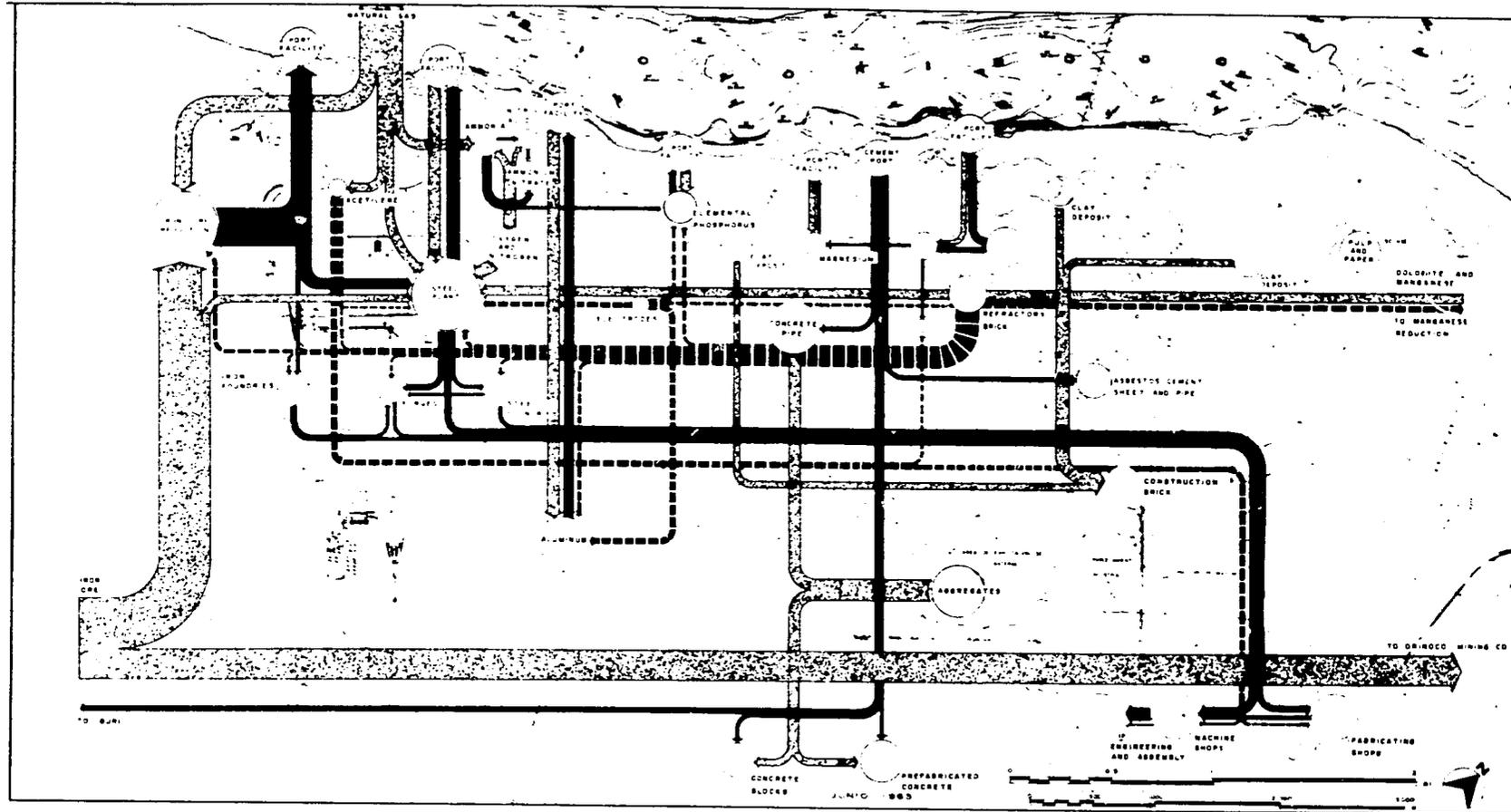
are complex and interdependent. They are gradually evolved after studying the possible interaction of many component elements. These include the terrain, the existing pattern of development, the functions and feasible locations of the principal activity areas, the alternative transportation schemes and a variety of urban forms which might serve the development goals. A few examples may help to illustrate how the land use plans of Ciudad Guayana finally evolved.

The Transportation System: The principal land use problem stemmed from four facts: 1) the site was very large; 2) a great preponderance of the jobs would be located on the far west because of the location of the steel plant; 3) a large proportion of the lower income population was already located east of the Caroni; 4) an extraordinary natural area of dramatic beauty was located in the south in the Caroni basin. In such circumstances, transportation, which is always a basic element in a land use plan, acquired exceptional importance. A transportation system was needed that would provide easy, rapid and relatively inexpensive movement between jobs and residences. Hopefully, also, the new system had to be flexible and to reinforce the desired land use activity and visual pattern at different stages in the course of development. The arrangement of activities would affect the volume and character of the traffic; but the design and routing of the circulation system would affect in turn the location of specific activities such as the city's central business district, the high density residential areas and the civic and cultural center. Therefore, the effects of the interaction of the land use and the circulation system had to be examined systematically to ensure that the staging and development of one system would link into and reinforce the staging and development of the other.

The staff formulated a number of land use and circulation alternatives and tested them with the aid of a high speed computer. They varied the distribution of population, levels of income, locations for homes and jobs, and choices of travel mode (buses, taxis, "por puestos"⁴ and cars). These studies made it possible to estimate preferred travel patterns and probable traffic volumes for each of the alternatives. This information provided the basis for some of the subsequent calculations of the size and layout of roads, the character of the mass transportation service and the key transfer points. It also guided the location and staging of the most important facilities, the reservation of land for the transportation network, and the evaluation of performance requirements and costs.

Given the size of the city and its prospective low density for many years to come, a high capacity transit system on exclusive rights of way would hardly be worth the high capital cost. The transportation and land use plans therefore presuppose considerable use of automobiles and a system of buses or equivalent vehicles travelling the public streets - perhaps for short distances on separate rights of way. The final solution, however, did not minimize transportation costs. An economic evaluation of the transportation plans indicated that when the city would have a population of 250,000, approximately 12-16% of the disposable income will be spent on transportation.⁵ This figure is high. Available data for somewhat comparable cities in the United States are in somewhat the same range (Los Angeles 16%; Cleveland 14%; and Chicago 13%); but income in the U.S. is higher and transportation costs tend to rise with increases of income.⁶ That transportation costs should be high, however, is not surprising. They reflect the size of the site, the low densities and the extreme separation between the steel plant to the west and the residential areas of San Felix to the east. In addition, the facilities will be used inefficiently because of the tidal traffic flows. Over time, however, with the further western growth of the city, the journey to work and the related costs of transportation are expected to decline. Moreover,

VI. LINKAGE DIAGRAM TO IDENTIFY USE ZONES FOR THE HEAVY INDUSTRY COMPLEX



This diagram indicates the major flows of materials and goods within the proposed heavy industry complex. The light colored lines indicate flows of raw materials from their local sources to the appropriate industries; the dark lines indicate flows of partially finished and finished products. The widths of the lines suggest the relative magnitudes of the flows.

the comparative costs are misleading, in view of the constraints. Low densities were practically unavoidable for the bulk of the population, especially in the low income shanty developments. There were also greater risks and possibly higher alternative costs in building a new city near the steel plant. Under the circumstances, there was probably no feasible or less expensive alternative.

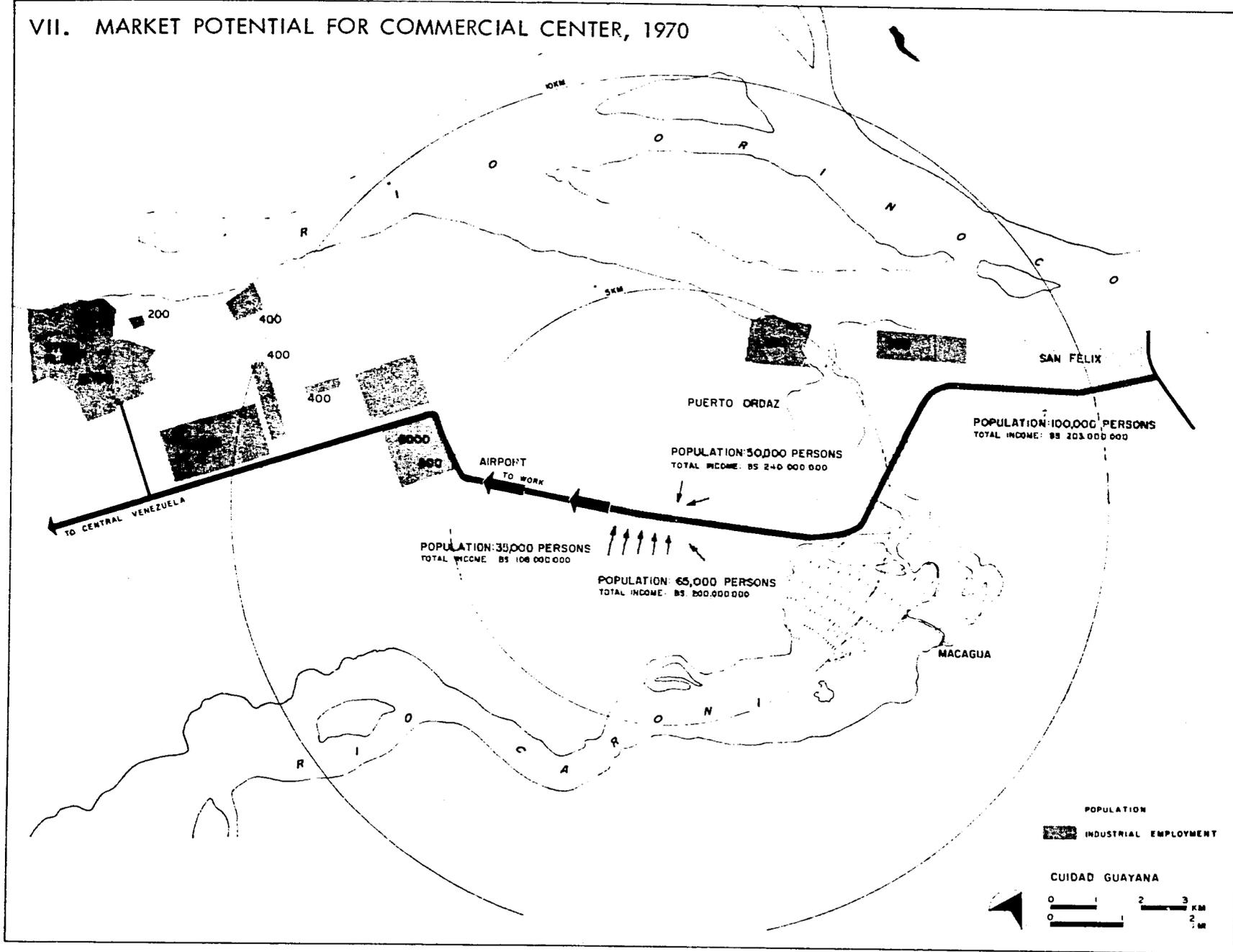
The Industrial Centers: The job of the circulation system is to knit together a variety of different activity areas. Ciudad Guayana will have several centers serving different purposes. One of the principal tasks of the land use planners was to identify and provide for the special characteristics and requirements of these centers so that they will reinforce each other and their possible contribution to the growth and development of the city.

One of the most important was the center for heavy industry. Clearly the future of Ciudad Guayana would hinge to a large extent on the efficiency of its basic industries. This would certainly depend in part on the location of these activities and the facilities serving them. Fortunately, the solution turned out to be relatively simple. The optimum location was clearly the extreme western boundary of the site. The steel plant was already located there. In addition, the area has excellent access from the east to both land and water transportation routes. It lies downwind from the rest of the city, thus minimizing smoke, odors and other nuisances. It also contains large quantities of suitable land so that the entire heavy industry complex could be concentrated in the same area. This facilitates easy interchange between goods and materials within the complex; and, truck traffic generated by the industry can reach domestic markets without passing through the city.⁷

Use zones were, therefore, organized for this area. Within these zones, provision was made for: 1) the steel plant and ore reduction processes as well as the foundries and forges which have strong linkage to these activities; 2) the chemical industries which require port facilities and interchanges with the steel mill; 3) the aluminum plant; 4) the construction materials industries, located near the extraction area and with access to ports and highways; 5) the heavy machinery manufacturing area, closer to residential areas because of its highly concentrated employment; and 6) the industrial reserve to be left in truck farms until needed for industrial sites.

Although the heavy industries constitute the principal activities of the region, they were largely capital intensive and did not furnish enough employment. Other economic activities were not only anticipated but had to be encouraged. One means was to provide attractive sites and facilities for light industrial areas. The investigations disclosed several feasible sites. Two of them were on the eastern side of the Caroni. These were developed to encourage the expansion of economic activities and employment in the older community. The best initial location on the western side, well served by roads and within easy access to the labor force, was east of the heavy industrial area. This site was divided into specialized zones. One will serve light consumer oriented manufacturing; another will be a goods handling area containing truck, terminal, storage and wholesale facilities; still another will serve as the airport commercial facilities and as an information and orientation center for visitors to the city. There are also plans for a special training and service center for nearby low income residential areas which will include a vocational school and workshops as well as commercial and social services.⁸

VII. MARKET POTENTIAL FOR COMMERCIAL CENTER, 1970



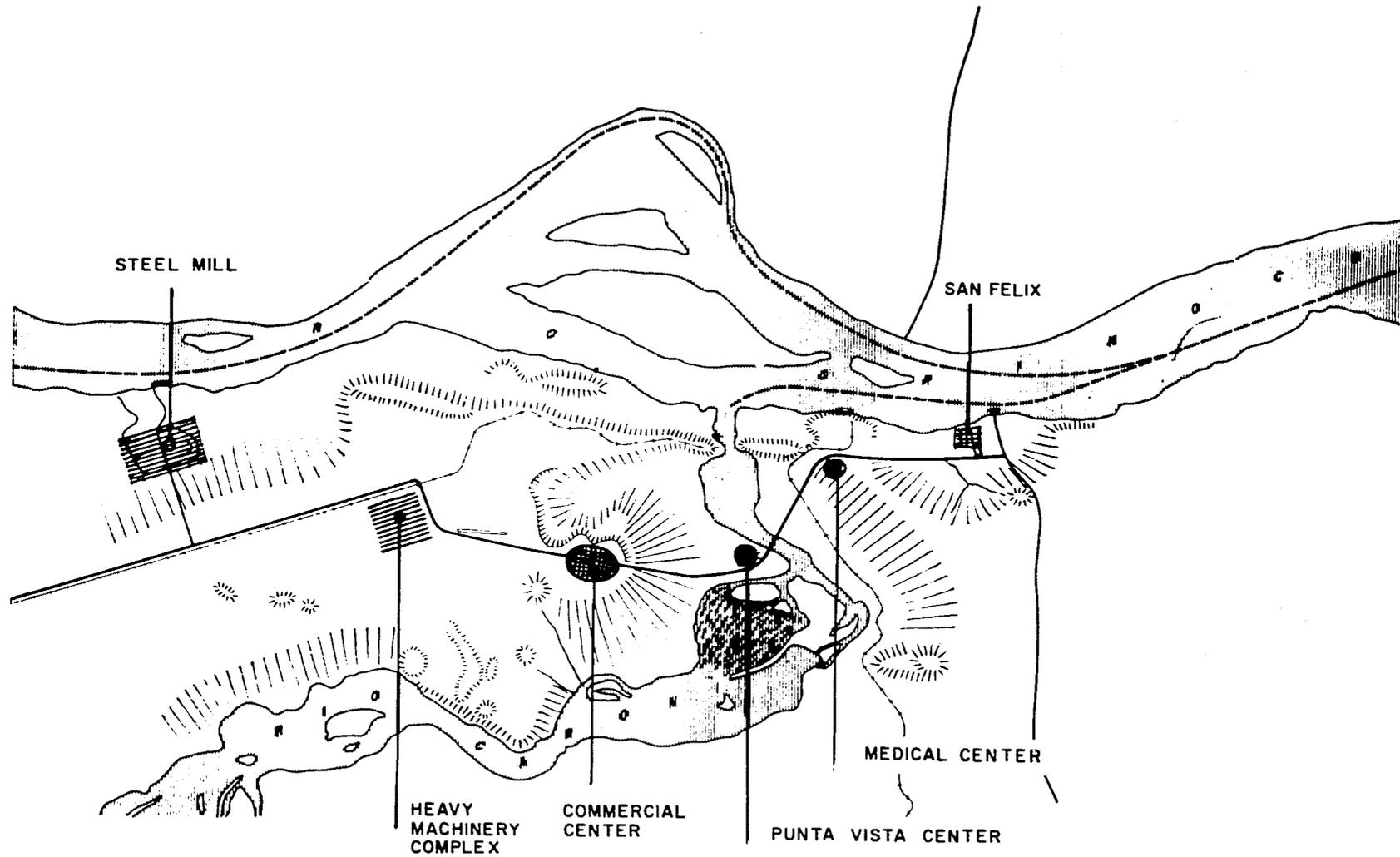
The Commercial Center: Another prominent activity center was the principal business district. It is a crucial area in every city. This is especially true for Ciudad Guayana, for this center will be one of the dominant elements in the location of neighborhoods and the growth of the city. It is an area which requires the best transportation facilities and the maximum accessibility to the greatest number of people or more probably the greatest volume of purchasing power. If these conditions are satisfied, it will attract the most important retail establishments and the principal administrative offices for business and business services. It would also generate the highest land and building values; and it is likely to be the single most profitable element in the development of the city. This, of course, is no trivial consideration for an agency which must risk vast infra-structure investments, most of which will not yield a return for many years.

The area designated as Alta Vista was finally selected for the business center in Ciudad Guayana. The decision was based on several considerations. The center could be expanded easily and inexpensively. The best locations for the bulk of the new residential areas for all elements of the population of Ciudad Guayana lie north, south and east of Alta Vista. Within a short period this area will enjoy a position of maximum accessibility to population and purchasing power and to the major industrial areas, the regional road and the airport. In terms of cost and convenience, the level terrain is well suited for commercial and pedestrian traffic. Finally, this is the most important site between the existing industrial and residential areas, and thus would help to link the two areas functionally and visually.⁹

The Civic Center: Every contemporary city with ambitious aspirations for the future will devote special consideration to its civic, educational and cultural facilities. For Ciudad Guayana, this problem was exceptionally difficult. Isolated from the leading population centers of Venezuela, unable to compete with Caracas in terms of the scale and quality of facilities and services, it was nonetheless essential to create an environment which would help to entice the skilled specialists to manage or staff the diverse economic and social activities of the region. Therefore, the staff gave painstaking attention to the choice of the area, the facilities and the neighboring environment for the most important concentration of these cultural and civic activities.

Punta Vista was the site selected. It lay at the heart of a central valley close to dramatic features of the natural environment, the Caroni falls and the confluence of the Orinoco and Caroni Rivers. It had the additional advantages of a varied and interesting terrain as well as high visibility from the surrounding slopes. Within this area, space was allocated for a civic center (including a church and municipal buildings) on a common plaza where the most important civic, religious and ceremonial activities of the city could be conducted. Provision was also made for an educational center including eventually a technical college, a research establishment, a hotel, clubs, a library, museum and other facilities geared to serve the industrial and growth requirements of the region. The extraordinary natural environment around the Falls will be preserved as a public park for recreation and enjoyment. Eventually, it will include a boat basin, a botanical garden, a zoological garden, an aviary, a boat landing and other facilities serving people of widely varying preferences and tastes. As a final element, the plans call for an attractive residential area adjacent to this center. If carried out as planned, the designated buildings and facilities should provide a dramatic and functional three-dimensional environment symbolizing some of the most important institutions shaping the life of the city.¹⁰

VIII. LOCATION OF MAJOR CENTERS



Avenida Guayana will serve as a spine for the major activity centers in the city. The centers will be visually and functionally accessible to each other and to the adjacent residential districts.

The Existing Settlements: The decision to make Ciudad Guayana a single community imposed an obligation on the planners to relate the plans for the new industrial areas, the business district, the civic and cultural center and the circulation system to the existing communities of San Felix and Puerto Ordaz. Putting aside for the moment the complicated political and social questions involved, it was clearly essential to identify the functions which the older settlements would play in the metropolis of the future.

San Felix, the community on the eastern flank of the city, was originally a small market town, but its growth burgeoned with the emergence of new activities. Its port will be in the future a principal entry and exit point for the products of the entire southeast region of Venezuela. San Felix and its adjacent areas of El Roble and Dalla Costa had also become the principal reception centers for migrants to the region. Puerto Ordaz, on the other hand, was established and still functioned as a residential settlement for employees of the Orinoco Mining Company. Built early in 1950, it was located almost midway between San Felix and the new industrial areas. Ranchos - temporary housing put up by the residents - and speculative development flourished, however, in the Castillito area to the east, especially along the road connecting Puerto Ordaz to the Caroni and the older settlements on the eastern side of the river. Frenzied growth also converted large segments of the intervening areas into a sprawling slum.

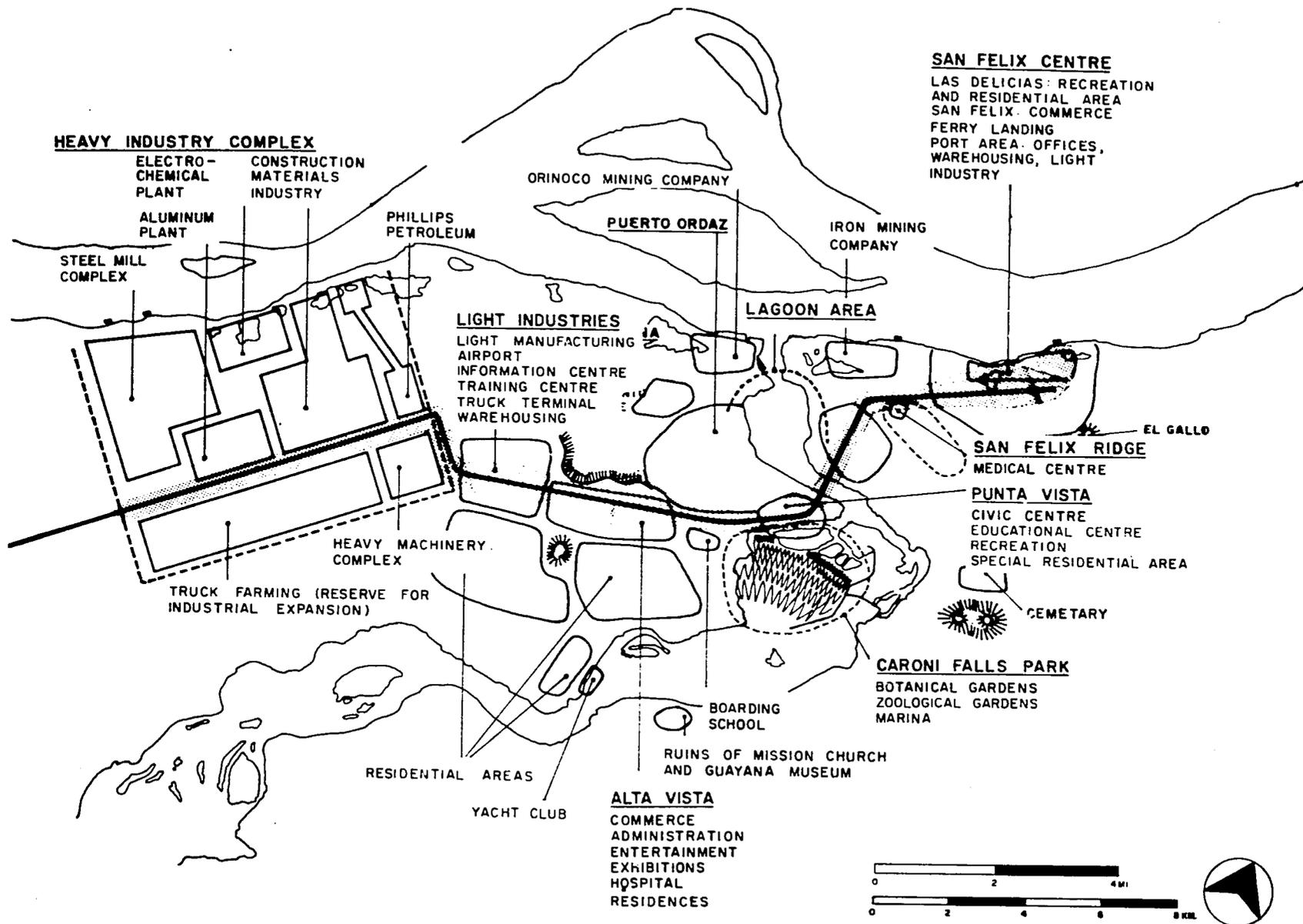
A variety of measures appeared necessary. Improvements in health and waste disposal facilities were required. There was a need for more schools, housing, social services and recreational facilities. The markets and commercial area had to be expanded, transportation facilities and services modernized, and the waterfront redeveloped. To ensure that these steps were taken, staged programs with varying priorities were incorporated in the development plans for Ciudad Guayana. ¹¹

But a key problem still had to be solved. How were the developments in the older areas to be related to the growth complex on the western side of the Caroni so that one urban community would ultimately emerge? There were two solutions. The first was to encourage the extension of San Felix and El Roble to the west. Future growth could then be steered and planned; existing activities would not be disrupted; and meanwhile, efforts to build the new city and improve the functioning of the older settlements could be pursued. The second device was to concentrate on a major linear highway. This artery would link the disconnected areas; it would facilitate movement between all parts of the city; and it would serve other urban roads, thus permitting easy access from all residential areas. Bypasses could also be provided when traffic volume reaches maximum permissible levels.

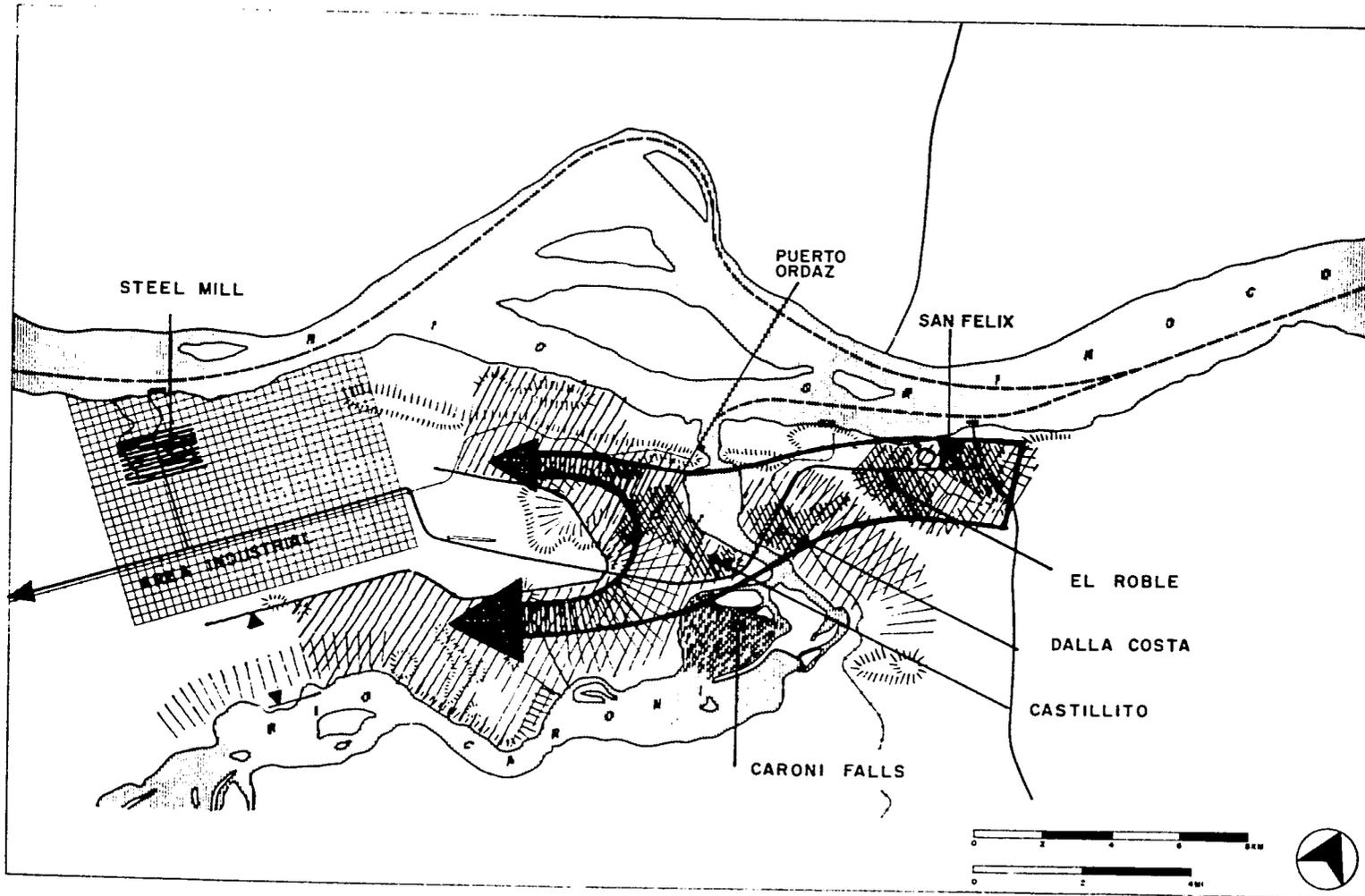
Avenida Guayana: Perhaps the most difficult feature of the city to influence is the way it will appear to the person within it. The sensitive urban designer is constantly on the alert for elements which he can manipulate to achieve given effects. But he is often betrayed by responses which he did not anticipate as he is by factors beyond his reach. Despite these limitations, one of his chief functions is to exploit whatever opportunities he can to sharpen and enhance the image of the city.

The principal design problem was how to establish the visual coherence and meaningfulness of the new city. Clarifying the functions and symbols of principal areas, pointing up the nodal points and the interstices, distinguishing and defining the edges, linkage of the parts and continuous testing of the results are some of the main steps in the process. It is not a "one way" process, however, and for optimum results, there must be a fairly continuous feedback between the designer and the user. ¹²

IX. PLAN OF ACTIVITIES FOR CIUDAD GUAYANA: 1970

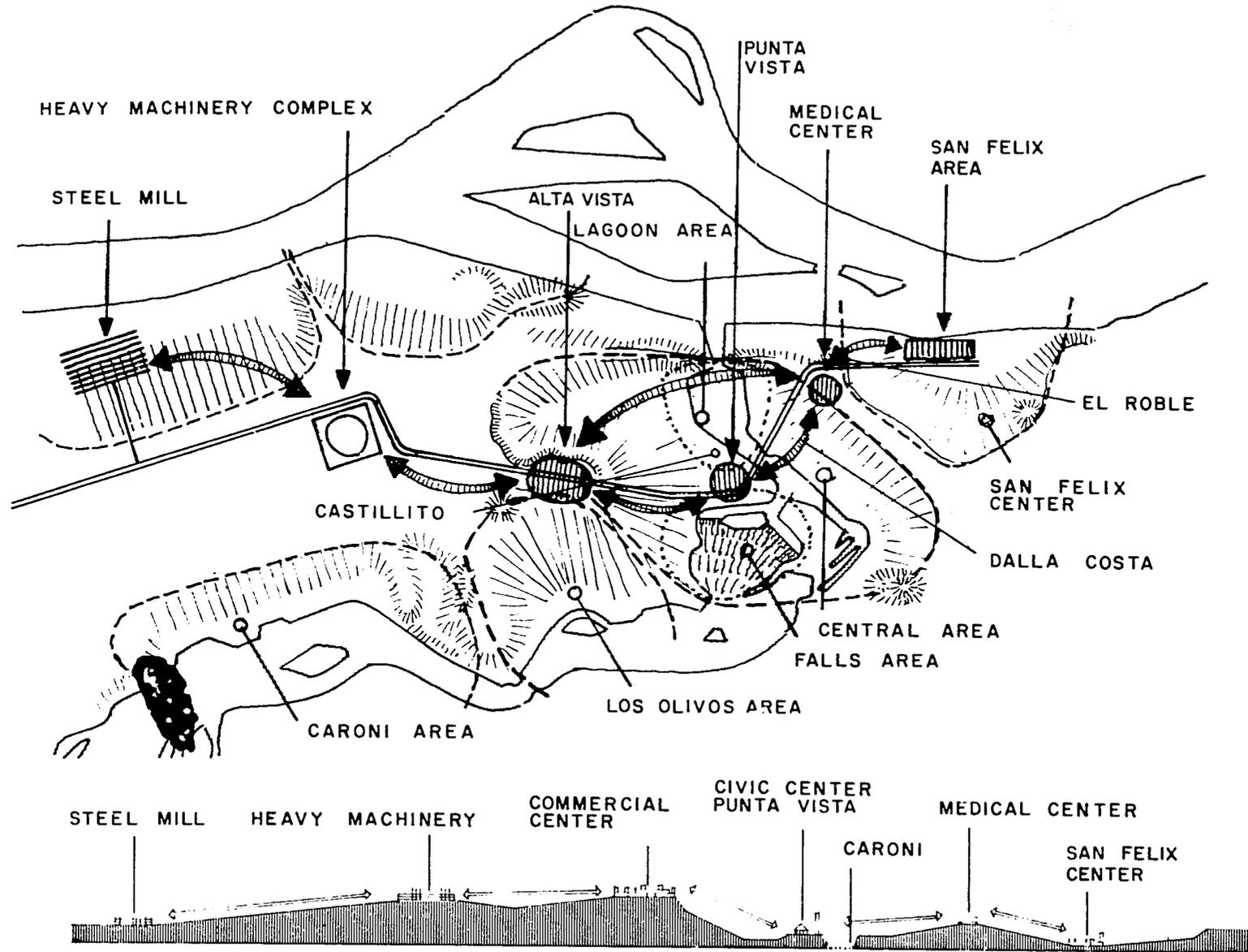


X. PATTERN OF RESIDENTIAL GROWTH



to unify development and to take advantage of the existing stock of services and facilities, new residential growth will be encouraged adjacent to existing settlements and in the areas between them. To reduce the distances between residential and work places, the greatest part of the new growth will be encouraged at the western extreme, or, as near to the locations for heavy industry as contiguous development will permit. The new commercial center, located in the west, will help to form a new and vital community there. Residential growth can continue to extend in a westerly direction over time.

XI. THE LINKAGE OF OLD AND NEW NODES



Many of these measures will be applied to the various activity centers described above. But the new highway, Avenida Guayana, created a special opportunity. Along the entire length of the link, there would be a succession of significant experiences. The artery will serve as "a dorsal spine" connecting the major activities and movements over the entire length of the city. It would tie together the industrial complex in the west, the airport and warehouse area. Then, transformed into a boulevard, it will move past the commercial center, sweep down the hill across the Caroni bridge emerging on the other side as a limited access highway with an interchange that would allow easy access to the cultural institutions and recreational facilities of Punta Vista, past a major hospital and health complex on the crest of the eastern hill, and then once again be transformed into a boulevard through the El Roble-San Felix area. Probably no other physical element in Ciudad Guayana is able to convey so effectively the relationships between the major activities of the city to each other and to their natural surroundings. And probably no other element is as subject to the control of the designer for the purpose of enhancing the observer's appreciation and enjoyment of the city's form and function.

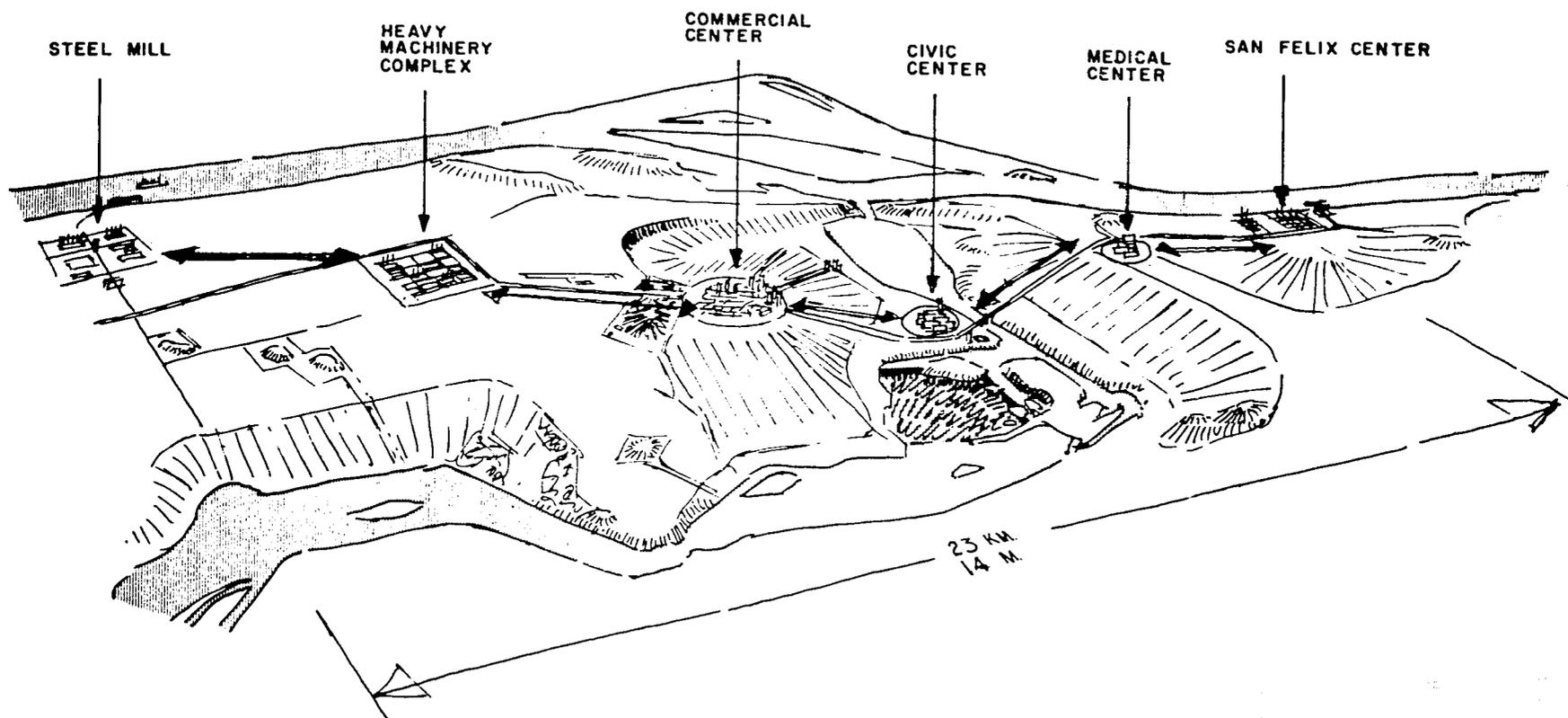
The visual plan focussed principally on this central physical feature. Here was the opportunity to thread discontinuous fragments into a comprehensive whole.

"Early in the development (of the city), activities of primary importance will be placed in locations of visual prominence or of functional importance over the length of the city. These activities and locations will define the broad outlines of the future city's form and they will provide a continuous sequence and express the unity of the whole city by being inter-visible; that is, each will be visible from the next in sequence. Later activities of secondary importance will be located at intermediate points and primary ones will grow in size and intensity."¹³

The opportunity whetted the attention of the designers. They examined every tool at their disposal. These ranged from controls on the location and siting of activities and the treatment of natural amenities to the handling of road alignments, paving, lighting, landscaping, densities, height and signs. To test responses of the citizens, they studied the visual reactions and behavior of persons now in Ciudad Guayana. Much will be built before the results are available; and there is controversy on how helpful the reactions of untutored observers can be in this complex process. Nonetheless, the work is being zealously pursued.

Serious difficulties probably lie ahead. The environment is altering rapidly and the designer is hard pressed to keep au courant of the changes as they occur. Shortages of staff preclude the detailed evaluation of purposes and plans, of feasible alternatives and compromise solutions. Even more difficult is the problem of providing for a given pattern of land uses now while planning for new uses that will be feasible and appropriate in the future. Partly for this reason, the staff is attempting to develop criteria and methods for handling "high" and "low" control zones. This would permit concentration on visually and functionally significant areas, such as Punta Vista, the Civic Center, Avenida Guayana, the skylines, historical monuments, etc. Design competitions, the award of prizes for well-designed areas, the setting up of architectural review committees and other positive incentives may be employed. In addition, flexible land use controls may be established ranging from general zoning and building regulations to more specific and special restrictions for key points in the city. Despite these efforts, the odds are that the final results will be far different from the original intent. This is understood by the designer, although he hopes the process will not get out of hand. A city after all is the "product of many builders who

XII. AVENIDA GUAYANA



are constantly modifying the structure for reasons of their own." ¹⁴ But if enough of the enthusiasm and of the aims are communicated to the citizens, who can say the process was not worth while?

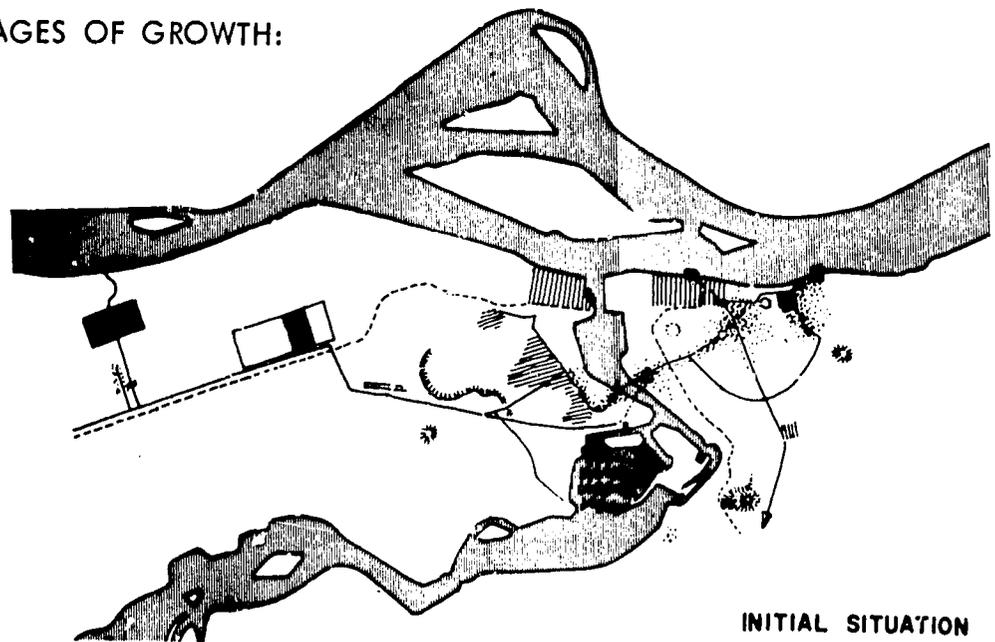
THE NEXT STAGE: IMPLEMENTING THE PLANS

The various studies and plans helped to establish the operational frame and criteria for the next phase of the planning effort, the phase requiring increasing emphasis on action. How was this to be done? For example, what stages of the plan were to be carried out first? Where and why? In what detail were the plans to be developed? How was the work to be divided between the various ministries and the Guayana Development Corporation? What was the role of the local authorities? How was the development undertaken by the private sector to be fitted into the program? And how were these efforts to be tailored to fit the changing needs of a local population whose characteristics and values were probably inadequately and differently sensed by the Venezuelan and Joint Center staff? These were some of the more significant problems of implementation which we shall now examine.

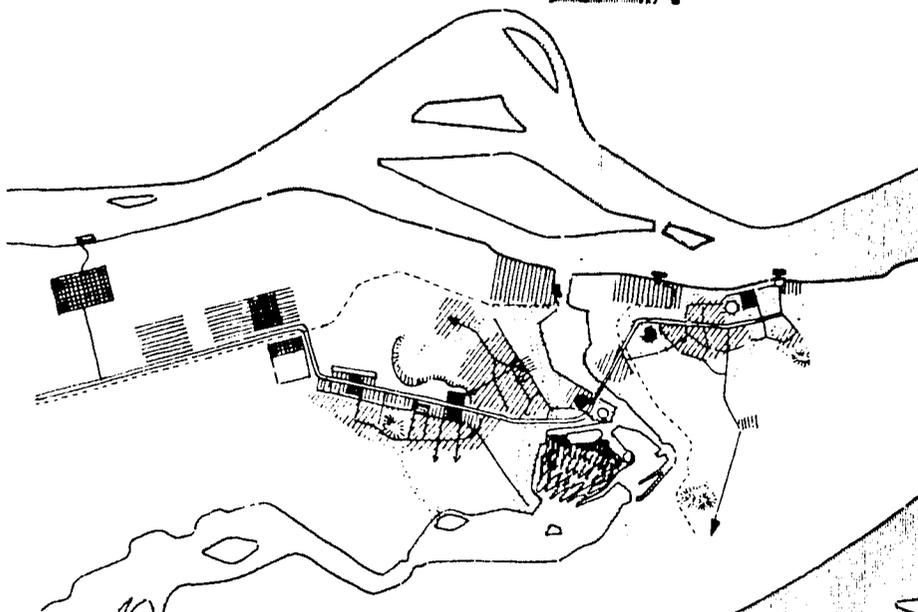
At the outset, it must be confessed that the distinction between the analytical phases and the action phases of the program is somewhat arbitrary. The analysis and the plans were closely geared to the need for action. Some aspects of the plan, as already noted, reflected the action that appeared feasible and the existing trends that the land use planner wanted to encourage. In turn, the results of the actions taken would often influence the goals and the general strategy. Feedback and interaction was inescapable. If the distinction has any meaning, however, it lies in the relative difference between the formulation of objectives and the plans and the policies and steps necessary to realize them. The former was intended to provide a relatively consistent framework and guide for a whole range of subsequent measures to carry out these purposes. However, the choice of implementing mechanisms was influenced by many things: by public preferences and pressures; by complementary requirements; by constraints such as actions that were feasible or which some organization was ready and able to handle; by the steps already taken; and by the internal logic and sequence suggested by the plan. In the course of plan making, one of the aims of the planner - although not always an explicit one - is to produce ideas that take reasonable account of these considerations so that their realism and imagination might generate enthusiasm and backing for the effort.

Priorities and Staging: There were several factors that influenced the staging of the program in Ciudad Guayana. One was the demand for improved transportation between east and west. Another was the role of the highway as a generator of new activities, especially in the commercial areas on both sides of the Caroni. Both set a high priority on the prompt scheduling and proper location of the new boulevard. In addition, the San Felix-El Roble areas were already expanding in a westerly direction. The policy was to encourage this growth pattern. This influenced the priorities for the location of the housing areas for the migrants and the preparation of a zoning ordinance for the city. It also intensified the pressures to provide an expanded commercial area on the western side of San Felix including a market and bus terminal in addition to the offices, warehouses and light industry parcels planned for the port area. This, in turn, influenced the location and staging of roads, utilities, schools, hospitals and other facilities. ¹⁵

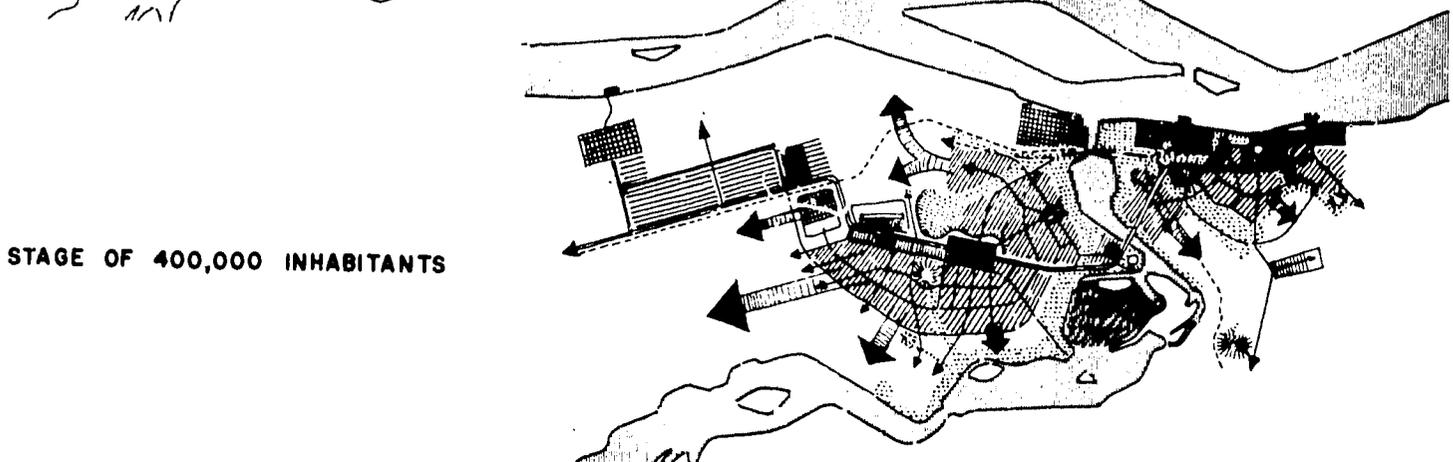
XIII. CIUDAD GUAYANA, STAGES OF GROWTH:
 INITIAL SITUATION,
 FIRST STAGE AND
 STAGE OF 400,000
 INHABITANTS



INITIAL SITUATION



FIRST STAGE



STAGE OF 400,000 INHABITANTS

In the first stage of growth, the plan proposes the development of needed residential and other activity areas. Transportation throughout the city will be greatly improved. The new areas will be mutually reinforcing. The new commercial center will take maximum advantage of the ability of the new Avenida to generate activity. The new residential areas will stimulate the early growth of the new center and benefit from its proximity. The positions of the new Avenida, the new centers, and the new residential areas will establish a flexible base for future growth.

The stage of 400,000 inhabitants shows a likely way the city might expand and the directions in which it might continue to grow.

On the western side of the city, the most pressing consideration was the need to provide space and facilities for the expansion of the light industrial area and the heavy industry complex, when and as these activities were established. Soon, however, the preparation of the site of the new business center and the provision of the services associated with it took temporary precedence. In the plans for the development of the center, attention focussed on the choice of the initial activities since they could determine the fate of the center. The strategy was to bring large department stores and supermarkets, such as Sears and Cada, and headquarter offices, such as those of CVG, to the business center to generate a host of related retail, office and service establishments. But key firms appeared likely to move to the other commercial areas because the facilities would not be ready until 1967. This prospect posed a threat to the pace of the growth and perhaps even the vitality of the central business district. This dilemma could be avoided, however, if the priorities for the development of the area were advanced; and so, in fact, they were.

These decisions prompted a belated recognition that there was not enough activity at the major commercial center to ensure its dominance and growth potential. Therefore, after much debate and anguish of spirit, the decision was made to shift the civic center from the Punta Vista area to Alta Vista. Some of the planners grudgingly conceded that Punta Vista could still function effectively as a cultural and educational complex. The other persuasive justification for the shift was the functional relationship which could be established between the government offices, the courts and the principal business services and establishments.¹⁶ Once this decision was made, the consensus was that the government center should be located at the east end of the Alta Vista plateau where it should be visible from a great distance in all directions as the symbol of civic activity.

The sequence of these decisions and the subsequent changes in the plan give some inkling of how the growth criteria did and should influence the priorities in the location and staging of key components of the plan.

Detailing Plans and Projects: One cannot go far in the action stage of land use planning until the land use plans are spelled out in detail. This process applies to the plans for activity areas. The same holds true for functions such as transportation, public utilities, schools, parks, hospitals and other service facilities. The end product is a hierarchy of ideas and relationships. These describe the plans for the region, the city, for smaller communities and neighborhoods within the city, for development units within the neighborhoods and for specific projects within the development unit. Somewhat the same process holds in general for the functions. The amount of detail, of course, depends on the requirements. It can be diluted to encompass the metropolis or the region or it can be pinpointed to deal with component elements within a project.

Land use plans were prepared for Ciudad Guayana at scales up to 1:10,000. Their function was to delineate the major activity areas, the circulation system, density patterns and the principal visual elements and focal points. If and when resources permit, these plans may be extended to embrace the entire Caroni area and Guayana region. Community plans were also made at scales up to 1:5,000. These depicted the land uses, streets, highways, public utilities, public service facilities and other major elements within the sector. The development unit plans, at scales up to 1:500, shifted the focus from the nature and intensity of land use to the character of development in terms of building types, uses and arrangements. The plans were preceded by specifications. These described the functions and use elements within areas scheduled for development within three to five years, the priorities and staging of the operation and the proposed methods of carrying the project into effect. The final phase

of this process is represented by the project plans. The plans for these areas required an even more detailed set of specifications since the project areas were the basic units for construction. A single general contractor, private or public, was held responsible for these areas; and the specifications served as the principal guide for the contractor in design and construction. These plans were finally carried out in two stages. The first provided general specifications for review and possible revision by CVG officials concerned with development. The second consisted essentially of more detailed working drawings.

Proper sequence and timing are as essential for these detailed plans as they are for the more general plans; but, it is not always easy to prescribe or to follow such schedules. Only a few residential areas in addition to the commercial center are as yet covered by detailed plans. Also, the more general plans should precede those developed in more detail for smaller areas and components of functional systems. Tight deadlines and staff shortages, however, often play hob with such requirements, so that in practice, the community development and project plans in Ciudad Guayana were prepared simultaneously. More serious problems can arise with scheduling failures. Sometimes two to four years, and even longer, may be required from the initiation of a project until its actual completion. These requirements must be anticipated in programming; but, unfortunately, the difficulties of anticipation are often complicated by changes in programs and projects as new obstacles or opportunities are identified. The price of failure, however, may be high. Enough capital may not be allocated by the budget for investment; adequate consideration may not be given to alternative locations and projects; there may be no operational criteria for checking the progress of actual development with programmed project schedules; and indispensable complementary facilities may not be provided when required.

Capital Budgets: Looking back, it can be seen that the most general studies and plans identified basic development goals and land use relationships. The function of the more detailed plans was to convert these basic goals and relationships into realizable programs and targets which might be achieved in successive stages. These, in turn, had to be transformed into economical and imaginative projects. The approximate cost of these projects then had to be established and evaluated in relation to available resources. Ideally, the appraisal of these projects and their alternatives took into account, among other things, their relationship to the goals, the presumed benefits in relation to costs and the timing and significance of the proposed projects in relation to other projects under consideration.

In the case of the urban development activities (as well as the other activities) conducted by CVG, the end product of this process was a financial schedule and program. It could be formulated in different levels of detail and for different periods of time. It could encompass the capital requirements for individual projects; the estimated investment requirements for all urban development projects, public and private, for the budget year; the four year capital investment program corresponding to the detail and time requirements prescribed by the national plan; and a ten to fifteen year investment schedule which projected the probable investment requirements for broad categories of expenditures to fulfill the long range objectives of the plan. ¹⁸

To be sure, the estimates were first approximations, likely to improve with time and experience. They reflected the best current information and judgments available. They were relatively more reliable for specific projects scheduled for early action and they were at best knowledgeable projections beyond the first year. This was because it was so difficult to obtain accurate information on costs and because of the changes that might occur in project details and schedules. For all its limitations, however,

the discipline of capital budgeting was essential to gauge project and program costs even roughly, to compare objectives, alternatives and price tags, to match proposed outlays with resources and to provide more objective measures of control and accomplishment.

Inter-Ministerial Relations: Although CVG was supposed to prepare the plans and programs for the development of the region, it could not handle these tasks alone. What is more, if it did it would quickly be accused of administrative imperialism. Functioning as a regional agency, its activities potentially overlapped every other sector of government. The perennial question was: what should be the role of CVG vis a vis other agencies? This was less easy to resolve than it might appear. The general policy of CVG was to avoid or to slough off any jobs that other organizations could be expected to handle more effectively. This called for a careful evaluation of the work to be done and the responsibilities which other agencies might be called upon to perform. This assessment was made intuitively during the early phases of the program. But the judgments became a little surer as the nature and scope of the work ahead became better defined and as the CVG staff became more knowledgeable about their own capacities and the limitations of other organizations whose energies had to be harnessed.

The issues may become clearer by getting down to specifics. For example, Ciudad Guayana needed more roads, housing, schools, hospitals, and other facilities. Everyone recognized that the Ministry of Public Works had more staff and experience in building roads and other public works. The same appeared to be the case for Banco Obrero, the government agency for building housing for low income families; for the Ministry of Education in relation to school design and educational programs; for the Ministry of Health in relation to hospitals and public health facilities; and so on. The logical solution was to get these Ministries to do the jobs that needed to be done in their sectors of the Guayana region. But these Ministries had fashioned their own national programs and they had their share of difficulties in meeting these obligations. True, with the acceptance by Cordiplan and by the Cabinet of the CVG investment program as part of the National Plan, the other Ministries had in effect incurred an obligation to use their organizations and resources to fulfill this phase of the National Plan. But as might be expected, they appeared quite content to assume because of political pressures, because of sheer inertia and perhaps for other reasons, that the resources allocated to CVG for the development of the region limited the need and the urgency for their participation. Except for modest token efforts, they believed their responsibilities lay elsewhere. If, however, the facilities and services were not available in the Guayana region when needed, the program was sure to run into difficulties or bog down; and CVG, whether justified or not, was likely to receive the lion's share of the blame.

To cope with the situation, a number of officials at varying levels within CVG are to concern themselves more actively with intergovernmental liaison. Eventually it was envisioned that CVG might have to create a special office to deal with these problems. Meanwhile, the aim was first, to establish a series of agreements on the respective responsibilities, deadlines and other forms of interagency collaboration and, second, to ensure a constant three-way flow of information between the CVG, Cordiplan and the other Ministries. CVG also came reluctantly to the conclusion that it would have to develop its own staff and programs when, for whatever reasons, it became clear that critical needs could not be met by other Ministries.

The Housing Strategy: Initially, CVG did not want to get into the housing business. The top officials had more than enough to handle. They felt that other agencies had the skills, the experience and the responsibility to do whatever needed to be done. Many of these same officials were convinced, however, that the housing would not be provided, when needed, by Banco Obrero or other organizations. But even if this were so, they argued that CVG could not act decisively until this was demonstrably the case. That, in effect was what happened. Everyone now concedes the backlog of needed housing has reached serious proportions and that neither Banco Obrero nor other agencies, public and private, are able to handle more than a fraction of the job alone. CVG, therefore, devised a wide range of measures to cope with the situation.

Early in 1962, CVG worked out a comprehensive evaluation of housing needs.¹⁹ This included targets for housing production to meet the critical requirements of different income groups. To reach these levels of building activity, a variety of innovations appeared necessary. For example, to increase mortgage funds, CVG started a savings and loan association. To increase the supply of middle income housing, CVG arranged for a non-profit organization, the "Foundation for Popular Housing", to put up 854 houses. It also offered a special "sales guaranty" to a private building organization, the International Housing Associates, to ensure that 800 new units would be built with cheaper foreign capital. This supplemented an "extended risk" housing investment guaranty of the Agency for International Development. Speed was of the essence; but the final agreement, unfortunately, took two years to negotiate and clear through the various government agencies.

To encourage private development, CVG decided to make available land that it owned at prices adjusted to the income ranges of the population for which the housing would be built. It is also studying a number of alternative construction systems since it may promote one or more of them. This would be done through guaranty or joint venture arrangements in association with local builders. Negotiations are likewise underway with prominent industrialists who are interested in the possibilities of large scale building involving prefabrication processes as well as more conventional building techniques. Despite all of these efforts, however, CVG found itself obliged to build houses directly. This was because it had an agreement with the steel workers union to provide a stipulated number of houses at given price ranges by the end of 1965. It was clear that the agreement would be breached unless this action was taken.

Special efforts were also made to provide housing for families of low income. The land use plan had already anticipated the need for "reception areas" for migrants. Actually these areas are not the first ones where migrants locate.²⁰ They tend to stay initially with friends and relatives or in the already-built housing. Only later when they are oriented in the community, get a job, find a mate and decide to stay do they search for land and a more permanent home. The planners do not yet know enough about this initial stage to do much about it, assuming they should or could. Eventually this process will be studied more carefully to see what, if anything, can be done. For the time being, however, they are only trying to meet the needs of the more established individuals on the grounds that some ideas exist on how to serve these families.

To redirect the flow of these migrants to the reception centers and to increase the effectiveness of control techniques in other locations where building would not be allowed, land and minimum services are provided as incentives. Minimum space standards are insisted upon; then at a later stage, when the incomes of these families increase, it will be easier and more economical to remodel or rebuild the houses at more acceptable standards. Such rebuilding is already occurring in existing slum areas.

To encourage these efforts, CVG has assigned a member of its staff to help prepare street and neighborhood plans wherever such self-help community improvement schemes develop.

In addition, CVG initiated an experimental self-help housing scheme in the El Roble area to provide for families who want to build their own homes but now lack sufficient resources to do so. Land, public utilities, schools, and other services are provided plus loans for construction materials and technical assistance in the building operations. The aim is to establish the responsiveness of these families to various forms of assistance. On these matters, the existing information is still inadequate. Water, sewage facilities, electricity and schools were originally considered critical elements. However, the information now available seems to suggest that the provision of streets may often be a decisive consideration in spurring housing improvement. This, more than schools or electricity, appears to imply a stage of urbanization that distinguishes city life from the countryside and a location that justifies families in investing in significant housing improvements. This behavior has important implications for policy. It is, therefore, being followed with interest, especially since CVG does not know how widespread these characteristics are and whether future migrants will follow the same practices.

Meanwhile, the program is proceeding by stages. When an area is occupied where lot lines and street rights of way have been staked out, street grading, lot levelling, installation of public water taps and the laying out of electric lines takes place. At the same time, building materials are made available on a credit basis. The next phase varies in time, depending on how quickly credits for construction materials are repaid and the community raises additional funds. CVG is matching the credit repayments and any other community resources that can be collected in order to finance further improvements, such as individual piped water, street paving, sidewalks, schools, and community centers. The hope is that as the community becomes more fully aware of the policy of reinvesting all repayments in the community itself, there will be a strong incentive to keep the repayment schedule up to date until adequate urban standards are achieved. However, the program has still not induced as yet a sufficiently high level of building activity.²¹ An additional innovation is, therefore, being considered. Under the proposed plan, construction might be undertaken by unemployed persons. They would build a house and either purchase the materials from CVG over a 20 year period or else sell to CVG the labor contributed by them. In the latter case, CVG would dispose of the house to a person with appropriate credit qualifications.

A Municipal Housing Institute, the equivalent of a local housing authority, has been established, too. It will take responsibility for the supervision of the self-help housing programs. In addition, it will mount an independent housing program for families of low income with funds provided in part from the savings and loan association, the Community Development Foundation, CVG and other sources. CVG is also considering a proposal to test, and then, if justified, to help obtain long term financing for a prefabrication plant to produce basic construction elements. Finally, studies are underway of local building materials. A government field material testing laboratory is providing assistance. Particular attention is being devoted to the use of precast concrete elements and light weight aggregates because of the limited variety of building materials currently available to the small autonomous builder.

From the efforts required, it is easy to understand why CVG seriously hesitated to tackle the problems of housing, if somehow other organizations could be counted on to handle these responsibilities.

Education: In anticipation of the problems that loomed ahead in education, CVG undertook a survey of the requirements in the region during the coming decade. The study examined four elements of the educational system: 1) the elementary and high school needs of the population; 2) the vocational (technical and artisanal) programs to train workers for some of the new jobs that would develop in the region; 3) the commercial and rudimentary business training at the secondary level; 4) the possible role of a technical college in serving the recruitment for the local industries. Needs were far in excess of resources. The study, therefore, focussed on minimum requirements assuming Ciudad Guayana would have a productive labor force of 150,000 and a population of 400,000 by 1975. ²²

The evaluation sharpened the awareness of a number of critical problems. There were no higher educational facilities to produce professional and sub-professional technicians within the region. The study made it clear that it would take three to five years to establish such a facility. Assuming a minimum three year program, the school was unlikely to produce more than a fifth of the required technicians by 1975. During this period most of these technical personnel would have to be recruited to the region. If prompt steps could be taken to establish a higher institution, the bulk of the higher level professionals and executives could be obtained from the region within a five to ten year period after 1975. The consensus was that establishment of a post-secondary facility would be essential because of the political sensitivity which surrounds the recruitment of foreign specialists and because of "the need to maintain incentives for the young Venezuelans coming up through the educational levels.." Such an institution would "serve as an earnest of purpose, a powerful symbol that the way to the top is not closed off to local middle level workers and their families." ²³

As for secondary education, it is unlikely that a sufficient number of middle level skilled workers could be recruited from outside the region unless prohibitive wage and incentive schemes are employed. Secondary and primary school facilities, therefore, have to be expanded to the maximum. The primary school program has to provide an adequate number of students for the secondary school system. It also has to provide workers with enough basic education so that they could profit from special training courses which would be required to meet the gap of skills in the middle level. The secondary school program, on the other hand, has to produce enough workers with middle level skills and to furnish a core of graduates to enter higher institutions that would be established.

The recommendations to meet these needs took into account "the present size and condition of the school system existing in the region, the likelihood of expanding and at the same time keeping sufficient quality to yield an education product of any significance, and the necessary balance that must be maintained between different levels and kinds of programs within an educational establishment." ²⁴ The recommendations also dealt with school plans and equipment, site locations, construction schedules, reorganization of curriculum materials, scholarships, in-service training, school organization and recruitment programs. If vigorously pursued, the proposed programs would meet a large part but not all of the target requirements. More ambitious strategies were examined. But the education specialists doubted that a larger program could maintain the minimum quality. It would only prove more expensive in the end.

This analysis of educational needs and problems of Ciudad Guayana was subsequently presented to the Ministry of Education. It is now being studied by the top officials of the CVG and the Ministry. The Ministry of Education, of course, has the principal responsibility for what must be done. But until this evaluation was made it was hardly in a position to know the scale of the problem that would develop in the region.

In the past the Guayana region probably received a proportionate share of the educational budget. But the role that the Guayana program is destined to play in national development requires some radical changes in priorities and programs. Beset by pressures for action throughout the country, the Ministry of Education is unlikely to have the resources to cope with all of those needs. CVG will have to assist in many ways. But the immediate problem is to determine the tasks which the Ministry is able and willing to handle. These decisions would then allow CVG to determine what additional measures it could undertake on its own. Meanwhile, to avoid the most critical lags and bottlenecks, CVG is preparing to provide sites for the schools and to assist, if desired, in the design of school plants. It will also attempt to identify relevant curriculum materials and school equipment, especially for vocational and technical programs. It has already rendered a certain amount of assistance along these lines for the so-called private sector in education, that is, the religious schools, But the largest part of the job still lies ahead.

Local Government: As in most developing countries, government and politics are extremely centralized in Venezuela. De facto and de jure municipal functions are extremely limited. Municipalities lack adequate revenues and have almost no experience in large scale management. This situation is reinforced by wide educational and status gaps between representatives of the national agencies attempting to cope with these demands and the local officials and community leaders who attempt to represent them.

Nonetheless, the region is experiencing a profound transformation in population, in class relationships, in economic activities and in values and styles of living. The convergence of these forces in Ciudad Guayana imposed tremendous strains on the existing local government, and, almost inescapably, on CVG's relations with the local authorities. The normal exercise of the Corporation's power provoked concern and resentment. The Corporation's ownership of most of the land in the local area, its power of expropriation, its authority over what development should or should not occur reduced the scope of local political authority and intensified the feelings of political inadequacy and anxiety of groups and individuals. But by speeding the process of development and change, it is also breeding higher standards and expectations. The CVG was aware of some of these effects. The staff knew that approximately 195 million dollars in urban infra-structure capital improvements were planned for the next four years and an ultimate investment of 400 million dollars in the next fifteen years. At a population level of 300,000 the operation and maintenance of this infra-structure would require almost 10,000 employees engaged in public or quasi-public activities. They were, therefore, aware of the fact that as many responsibilities as possible had to be turned over to the local officials so that the Corporation could concentrate on those matters which no other agency could handle. But it was one thing to recognize this need and another to get agreement on what these responsibilities should be, and to decide how and when these shifts should occur.

Fortunately in December 1963, the long overdue upgrading of the city government from Municipal to District status went into effect. Municipal status had become inadequate for the mushrooming city. Yet even now the District government must operate under the highly centralized 1953 Constitution pending passage of the new (1961) draft which greatly expands District powers and responsibilities.²⁵ Meanwhile, the CVG and other national agencies by necessity had to assume responsibility for the planning and administration of most urban services.

CVG explored the problems with the Foundation for Community Development, the government agency assigned to study local problems. The Foundation agreed to collaborate with CVG in drafting new ordinances and in assisting in the development of local institutions in Ciudad Guayana. The staff also organized a team of political and social specialists, local and foreign, to examine these questions. The purpose was to evaluate the political and organizational capacity of the persons now active in public affairs and those likely to emerge in the future. The team took account of the character of existing services and programs within the region and the magnitude and scope of the new facilities and services that would soon be provided. It studied the present aspirations of the Guayana population and the current civic and political leaders. It also probed into some of the political changes now taking place, their implications for CVG and the ways in which these might be channelled to discourage hostile, negative expressions and to maximize the prospects of constructive performance by the new municipal officials. ²⁶

Of the wide range of measures proposed, only those aspects most directly relevant to the urban planning function will be touched upon here. The team emphasized the need to provide for an increased number of opportunities for local action and for the expression of local options. There were several possibilities. For example, in addition to the customary minor service and regulatory functions, the local community could play a greater role in advising and helping CVG to administer housing and public works programs and in undertaking neighborhood improvement programs in cooperation with the Corporation. It could also take increasing responsibility for such matters as the maintenance of public works; the administration of zoning, building and subdivision regulations (subject to the approval of the CVG for a number of years); and the reorganization of the system for land registration and revenue administration (in cooperation with CVG and the Foundation for Community Development).

Coupled with these recommendations were several proposals which concerned CVG's organization and activities. One called for a quasi-autonomous Urban Development unit within the Corporation to handle urban public works of CVG. Another suggested the establishment of a formal liaison office and mechanisms to facilitate a flow of information between the local and central government officials of other ministries, the representatives of the local community and the CVG. Still a third stressed the need to improve information services and to explain the aims and activities of CVG and the ideas and programs behind the plans. The report also proposed that CVG should enlist the aid of some organization, such as the Foundation for Community Development, to organize a training program to prepare local officials for some of their new management responsibilities. ²⁷

Efforts are now being made to put some of these ideas into effect. How successful they will be and how these relationships will evolve in the future is too early to say. One overriding lesson from this experience, however, is the inability to execute an effective program for urban planning, even in an environment where the political leadership is weak and inexperienced, without developing a sensitive rapport with the local interests these plans affect.

Land Policy and Controls: With the exception of the Orinoco Mining Company properties and some small private holdings in the vicinity of Puerto Ordaz, CVG had acquired most of the urban land in Ciudad Guayana and about 35-40% of the land in the Caroni District. The land use planners figuratively rubbed their hands in glee at this prospect. Zoning, building and related ordinances were counted on to maintain or reinforce their efforts; but public land ownership presumably gave them more freedom to decide the initial use and price policy of the land, in accordance with their plans.

Perhaps even more important, the planners hoped to recover most of CVG's investments in plant, facilities and services, with a reasonable profit to boot, through earned income and increases in land values, particularly in the new commercial areas.

As is often the case, the freedom and advantages proved to be less real than anticipated. CVG's administrative burdens were heavy. Key officials were reluctant to get entangled in extensive real estate management. Some of them feared the ever-present possibility of corruption. Credit impediments loomed, too, since it was not customary to finance improvements without land serving as security for the debt. Certainly, private land ownership, with prospects of speculative profits, was more customary in Venezuela. Sale of the land would also erase part of the image of Ciudad Guayana as a government city; and it would probably induce more rapid housing, commercial and perhaps industrial development, thus generating jobs and income which after all was one of the principal objectives of the program.

Other officials demurred. Because the Corporacion was functioning as a public entrepreneur, they felt it was taking great risks and had an obligation to protect and even earn a fair return on its investment. These investments, they believed, were in jeopardy unless CVG faced up to some unpleasant realities. As matters now stood, there was danger of erosion of the plans by illegal private building activity, lack of coordination and communication, and unsympathetic or inefficient local administration. A few steps could be taken to deal with these problems. For example, CVG might review patterns of existing development through frequent land use surveys and aerial photographs. It could establish more effective links between the planners, the local regulating agencies and the principal development officials within and outside of CVG. Even more important, CVG could try to promote greater understanding of the principles and purposes of the plan. But CVG had to recognize that the administration of the zoning, building and other ordinances which it was preparing would ultimately be the responsibility of the local council. And despite all of CVG's efforts, the local council, for a variety of reasons, might not prove sufficiently sympathetic or cooperative.

Public land ownership offered the principal means by which CVG could preserve the essence of the plans at least for a reasonable period of time. Public ownership would allow CVG to place restrictions on the land sold. Continuous regulation could be maintained through the use of leases and similar mechanisms; and land needed for public purposes could be kept out of the private market. Above all, public ownership offered CVG the prospect of capturing a reasonable share of the flow of income and the concentration of values it helped to create. In the United States and elsewhere, there are significant local taxes on the capital values of real estate. The public, therefore, shares these increases in value even when land and the improvements are privately owned. But in Venezuela, as in most developing countries, local revenues are negligible and most communities have no real estate property taxes of any consequence.

The arguments on both sides were telling; and so a search began for an effective alternative or compromise. There was a consensus that the commercial land and some of the better quality residential and industrial land were likely to be the most profitable areas. The other land could be sold subject to restrictions on land use and perhaps even restrictions on the transfer of title until the completion of development. There was even a reluctant recognition that parcels in certain commercial locations might have to be sold to avoid bottlenecks and to encourage desirable development. But it was agreed that such action should be taken as a last resort; and if land was sold, it was essential to retain some benefits for CVG via joint enterprises, or, more probably, by the holding of strategically located parcels.

In addition, some experienced real estate economists were asked to review existing methods for setting prices and leasehold terms for all land in Ciudad Guayana. They were also invited to suggest changes in land uses or revisions in the stages of development, provided these proposals could be justified by pragmatic market considerations. Interestingly enough, their recommendations did not seriously challenge the basic elements of the plan.²⁸ They generally supported the compromises on land policy but emphasized the need for more economical density standards. They also proposed a flexible system for setting land prices. This was to be based on the price of housing and the desired density patterns. It would also take account of the employment and income effects of subsidized prices in attracting specific economic activities.

In addition, there were ingenious suggestions for a land disposition strategy.²⁹ To increase the importance of urban development on the western side of the Caroni, the economists urged that 75% of all new housing should be built on the western side. If this policy is adopted, by 1970 60% of the population would be living on the western side of the Caroni and 40% on the eastern side. Also strongly favored was an "outside-in" staging of development near Alta Vista, the commercial center. This recommendation would require CVG to encourage the construction of low density and low priced houses in the outer rings before developing the inner areas closer to Alta Vista. If, in stages, corridors or roads were extended from the center, some higher priced and higher density housing might be built in the inner area. By adopting this strategy, utility costs would be higher and less population would surround and enliven the center. But CVG would be able to obtain a much greater proportion of the increases in land values. It would also avoid a serious urban renewal problem in the future since the commercial center would otherwise be surrounded by low density houses of poor quality.

Promotional Activities: Despite the scale of the public investments, the bulk of the development will be predominantly private. The object in large measure of the planning efforts was to encourage the growth of economic activity and thereby to increase the income and the well-being of the population. One decisive test of the plans and programs is whether they do indeed create a physical environment and quality of services attractive to investors and entrepreneurs. That this was already the case, even at this early stage, is clear from the increasing interest displayed by a variety of business interests and by the decisions of firms, such as Phillips Petroleum, Reynolds, U.S. Steel and others, to invest or to expand their investments in plans and facilities in the region. But these investments, largely self-generated, had to be greatly expanded and accelerated as the plans matured and the facilities took visible shape and form. A well-conceived program, therefore, had to be devised to deal with the mounting series of inquiries and to kindle the interest of other business enterprises in undertaking specific investments which were necessary and appeared economically attractive.

In setting about this task, the work to be done had to be identified and then some decisions had to be made on the things that would be done first. To begin with, procedures had to be established and policies clarified. For example, how were routine inquiries and follow-up to be handled? What informational materials were needed to answer the usual questions investors might ask? To what extent should local officials and business interests be drawn into the promotion effort? What are the present policies of the government and of CVG for providing technical and financial assistance for new enterprises and what changes might be advisable? Still another set of questions concerned the efforts to promote the program outside the office. How much time should be spent in meeting with business organizations in Venezuela and abroad? Should offices be established in Latin America, the United States, Europe and elsewhere? Finally, and

perhaps most important, what fields of potential investment warranted the highest priority and what resources were required and likely to be available to carry out these responsibilities?

Clear answers to all of these questions were not possible. But a program was formulated which took account of the resources available, the work already done and the immediate problems on which there was a consensus. For example, in several cases, CVG in cooperation with the Venezuelan Corporation for Development (CVF) had already furnished special assistance to encourage new activities. Though adapted to the requirements of specific firms, the arrangements were comparable to those employed by the British Trading Estates. They included the provision by CVG of inexpensive land on prepared sites with urban services and facilities in its industrialized areas; help in the preparation of market and feasibility studies; and assistance on occasion in obtaining investment capital, tax benefits, custom duty exemptions, and CVF leaseback arrangements for plant and equipment. In unusual situations when there was a justification and request for participation, CVG provided equity capital in the form of joint ventures. These were some of the general tools that could be deployed in appropriate circumstances.³⁰

At the time these questions were under consideration, certain promotional activities were already in an advanced stage. They were being handled by some of the members of the economics staff who had special knowledge of particular industries such as pulp and paper, aluminum and chemicals. The decision was made to continue these arrangements with only marginal assistance from outside specialists. Other high priority activities were screened from the list of the principal economic activities which the studies of the economics staff indicated would prove profitable in the Guayana region. The most critical were housing, construction materials, the heavy machinery complex and the business center.

An approach was tailored for each of these activities. On construction materials, for example, there appeared to be attractive prospects for operation of a materials wholesaling business, given the existing and prospective level of building. It also appeared desirable to work out a method of easy financing for the self-help house-builder. Although less profitable in terms of investment, it affected an important social program. It was agreed that the first efforts should be to help establish a wholesale business. When this was accomplished, an attempt would be made to persuade this entrepreneur (or another) to develop the retail activity. In the field of housing, contacts had already been established with leading builders and industrialists interested in this market. While these potential investors conducted their own feasibility studies, the staff investigated related questions. For example, they examined the terms on which long term and short term construction financing could be obtained, the possibilities of expanding the assets of existing savings and loan associations in Ciudad Guayana and the kinds of reasonable guarantees and other assurances which builders required before initiating operations.

The work on the heavy machinery complex was in a pre-promotional stage. A contract was made with the Battelle Memorial Institute to evaluate the specific production processes, the costs and the organizational framework for the management of this group of activities. Until the studies were completed, promotional possibilities were limited. Nonetheless, preliminary efforts were made to identify the attitudes of various firms which might wish to be associated with this complex.

Development of the commercial center, however, was the most pressing problem. Major emphasis was placed on the search for an entrepreneurial group to take responsibility for the center. A private firm could save CVG about 2.2 million dollars in capital investment funds and it could help CVG avoid getting enmeshed in the details of development and administration. Meanwhile, the planners made the decision to prepare at least some of the initial plans for the center, and, if necessary, to erect key buildings there. The staff, therefore, began to work out the terms for participation of the Sears, Cada and other interests. All of this, however, involved time consuming details of coordination. The promotion staff found themselves actively involved with the urban design specialists concerned with the architectural projects, with the development staff responsible for the provision of basic services, with the real estate staff on the working out of leasing arrangements for the land and improvements and with the legal staff to prepare the necessary contracts and iron out the inevitable legal questions. ³¹

These activities had first priority and consumed most of the staff's energies. Other efforts were reluctantly held in abeyance or pursued when time permitted. Thus, the changes which might be desirable in government policy involving taxes, loans, and other types of assistance, were not systematically investigated. Similarly, the organization of local business interests in Ciudad Guayana was encouraged but not vigorously pursued, and therefore, came to naught. However, standard office operating procedures were clarified, recruitment for personnel pressed, and brochures prepared to provide basic information about the region, its resource endowment, population, labor force, market and so on. The brochures included a portfolio describing selected investment opportunities and some examples of the type of assistance made available in the past for industrial and other enterprises.

Although the general allocation of effort was considered reasonable, there was nonetheless some concern that two important efforts were being neglected because of the heavy workload and the limited number of staff. One was the promotion of foreign investment; the other was the promotion of smaller, labor intensive industries. In regard to the former, establishment of offices abroad was considered desirable, but neither feasible nor essential at the moment. Other agencies of the Venezuelan government such as CVF and the foreign consulates were already engaged in such efforts. They had some general informational materials about the Guayana region and were to be supplied with more. As an alternative, however, consideration is being given to the possibilities of engaging a specialized firm to undertake some of these activities. As for the encouragement of labor intensive activities, there was some hesitancy because labor costs in Guayana were so high and the efforts required to establish such activities so time consuming. The service industries and the construction of housing and the dam was expected to provide most of this employment. Nonetheless, these industrial possibilities are being reviewed and may receive more attention in the future.

Cultural Problems of Implementation: Enough has been said about the efforts of CVG in programming, budgeting, inter-ministerial relations, housing, local government, land policy and promotion to illustrate the range and complexity of an effective implementation program. It serves to remind one, if a reminder is necessary, that it is as difficult a task to make plans work as it is to make them in the first place. But perhaps the most difficult aspect of implementation lies in the way ideas and programs are adapted to a different culture. The social environment varies in unsuspected ways; and it requires an exacting combination of skill and wisdom to work sometimes with subtly different, sometimes with radically conflicting groups and values within a culture. There are no hard and fast rules on how to identify these differences

or how to resolve them. It is still largely a matter of sympathetic interest and of sensitivity - alerted perhaps by the realization that neglect in the past has led to misunderstanding, friction and failure.

The problem affects every phase of the program from the association between "counterparts" of a multi-national planning group to the design of a residential area, the creation of a building and loan association or the conflicts between persons, classes, public agencies and interest groups. Learning the language is often said to be indispensable, as indeed it generally is. The use of the same language in the capital city and in the local areas may mask tremendous differences in aims and in views of reality; and sensitivity may overcome language barriers that linguistic skills will never correct.

Local habits and values must be sympathetically approached. Plans that ignore or patronize them run the risk of being ignored or patronized in turn. But local habits are often changing and values are often in conflict. A residential area that serves "a just-emerging middle class... may create all sorts of difficulties in the mobility process at the bottom of the scale... a process which tends to separate the successful individual from his less successful relatives and acquaintances makes it harder for those at the bottom to find the models who would help them learn what we would like them to learn."³² And designers who can accommodate or reconcile these requirements are rare indeed.

Solutions should be flexible and subject to review at various stages of the process because we know so little, especially about the changes yet to come. But economy, understaffing and time constraints often preclude experimentation or the necessary subsequent tests. Creation of new institutions such as a building and loan association or a housing authority is relatively easy to work out on paper. But getting the legislation, recruiting the staff, and maneuvering an administrative apparatus operating to a large extent on the basis of social and class ties involves frustrating delays and the constant threat that the original aims will be vitiated.

Fashioning and carrying out plans and programs that reconcile conflicting interests is in itself a heroic enterprise. The planner is suspect by diverse interests inside and outside his organization. There is always the lurking suspicion of his values, his associations and his activities; and this is all the more so for foreign specialists who are often considered, and sometimes are, easy dupes whose friendship, frankness or naivete will be exploited for purposes that he will hardly suspect or even comprehend. All of this, and more, is part of the problem of implementation in transitional societies. How successfully these matters were dealt with in Ciudad Guayana will be a matter of controversy. Given the institutional context, there was often a quest for instruments and incentives that would foster local initiatives or relieve CVG of responsibilities. The self-help housing program is one example. Land policy was another. The approach to local government responsibilities was a third. Yet much more remains to be done. Fortunately, such a program requires many years to devise and put into effect and there may still be time to modify existing approaches and invent new ones once the more pressing needs are met.

Perhaps a final observation ought to be made on the consultant relationships. Joint Center staff stationed full-time in Caracas were generally briefed on the social and administrative topography they would have to negotiate. Knowledge of the language or readiness to learn it was a requirement of the job. All members of the staff had to respect, if not follow in all respects, the administrative style of the client agency; and they were instructed to take no strong public positions in a serious conflict situation.

If they became persona non grata, they knew their usefulness would come to an end, no matter how exceptional their skills might be. Basic differences of opinion were not discouraged, but they were to be vigorously represented only at the highest administrative levels. A few individuals who lost sight of these rules had to leave or brood in splendid isolation. The others, however, functioned effectively subject to these constraints. On several matters, some of the resident consultant staff felt that different policies and procedures more vigorously pursued might have produced better results. That may or may not be so; but no one will ever really know.

CIUDAD GUAYANA IN PERSPECTIVE

Lengthy as it is, this description of the planning and implementation efforts for Ciudad Guayana is far from complete. The political background has been omitted. No evaluation has been made of the quality and effectiveness of the work done. There has been no discussion of the management, organization and reorganization of the planning office. The personalities of the Venezuelans and their consultant associates were effaced by bleak references to the staff. The conflicts in views, the evolution of working relationships, the disappointments and satisfactions of association with this enterprise must be inferred. The emotional outbursts sparked by the design of a bridge, the location of a sewer, the closing and opening of a road, the choice of a site for a center, the handling of applicants for housing sites have no place here. Even more abstract policy issues such as the handling of environmental sanitation, housing density and tenure, fiscal policy, migration, inter-regional relationships, the boundaries of the Guayana region and many others have not been touched upon or dealt with only in passing. Only a series of books could explore these ramifications adequately.³³ Nonetheless, this abbreviated version may help to acquaint the reader interested in urban planning in developing countries with the way some of the basic ideas and methods of urban planning as they were applied in Ciudad Guayana.

The program is still continuing, of course. Any assessment now would be somewhat premature. Nonetheless, a number of tentative observations might be hazarded on the basis of the experience to date:

1. To succeed in an enterprise demanding a heavy and continuing investment of national energy and resources in one region, requires substantial consensus and political support. Without the impressive reputation and political backing which the leadership of CVG managed to maintain, especially during the early years when there was little to show for the investment and effort, the program would have foundered. This is a task which required remarkable acumen and leadership. There are no rules on how this should be done. The strategy will vary with the circumstances, but it is surely one of the vital responsibilities of the top political and administrative officials.

2. Lack of staff is undoubtedly one of the most cramping constraints for undertaking such an effort. The government of a developing country may draw up plans and programs, only to find these impossible of execution for lack of the skilled personnel needed to carry them out. The CVG has not yet adequately resolved this problem. But it pioneered a novel arrangement with foreign universities which permitted the program to proceed. This arrangement was not the only one possible, and perhaps not even the best that could or should be worked out elsewhere. It illustrates, however, one imaginative way of reducing the problem to manageable proportions.

3. Even with skilled technical assistance, there are many novel issues which we do not yet know how to solve. These include methodological questions such as the fashioning of more sensitive analytical and land use control techniques for transitional areas, institutional problems such as the reduction of financing costs, or technological bottlenecks such as the construction of really cheap housing or housing components. Much too much has to be learned on the job by Venezuelans and consultants alike. It is understandable, therefore, that practitioners working under these conditions should feel that the research undertaken in developing countries and in the more developed countries is scandalously inadequate - especially considering the potential effects of innovations in human and economic terms.

4. Even in a relatively well financed undertaking, as in the case of the Guayana program, it was impossible to tackle many critical problems. It would be easy for a knowledgeable specialist to find flaws and omissions. It would be superficial, too. One of the hardest tasks of the local official and of his technical advisors is to determine not only what things can be done but also what problems they must live with, given the constraints and opportunities. No easy rule is available to guide these choices; but they must be made. Perhaps one can take some consolation in Hirschman's observation that these inadequacies are not always a disadvantage. Given the nature of the development process, "the pressures and tensions it creates do not necessarily frustrate it, but can be made to help it along." ³⁴

5. It is often said that programs should experiment, and no doubt they should. But it proves harder to experiment than might at first appear. Programs are developed because needs are real and pressing, and they have to meet those real and pressing needs. But the planners cannot often tailor their programs to suit the requirements of experimental design. The scientist recording his results in the laboratory is in a rather different position from the planner, who has to do his evaluations in the midst of simultaneous pressures for solving problems in the field and for maintaining the public support on which his work depends. Still, the "experimental project" or "pilot program" is often a useful device, provided that such programs are clearly significant ones, and are properly evaluated. This means that the "experiments" must be few and critical, and that adequate means must be devised for getting "feedback" from them. The advantage of the university connections established by CVG is that some significant studies may emerge describing the experience. Officials undertaking similar programs elsewhere might well ponder the advantages of emulating this experience, if only to nourish this point of view as well as to tap the wider range of skills and abilities which the university has to offer. The opportunity, however, should not be exaggerated. Even in the Guayana program, the operations in the field have yet to provide successful laboratories. Housing and education offer real possibilities. But it is still an open question whether significant alternatives can be devised; and, if so, whether the readings will be taken.

6. Human relations, of course, are critical in every phase of the program. At any point in time, an unmanageable conflict between the counterparts could have ended the program. But this kind of conflict might have occurred within the Venezuelan and within the Joint Center staff. Such conflicts involve more than personalities. Groups of human beings working together develop styles of acting and valuing and conceptions of reality which suit the situations they confront; and these situations vary. Thus there develops what might be called a "Rashomon effect". In other words, the same events are often seen differently by different persons, by the man in the field and by the one in the central office, by the man in one section and by the man in another, by the resident consultant and by his local colleagues in or outside the agency. The foreign technical expert has not only a different native

language and different past experience, but is subject to the pulls of a different career line than his resident counterpart. They have different professional audiences, and different personal futures to build. Many conflicts did occur in the course of the work on the Guayana program; and in many ways they affected what was and was not done. But the top leadership of the CVG and the Joint Center and many of their lower echelon staff sedulously cultivated the kind of personal relationships which made it possible to air exasperating problems or discuss personal failings and deal with them before they became explosive. Again there are no simple rules beyond emphasis on the obvious. In the choice of staff, ability and common objectives are necessary, not sufficient conditions. Humility, sincere respect and genuine sympathy not only for different views but for failings, too, are equally essential qualities.

7. Finally, it is tempting - and dangerous- to draw even more general technical conclusions from this particular case. The temptation and the danger is all the greater because the Guayana experience is apt to be dismissed as unique and hardly relevant to other countries. The uniqueness cannot be denied. The focus was on a new city in a frontier region; the consultant relationships were unusual; the public ownership of land was exceptional and the resource endowment and the financial position of Venezuela were extraordinary. But these are not the critical items for gauging the import of the program for urban planning. There was a combination of elements of far greater significance for other developing countries. What were these elements? One was the path of development. The special emphasis on developing the resources of one region required, as we noted, extraordinary political consensus to provide the support for a sustained program. Another element was the creation of appropriate intelligence and implementing mechanisms for the region. This made it possible to assess and link the growth potentials of the region with the national development targets. Still another was the systematic derivation of the implications for related sectors. The whole effort would bog down without roughly parallel action in a few key sectors. Finally, the joint use of economic and physical plans furnished the instruments for organizing, staging and reinforcing the critical decisions. It is this combination of elements that has been missing in most of the development efforts of the past.

Part III

THE REQUIREMENTS FOR EFFECTIVE URBAN PLANNING IN DEVELOPING COUNTRIES

One of the questions that might be raised at this point is how similar programs, modified, of course, to fit varying political, social and economic contexts, might be introduced in other developing countries. What kind of national policy would this imply? What would be an effective strategy to make such a program work? And what are some of the critical problems which would have to be solved? Since the answers to these questions depend in large measure on the relationships of the urban and regional problems to the general development problems which characterize these countries, let us focus our attention on these considerations first.

URBAN PROBLEMS IN DEVELOPING COUNTRIES ³⁵

The countries for which these measures are likely to be relevant are those which are close to or like Venezuela have reached the "take off" stage of economic development. Typically they have a few giant metropolitan areas experiencing formidable "growing pains". These are the principal foci of economic activity. Typically, too, all of these countries have an extremely primitive hinterland of lagging regions and a far less mature urban complex. One might contend, of course, that there are lagging regions even in the most economically advanced countries. These regions even exercise enough of a drag on the economy to become serious political issues, as is evident from the British experience with development areas, not to mention the current debate about depressed areas and structural unemployment now being carried on in the United States. The difference in the underdeveloped countries, however, is that their lagging regions are dominant elements partly because of their magnitude and partly because some of these regions may have significant growth potentials. It should not be surprising, therefore, to find that this disequilibrium in the national pattern of urban development distorts the claims for the spatial allocation of the meager capital and skills available for development. In the giant cities there are the pressures to do something about the monstrous slums, traffic congestion and shortages of essential services; and in the hinterland, there are the pressures to create investment opportunities, to exploit the country's resources with more drive and balance, and perhaps equally important, to establish new "growing points" and reception areas for migrants, if the problems of the big cities are not to become utterly unmanageable.

Despite these pressures, the crux of the problem has been neglected both by the physical planners and the economists. In part, this is because the physical planners have tended historically to operate at the local and regional level. With rare exceptions, they are not at all knowledgeable about national economic development policies and programs. The economic planners, with infrequent exceptions, wear a different set of blinders. They tend to conduct their analyses and programs on an aggregative and

sector analysis. The emphasis is on national accounts (national income, savings and investments) and related issues such as population trends, problems of exchange, industrial production, labor force, productivity, etc. They may also examine investment needs and possibilities in particular sectors such as agriculture, industry, transportation, and education. Both approaches have their uses, of course, but they are too limited or too general to permit evaluation of inter-sectoral or inter-regional relationships.

These failings are all the more astonishing on purely practical grounds. Considering that some 50 to 70 per cent of the public funds available for investment goes into overhead capital,³⁶ an extremely critical question is where to put that investment. To suggest that the decision ought to be made by the market makes even less sense in the developing countries because most of them don't have a vigorous market economy, and because the public development decisions, albeit permissive, will have a strong influence on where the private sector of the economy is able to function. In short, from the point of view of a national policy for economic development or a national policy for urban development, the question of where growth should be encouraged, and on what scale, must be explicitly faced.

POLICY ALTERNATIVES FOR URBAN DEVELOPMENT

Theoretically, a variety of alternatives may be feasible including the promotion of one huge population center, a few major centers, a network of decentralized communities or some combination of these. In practice, however, most countries would find the policy of encouraging metropolitan concentration in a few regions a desirable one for several reasons. To begin with, the meager resources make it impossible to pursue a systematic policy of dispersion. Since there are not enough resources for all communities and regions, some principle of selection is unavoidable. The encouragement of smaller cities is one possibility, and it has some advantages. Overhead costs are probably higher in the larger cities. Moreover, with most of the facilities of these cities overtaxed, the marginal costs of accommodating a much larger population are likely to be high. The proponents of decentralization believe:

"Cheap land, lower densities and shorter distances could mean simpler standards and technology for all kinds of social and civic facilities, utilizing rough, impermanent materials, personal labor and capital otherwise untapped, and other resources from the more or less non-monetized sectors of the economy. From this viewpoint, decentralization in one form or another is essentially a resource-saving device."³⁷

On the other hand, it is more important to increase returns than to cut costs. Through processes not as yet fully understood, growth appears to have a better chance of becoming self-propelling in the larger cities, that is, cities of 100,000 or more. This is likely to be especially true of those with some initial advantages, such as an exceptional harbor, a salubrious climate, superior transport preferably with access to a potentially rich hinterland, or a resource ripe for exploitation. Such assets offer a matrix of possibilities which, if successfully exploited, will create new advantages and opportunities: a larger and more specialized labor force, more adequate credit and exchange facilities, increased business and professional services, improved roads and utilities, more diversified job opportunities, a wider range of consumer services sparking worldly ambitions and competitive effort. The interaction creates external economies, widens the market, generates new enterprises - in short, reinforces the whole syndrome of growth and radiates its influence over an expanding hinterland.

Large cities also attract migrants and induce drastic changes in traditional attitudes. Job opportunities or illusions beckon; and so do the jostling crowds, the bazaar-like shops, and the rich variety of sights, sounds, and human experience. Patterns of family expenditures change, standards of demand rise, the birth rate tends to decline, the origins of class or caste lose some of their significance, while innovations find an easier welcome. Such influences do not happen overnight, of course. No one knows how many derive from increased income and education, new patterns of work and living, or to what extent the scale of the metropolis itself plays a role, and if the latter, which urban size, or mixture of sizes, produces the best results. During the next decade research may give us a lead on these matters. For the moment we have only a strong suspicion, supported by what we observe of urban trends in economically advanced countries, that a shift from the traditional economy to the large city is conducive to these results.

However, partly because of the probable advantages of large cities, the present trend in most of these countries is leading to a politically unacceptable and potentially explosive dualism; i. e. ,

"A peasant agriculture and handicrafts sector using simple labor intensive techniques where manhour productivity is extremely low, and where one-half to four-fifths of the population earn their incomes; and a plantation-mining-manufacturing sector using advanced techniques where manhour productivity is high but where only a small part of the population is employed. . . Both sectors are usually distinct geographically as well as technologically and economically. Sometimes they represent quite different regions. Nearly always the two sectors appear in contrast between one or a few large and growing cities and the surrounding countryside - Djakarta, Surabaya and Indonesia; Delhi, Bombay, Calcutta and India; Manila and the Philippines; San Juan and Puerto Rico; Port Harcourt and Nigeria; Tripoli and Libya - the examples can be extended to virtually every underdeveloped country. "38

This dualism is probably responsible for an inefficient allocation of capital. The losses are hard to estimate but are nonetheless real: they involve not so much the increasing costs for overhead, transportation, and congestion in the one or two expanding cities as the costs (even harder to calculate) resulting from the failure to exploit resources and other investment possibilities in the lagging regions. In the largest cities opportunities come more easily within the line of vision of the investors, whereas in other areas the lack of information makes it difficult to judge whether opportunities there might not be more remunerative. Even when information becomes available, the prospects are still apt to be obscure. Returns must be gauged over a long period, and during the first few years when prediction is somewhat surer, the returns may be low, though thereafter they may more than balance higher returns elsewhere. Success also tends to fan expectations, failure, to dampen them. Under these circumstances, Hirschman is quite justified in concluding, "that the external economies (in growing areas) although real, are consistently over-estimated by the economic operators. "39

Perhaps the most effective means of correcting these estimates, aside from general policies on taxation and incentives, is through government decisions on the location of overhead facilities; but as noted earlier, there are two powerful forces that lead to questionable allocations: the pressure to supply the overhead facilities required or induced in the growing metropolis; and the pressure (both for political reasons and the lack of adequate technical talent) to disperse resources earmarked for regions outside the large cities "among a large number of small projects scattered

widely over the national territory."⁴⁰ The question that constantly faces responsible officials, therefore, is how to channel investments so that they will not be frittered away in big cities on costly urban services that could well be postponed. Ideally, the decision makers should husband this capital so as to create opportunities for investment and thus stimulate selected growing points or impulse sectors.

The policy most likely to achieve current goals would seem to be the creation of a few regional centers (including essential transportation links, minimum overhead facilities, and the necessary intelligence mechanisms, so as to examine more systematically the possibilities for development). If such a policy were clearly defined, it would place private investors in a far better position to judge the prospects of the area; and it would make it possible for government officials to evaluate plans for capital expenditure for railroads, highways, power installations, utilities, housing and other community facilities, to be sure that they contributed whenever feasible to the success of these centers. The relative concentration would aid some of these regional centers to acquire some of the characteristics of what Perroux called poles de croissance,⁴¹ and thus to compete more effectively with the existing metropolis, and even help spark a profound transformation in the cultural pattern of the hinterland. The growth of such regional centers would also enable the capital cities to cope more effectively and economically with the population avalanche that now threatens them.

It will not be simple to break the vicious cycle and ensure that these investments in regional centers are not made prematurely or unwisely. Much depends on the right selection of such centers. Even so, individual firms may see no advantage in shifting their location until the necessary overhead facilities exist. Moreover, the provision of such facilities is "permissive" and may not always induce the desired entrepreneurial activity. Probably only one or two centers can be developed in the early period of economic development, because there is a limited national market, and because much of the investment will be made in agriculture, transport, and communications, thus involving considerable geographical dispersion. As the economy expands, however, regional markets emerge, and industry becomes more oriented to labor and market. Larger urban centers are then more feasible. Notwithstanding the difficulties, the promotion of regional centers may have a better chance for acceptance than a plan that neglects the lagging areas; and it may well prove more effective in promoting the various goals of development than either dispersion or concentration in one or two great cities would be.

CRITERIA FOR THE CHOICE OF REGIONS FOR DEVELOPMENT⁴²

Which urban regions should be selected for development will depend on a variety of considerations. Some of the most important will be the growth potential of the regions, their capacity with relative economy to improve their access to large hinterlands and other regions, and their susceptibility to measures encouraging their further growth. However, these characteristics and others, should be evaluated in terms of the country's basic goals. These ought to be as clearly specified as possible. For most countries the immediate objectives are to maximize the increase in per capita income. This general goal, however, is subject to a variety of qualifications or constraints, of which some of the more important are minimum levels of consumption and implicit discount rates of future returns; desired distribution, or rate of change in the distribution, of income by class and region; and minimum acceptable levels, or rate of decrease of the levels of unemployment by class and region. Other restrictions will emerge from projected defense requirements; or from the need for internal consistency in resource allocations, such as specified exchange balances and execution of

programs within available or potentially available resources of capital and of managerial and administrative ability. Clearly one may add new goals, weight them differently, specify less or additional constraints, or spell out the implications more or less precisely. The task is difficult and is easily slighted; but ideally, the more important of the country's objectives should be examined to see how they might affect the choice and scale of investments that might be undertaken.

Investments planned for selected regions which score high on these criteria will take a number of years to promote. More detailed studies can be gotten underway while tentative programs are started based on existing knowledge and judgment. Then at some later stage, these programs and their planned sequences could be reviewed, stepped up or contracted, as one gets a better sense of the development prospects. Assuming there was agreement on this approach, what would it be wise to start examining to facilitate this subsequent review? Certainly some comparative analysis of the long term prospects for the leading regions would be essential. This would involve, as in the case of Ciudad Guayana, projections of demand for the principal economic activities and evaluation of those activities which might enjoy comparative advantage, if not now, then in the future. It would be indiscreet, but probably indispensable to hazard some rough estimates of the probable impact of national development policies on sectors within particular regions, not to mention the need to evaluate the "backward and forward linkages" and multiplier effects. These studies would provide some basis for gauging the relative consequences of the regions' development on the national economy. Where data and circumstances permit, even the presently inadequate and unrealistic inter-regional input-output matrices and programming methods might be employed, if used mainly to direct attention to significant relationships which might otherwise be overlooked.

Inexorable short-term considerations, such as serious disproportions in the use and availability of productive factors might have to warp these evaluations. The foreign exchange problem or serious unemployment areas are examples; and in selecting regions as well as in determining the pattern of their development, the capacity to contribute solutions to these problems may well become the prime requisite of any effective strategy for regional priorities and development. It goes without saying that the form of the response might vary from the exploitation of the regions' export potential of raw materials or agricultural products, the stimulation of import substitution activities, the attraction of labor oriented industries, the encouragement of "tourism", the minimum use of overhead capital, etc.

Finally, a less tangible but fundamental consideration is the effect of different regional development programs on public attitudes. Have the schemes the possibility of changing the citizen's, not to mention the decision maker's, image of himself and of his country? Can it arouse the public's imagination sufficiently to set in train a whole new level of aspiration? It would be folly to neglect these possibilities; yet who but the greatest political leaders can fathom their significance? This is one of the reasons why need as well as effects have to be taken into account. Investment in a particular region may well yield poor returns, yet warrant high priority. A region - such as southern Italy or the Negev in Israel - may be so backward, neglected or difficult to develop - that it acquires symbolic value. It is as though a nation should stubbornly choose to pit its energies and will against insuperable odds. Or it may consciously prefer a slower rate of development. Such programs, of necessity, must be unique exceptions - but it is worth remarking that over the long run, they may speed up rather than retard the development effort.

What about those regions which are not selected for large scale development programs? They cannot be entirely neglected; and yet they cannot be adequately served. The effects of regional development elsewhere may perhaps be exploited - or at least underscored. Certain programs and forms of technical assistance involving a minimum commitment of resources may also be undertaken to allay discontent. A few self-help and technical assistance programs may be initiated including information and education programs of benefit to migrants from the region. Some uneconomic investments and tax benefits may be inescapable but not especially emphasized. In short, token efforts and consummate political skill would be essential. The measure of success will hinge on the balance struck between economic progress, social welfare and relative sensitivity to those repercussions that may upset a theoretically rational calculus.

It seems almost hopeless to assign weights to the factors just discussed, partly because many of them are intangible and interact. All that one seems able to say at present is that the decision makers must somehow ponder and estimate the relative importance of these considerations in their countries in arriving intuitively at some final judgment.

PROBLEMS OF IMPLEMENTATION

Once a decision has been made, however, and a firm set of regional development goals and a program agreed upon, then what next? There is a need to orient the thinking of the key officials in the sector agencies to relate their activities to the national aims for regional and sector development. This implies, of course, a metropolitan or regional development function located either in the chief executive's office or in a national planning agency, or in some national agency for public works and metropolitan development. As the program gets under way, better coordinating and feedback mechanisms will be required to deal with problems and errors before they become too serious. To project overhead capital and land use requirements, detailed demand, cost and industry feasibility studies will be required. Training and education measures to support these programs must be pushed; and effective tax, incentive and other fiscal measures may be needed to spur the momentum of investment in the designated regions.

All of these things are important; but something more is needed if these and other hard, but essential, staff activities are to achieve disproportionate effect. Without significant consensus and political support, the budgetary and other requirements of the program may never be obtained; or, if obtained, they may be whittled away by the customary processes of attrition. Appointment of a distinguished and skillful leader to head the program may be one means of countering this tendency. "Reform-mongering" may often be another.⁴³ Somehow, the regional development goals, like the other goals in the national development plan, need to be spelled out, enlarged, dramatized, made more visible. For many countries, the goal of transformation of the hinterland can play a powerful role in propelling a nation forward. Even if the programs were limited to one or a few areas, the idea has tremendous ignition potentials which might spark unsuspected energies.

The foregoing discussion points up some of the new ideas and methods of dealing with issues of urban growth and economic development. Experts from various countries can best judge what legislation and institutional changes, what social attitudes, and what other factors may be relevant for applying these ideas and methods to their respective countries. But, if applied, at least three critical problems must be anticipated. First is the question of personnel, which is critical. Specialists in these

problems are rare, and, as we have observed, few have ever received the appropriate professional training to handle these responsibilities. Second is the level of intellectual capital. Whether we now know enough about these problems to do something effective about them is debatable. Many persons may doubt whether we can acquire the necessary understanding early enough to avoid doing more harm than good. Third, the proposed innovations in policy may accentuate tendencies for political centralization. Many of these countries are already suffering from "apoplexy in the center and anemia at the edges". Sooner or later these governments will have to decentralize their activities. It should be the task of the central government to call the signals and permit local or regional agencies to conduct more of the actual operations.

Citing these difficulties may produce contrary reactions. Some persons will consider them decisive arguments against such action; others will brush aside the difficulties or regard them as problems to be solved. One of the dangers in developing countries is the desire to bite off more than can be chewed. Even the economically advanced countries, it will be said, would have difficulties in bringing such programs to a successful conclusion. There is enough in these arguments to cause responsible persons to hesitate and weigh the consequences. But the choice between all or nothing may not be necessary. Some of the hypothetical recommendations can stand alone. For some countries it may be enough simply to establish a high level group concerned with the national policy for metropolitan or regional development. Officials in these countries may want to explore the ideas but may be unwilling to set up the more intricate planning system. Other countries may reap immediate dividends by undertaking thorough regional studies or by establishing a mechanism to budget and evaluate the regional incidence of capital expenditure. Still others might wish to go much further, for surely the argument for more extensive action is not without appeal. Decisions are daily being made fixing future patterns of development. These decisions are already creating grave problems for the future. Is it not better to make these decisions consciously?

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2. R.A. Blanco and A. Ganz, op. cit., p. 17. The total estimates private investment is expected to approximate 365 million dollars for the 1965-1968 period and 1,483 million dollars for the 1969-1975 period. The data are based on material on the Guayana Region Development Program prepared for the Plan de la Nacion, 1965-1968 and on other long range estimates made by the Economic Research and Planning Division of the Corporacion Venezolana de Guayana and the MIT-Harvard Joint Center Guayana Project.
3. A. Ganz, op. cit., p. 9.
4. Por puesto is a public form of transportation which uses the passenger car as the vehicle.
5. R. Soberman, "An Economic Evaluation of the Urban Transportation Plan: August 1964", (Report prepared for the Economic Research and Planning Division of the Corporacion Venezolana de Guayana and the MIT-Harvard Joint Center Guayana Project), p. 9.
6. Ibid.
7. Division De Estudios Planificacion E Investigacion Planeamiento Fisico, Plan De Desarrollo Ciudad Guayana, Corporacion Venezolana de Guayana, p. 36. This document incorporates the results of a number of studies and conclusions of the staff of the Urban Design Section of the Corporacion Venezolana de Guayana and the MIT-Harvard Joint Center Guayana Project. The author's discussion of the industrial, business and civic centers is based to a large extent on these studies and reports.
8. Ibid., p. 37.
9. Ibid., pp. 56-60.
10. Ibid., p. 62. See also Wilhelm von Moltke, "Urban Design, Its Nature and Role in the Development of Ciudad Guayana, "Draft Report Submitted to the Urban Design Section, Corporacion Venezolana de Guayana and the MIT-Harvard Joint Center Guayana Project), 1964.

11. Division De Estudios Planificacion E Investigacion Planeamiento Fisico, op. cit., pp. 67-69.
12. K. Lynch, "Some Notes on the Design of Ciudad Guayana "(Report prepared for the Urban Design Section of the Corporacion Venezolana de Guayana and the MIT-Harvard Joint Center Guayana Project), pp. 1-11.
13. Division De Estudios Planificacion E Investigacion Planeamiento Fisico, op. cit., p. 40.
14. K. Lynch, The Image of the City, Cambridge: The Technology Press and Harvard University Press, 1960, p. 2.
15. Division De Estudios Planificacion E Investigacion Planeamiento Fisico, Op. cit., p. 67.
16. R.B. Mitchell, "Memorandum to Lloyd Rodwin on Caracas Visit of May 11-16, 1964", p. 4.
17. A. Fawcett, Implementation of the Physical Plan (Preliminary draft report prepared for the Division de Estudios Planificacion E Investigacion, MIT-Harvard Joint Center Guayana Project), November 1964, pp. 21-28.
18. Ibid., pp. 31-32.
19. R. Corrada and L. Ayesta, Investment Opportunities in Housing Construction and Financing and in Housing Materials Manufacture, (Report prepared for the Division de Estudios Planificacion E Investigacion and the MIT-Harvard Joint Center Guayana Project), May 1963.
20. L. Peattie, "Memorandum to L. Rodwin, W. Doebele and R. Corrada", dated August 26, 1963, pp. 1-2.
21. R. Corrada, "Housing Program for 1964", Memorandum to Colonel Rafael Alfonso Ravard, dated November 18, 1963, pp. 1-5.
22. R. Davis, "Strategy For Human Resource Development in the Distrito Caroni: A Summary, " (Report prepared for the Human Resource Section of the Corporacion Venezolana de Guayana and the MIT-Harvard Joint Center Guayana Project), December 1964.
23. Ibid., p. 10.
24. Ibid.
25. J. Zuccotti, "Municipal Ordinance Project - Preparatory Memo", (Report prepared for Desarrollo Humano and the MIT-Harvard Joint Center Guayana Project), February 1964, pp. 1-5 and 8-14.
26. Summer Study Group in Public Administration, Governing Guayana, Roles and Responsibilities in the Public Management of Santo Tome (Staff working paper prepared for the Corporacion Venezolana de Guayana and the MIT-Harvard Joint Center Guayana Project), August 1963.

27. Ibid., pp. 31-60.
28. Real Estate Research Corporation, Summary of Conclusions - Land Development Strategy Analysis, Ciudad Guayana, Venezuela, (Report prepared for Corporacion Venezolana de Guayana), December 1964.
29. Ibid., pp. 30-37. Mr. William Porter observed after reading this paragraph that "the physical planners had already developed these ideas for the physical plan but from a different perspective and without the economic insights and justifications."
30. For further details on the application of these policies to specific firms, see R.A. Alamo and A. Ganz, Op. cit., pp. 25-26.
31. N. Fitts, "Recommendations for Action: Organization and Activities of the Promotion Staff", (Memorandum to Lloyd Rodwin, Rafael Corrada, and Alexander Ganz), July 1, 1964.
32. L. Peattie, "Urban Design in the Underdeveloped Countries", (unpublished paper prepared for the MIT-Harvard Joint Center Guayana Project), November 1964, p. 4.
33. The Joint Center for Urban Studies of MIT and Harvard University plans to publish a series of studies on different aspects of this program.
34. A.O. Hirschman, The Strategy of Economic Development, New Haven, Yale University Press, 1958, p. 210.
35. This section and the one on Problems of Implementation is a revised and abbreviated version of a paper by the author. For the original article, see L. Rodwin, "Metropolitan Policy for Developing Areas" in L. Rodwin, The Future Metropolis, New York, George Braziller, 1961, pp. 171-189.
36. Paul Rosenstein-Rodan, Professor of Economics at the Massachusetts Institute of Technology, supplied me with these figures as part of studies not yet published. The estimates are based on data for several countries, and of course, the figures vary for each country.
37. C. B. Wurster, "The Nature and Cost of Minimum Acceptable Living Conditions in Different Types of Indian Urban Community" (mimeographed), Department of City and Regional Planning, University of California, Berkeley.
38. C. Haar, B. Higgins and L. Rodwin, "Economic and Physical Planning: Coordination in Developing Areas," Journal of the American Institute of Planners, Vol. XXIV, No. 3, 1958, p. 169.
39. A. O. Hirschman, op. cit., pp. 184-185.
40. Ibid., pp. 190-192.
41. F. Perroux, "Note sur la Notion de Pole de Croissance", Economie Appliquée, Vol. 8, 1955, pp. 307-320. In the Calcutta region, these growth points have been called "anti-magnet towns".

42. This section is a revised and abbreviated version of a paper by the author. For the original article, see L. Rodwin, "Choosing Regions for Development" in C.J. Friedrich and S. E. Harris, Public Policy (A Yearbook of the Graduate School of Public Administration, Harvard University), Cambridge, Graduate School of Public Administration, 1963, pp. 141-162.
43. A. O. Hirschman, Journeys Toward Progress, New York, The Twentieth Century Fund, 1963, Part II.