

## The Guayana Project

**Figure 1.1** Guayana region of Venezuela.

**Figure 1.2** Man-made site conditions of Ciudad Guayana, 1963: (1) Matanzas Steel Mill; (2) port; (3) industrial estate; (4) small industries; (5) Orinoco Mining Company port installations; (6) Iron Mines Company—port installation; (7) light industrial estate; (8) Macagua Dam; (9) Puerto Ordaz; (10) Orinoco Mining Company—Country Club; (11) Castillito; (12) Dalla Costa; (13) El Roble; (14) San Félix; (15) Macagua Dam—housing; (16) Los Barrancos; (17) San Félix—general port; (18) and (19) water treatment plants; (20) oil pipeline; (21) airport; (22) microwave transmission tower.

In the early 1960s, the Joint Center for Urban Studies of the Massachusetts Institute of Technology and Harvard University was asked by the Corporación Venezolana de Guayana (CVG) to act as resident consultant for the development of the resource-rich Guayana region of Venezuela, and particularly for the planning of Ciudad Guayana, the new industrial city growing on the banks of the Orinoco River at the expanding center of that region (figure 1.1).

At that time, some 30,000 people were living near the confluence of the Orinoco and Caroní rivers, about 300 miles to the east of Caracas (figure 1.2). For nearly four centuries a small population had inhabited San Félix, a fishing village below the confluence, but the region witnessed little change until extensive deposits of iron ore were discovered in the 1940s (Orinoco Mining Company 1959). In the late 1940s, two North American steel companies began to extract ore from the iron mountains at Cerro Bolívar (the Orinoco Mining Company, a subsidiary of U.S. Steel) to the west of the Caroní River and at El Pao (the Iron Mines Company, a subsidiary of Bethlehem Steel) to the east. Both companies constructed railroads from these mines to ports west (Puerto Ordaz) and east (Palúa) of the Orinoco-Caroní confluence.

The Orinoco Mining Company planned Puerto Ordaz as an open city for about 6,000 people, with neighborhood units called “camps” for different levels of personnel and a separate country club for the predominantly North American executives. Many of those who could not afford a house in Puerto Ordaz began to settle in Castillito on the main road, at the entrance to the company property, and by 1961 Castillito included a few hundred ranchos, shops of all sorts, bars, cinemas, churches, and schools.

The construction of Puerto Ordaz and its airport was followed by the Macagua Hydroelectric Dam built above the Caroní Falls during the late 1950s, and the mammoth steel mill at Matanzas, which started production in 1962. These projects attracted new populations to the area, most of whom settled in and around the old town of San Félix, which grew

from 1,500 persons to 24,000 within a few years, especially after the policing of illegal squatters was relaxed when the Pérez Jiménez dictatorship fell in 1958. A scattered suburban community called El Roble began to grow along the main road to the west of San Félix, followed by a small commercial center named Dalla Costa at the ferry crossing over the fast-flowing Caroní River.

The Corporación Venezolana de Guayana was formed some six months before the Joint Center planning group began to arrive in Caracas. Before this, the planning of the new city had been in the hands of the Ministerio de Obras Públicas. The CVG was given jurisdiction over the whole Caroní District—a large area of land surrounding the river confluence—with extensive ownership of the land and powers to plan and develop the new city of Ciudad Guayana, as well as the larger region.

### **The Planners and Designers**

The representatives of the Joint Center for Urban Studies were to work in conjunction with counterparts in the CVG. Since the CVG itself was a new entity, all members of the team were new to the project. The urban planning and design group consisted of city and transportation planners, urban designers, architects, landscape architects, and engineers. This small group—working in close contact with economists, housing experts, lawyers, sociologists, anthropologists, natural resource planners, and others—was given responsibility for developing the plans for the city.<sup>1</sup>

The goals of the CVG were high. They were to develop not only an efficient and economically viable city but also a beautiful one. For the first year of the project, 1961-1962, while the economists were gathering data for estimating the industrial potential of that particular combination of natural resources, hydroelectricity, and a steel mill, the physical planning group possessed only the haziest image of what growth to expect. Early guesses at an eventual population level of 150,000 to 250,000 were later raised to 600,000 people by 1980 and continued to fluctuate throughout the project. However, the designers were kept occupied by more urgent needs. A hospital, a technical school, and an aluminum smelter were among a dozen or more major facilities that required immediate locations, plan or no plan. The Caroní Bridge crossing had already been located, but its detailed design was still in question. These design problems suited the talents of the early Joint Center group, and it was a year before serious thought was given to the development of a coherent planning procedure for large-scale and long-term planning. In the interim the design team asked for a moratorium on develop-

ment in certain parts of the city.

In the second year, as the economists began to project estimates of employment, population size, and future family expenditure patterns, they predicted alternative programs of growth, in figures that were more precise than they should have been. They estimated the areas required for industrial, commercial, residential, and other facilities and developed a land-use-and-transportation model (Penfold 1969).

While the long-term forecasting was under way, two members of the Joint Center group, an anthropologist and an urban designer, took up residence in the city. They immediately reported frustration among the population due to the “freeze” that had been placed on development (Peattie 1962). Contrary to the planning group’s assumption that it might be difficult to stimulate private industrial development, one or two small industries desirous of locating in the city were being prevented from doing so. Such misperceptions began to make the planning team feel uneasy about their understanding of the situation. From that time on, the need for surveys and the question whether the planning group should be nearer to the population—in the city itself—than to the seat of decision making in Caracas were frequently mentioned. There were sensible arguments for staying in Caracas in the early stages of planning when plans had to be worked out with other agencies in the capital, but as the new city grew and local problems became more complex, arguments to move to the site became indisputable.

During the second year the designers studied the terrain, flood levels, soils, vegetation, and microclimate with the help of some natural scientists. They constructed models of the terrain, identified visual regions, and plotted the visibility of important facilities and prominent features. Although the landscape was complex, the designers made great efforts to understand it.

Also in the second year, the planning team split into groups to analyze and program industrial, housing, commercial, recreational, transportation, and institutional needs. During this period, several attempts were made to rationalize the planning process, and several sets of objectives were formulated.

Economic objectives were considered paramount. High priority was given to an economic scale of facilities, an efficient use and transportation pattern, and adaptability in the face of future uncertainty. But economic development could not be achieved without a satisfied population, and the shortage of skilled personnel, executives, and professionals became a major issue.

There was much debate about what would attract this elite population. Good services and economic opportunities were essential, but which were more needed, and what kind of environment would this group desire? Would they prefer high- or low-density housing, urban or outdoor recreation, order or diversity? Without any clear knowledge of such preferences, the planners and designers all argued from the perspective of their own values and experience. Urbanity was proposed as a major goal, but interpretations of urbanity ranged from high-density enclosed spaces to a rich mix of uses. Others suggested that the desired personnel, mostly engineers, might have very different values from design professionals and might prefer low-density development, with facilities for outdoor recreation, to high-density urban surroundings.

Discussions between the “order” and “diversity” poles of the planning-design spectrum were frequently the most heated. Those who saw the current development as chaotic and formless were concerned more with unity and order—the “completion” of Puerto Ordaz, the “reorganization” of El Roble. Others were more willing to tolerate diversity, open-endedness, and flexibility and were prepared to accept a less complete form of development.

Those with social concerns focused initially on providing minimal services for low-income migrants and on building stable, preferably mixed-income communities—goals that were based both on equitable grounds and on a concern for minimizing the social conflict dramatized at the time by terrorism in other parts of Venezuela. As the difficulties of attracting skilled personnel became more apparent, the planning group began to see this low-income population as an essential human resource to man the future industry. Thus the education and social mobility of this population became a high-priority goal. (McGinn and Davis 1969)

Attention was also given to the political problems inherent in the trend toward a split city, with upper-income groups to the west of the Caroní and lower-income groups to the east. This bore particularly on the issue of locating the city center.

Many of these concerns were crystallized into a loose set of objectives for the city that, although couched in general terms, were useful when some of the more important locational decisions had to be made (Appleyard 1962; Fawcett and Kise 1962). As the project developed, however, it became evident that different members of the planning team were not only emphasizing different sets of values but also projecting quite different images of the future city.

Experts selected their aspect of the environment as the most

critical. Planners concentrated on land uses; social scientists on institutions. Architects focused on buildings and searched for sculptural solutions; landscape architects were dismayed to find that the population gave the landscape so little attention; engineers waited impatiently to detail and construct the road system. The subjective nature of these viewpoints meant that unless a policy gained the personal support of a team member, it might be acknowledged by all as important, but no sharp and enduring arguments would be made on its behalf. Thus, until a specialist in transportation planning became part of the group, transportation concerns were given only lip service.

Images of the future varied in clarity and in form. Those working in Caracas on the transportation model were conceptually at home in the plan for 1980; those living on the site responded to immediate happenings. Such groupings also cut across professional lines. The urban designers, anthropologists, and engineers living in the city sometimes had more similar viewpoints than their long-term planning colleagues in Caracas.

All members of the group brought their own images of other cities to bear on the planning of this city. Some had European cities in mind and would talk eloquently of boulevards, sidewalk cafes, museums, and an opera house. Others referred to Brasilia, with its formal clarity, symbolism, and monumentality. The latest English New Towns and even Philadelphia row houses were brought into the discussions. Other members of the team drew on the qualities of existing Venezuelan cities, with their Spanish *cuadras* and *plazas*, and some imagined modified versions of the *rancho* areas or the California-like auto-oriented commercial developments of the Caracas suburbs.

Planners and designers frequently work through analogy; this is the stuff of the planning culture. But personal perceptions and values were often claimed to be congruent with those of the present population of Ciudad Guayana, and evidence of conversations with inhabitants of the city was occasionally produced in their support. Were these claims true? How did the people see the city; how much did they understand; what did they consider important; and what were their values? The decisions to be made would be meaningless and fragile if they were imposed on an ignorant, apathetic, or even hostile population. Moreover, without the evidence of popular opinion and concern, the more intangible social and environmental goals might carry less weight in the CVG planning process than the more quantifiable, though socially no more valid, engineering and economic criteria.

Therefore, in the second and third year of the planning oper-

ations, three surveys of the population were carried out, one on political and social perceptions, one on housing needs and preferences, and the one reported here on urban and environmental perceptions.

## **The Interviews and Field Surveys**

The environmental interview began as a small-scale test of urban perception carried out by an anthropologist. It was subsequently expanded into a large-scale interview of over 300 subjects from four representative parts of the city, including the model "North American" community of Puerto Ordaz, the indigenous rancho area of Castillito, the partly self-help and low-density area of El Roble, and the old village of San Félix. This was a sample large enough to give us reliable information about the population differences in urban perception (see appendix B).

The interview itself (see appendix C) covered a wide range of material beginning with an assortment of questions probing the environmental knowledge of the respondents. It gave them open tasks like naming the city, mapping it, recounting a journey along the main road, and describing selected buildings and districts. They were asked to identify places of social, political, functional, and natural significance and were questioned about their knowledge of existing and future change. Finally, their opinions were asked on current needs and preferences, and they were asked to compare Ciudad Guayana with imagined ideal and worst cities, as well as with the national capital, Caracas, and the state capital, Ciudad Bolívar.

The interview elicited information on several aspects of each inhabitant's background. In addition to his or her age, sex, marital status, education, occupation, and income, the respondent was questioned concerning his or her origin, present and previous use of the city, modes of travel, and knowledge of maps. Most of the interview, then, was directed toward urban perception and knowledge; only one section dealt with preferences.

Simultaneously with the interviews, field surveys of the city environment were carried out, and data were collected on the functional, social, and political patterns of the city. The environmental surveys identified outstanding features and made judgments on the degree to which the city was structured. Panoramic photographs, time-lapse movies, and descriptive tape recordings were collected along the main roads, and photographs were taken of over 200 buildings and of typical streets in all the districts. These surveys were to be correlated with the interview results.

Without a detailed census it was impossible to survey accu-

rately the use of buildings or the location of social groups. Land-use surveys located the types of building and the more important community facilities, and some economic surveys gave employment figures in major industrial and commercial facilities. For the rest, we were forced to rely on the consensus of experts. Some estimate of the news being disseminated to the population was made by studying the editions of the local newspaper for three months before the time of the interviews. Elements mentioned in interview responses were assumed to be present partly because of this publicity.

One purpose of the interviews and field surveys was to serve the immediate needs of the project. The second was to advance basic knowledge in the field of urban perception and to draw conclusions for the benefit of planners in general.

While this book attempts to fulfill the second purpose, the initial purpose was only partly achieved. Many of the planning implications cited in this volume were conveyed to the planning team within six months of the interviews, and decisions that were influenced by these findings will be mentioned in later chapters. But the conclusions were not easy for the designers to absorb. This was due mainly to the difficulty of converting behavioral research findings into policy recommendations. Even more serious was the problem of changing the ways in which the planners and designers planned the city. For instance, it is one thing to report that the population knows what is visible in the city. It is quite another to change the planning media to incorporate visibility as a variable. The difficulty of bringing the planners' vocabulary closer to everyday life is a real obstacle to progress in user-orientated planning. Meanwhile, planners and designers continue to spend time solving the wrong problems.

## Time of Interviews

At the time of the interviews in the spring of 1964 and after three years of planning under the CVG, Ciudad Guayana was in a state of transformation. (See figure 1.2.) The government steel mill was finally in production and employing over 2,000 workers. New steelworkers' housing was being built in Puerto Ordaz and outside Castillito, and a self-help housing program, new roads, and utilities had opened up *unidades vecinales* (neighborhood units) in El Roble and San Félix. The streets in San Félix had been blacktopped, more substantial buildings (some three stories high) were under construction, and concrete-block buildings and glass shop fronts were beginning to appear in Castillito. The commercial area that had grown up along the road into Puerto Ordaz was flourishing. Educational, medical, and other facilities were under construction. An in-



dustrial area was being laid out on the road to the steel mill, and the CVG engineers had built themselves a small camp, Campo Caroní, by the Macagua Dam.

However, the most dramatic change, scheduled to take place at the time of the interviews, was the opening of the first bridge across the Caroní to supplant the old ferry and the connection of that bridge to a new *autopista*, the Avenida Guayana, bypassing Puerto Ordaz.

The first schematic plans for the whole city had also been made (figure 1.3). The city was due to grow in a westerly direction toward the steel mill, with residential areas located along the upper Caroní. A new commercial and governmental center was to be constructed on Alta Vista, the ridge to the west of Puerto Ordaz. The Avenida Guayana was to act as a spinal link between all the major centers of the city, from the steel mill in the west, through a heavy industrial complex, the airport, the Alta Vista center, a proposed cultural and hotel center on Punta Vista, across the Caroní to a hospital complex on the eastern San Félix ridge, and on into San Félix itself.

Thus, the interviews were carried out at a time when the city was changing from a number of small settlements, mostly indigenous, to a planned large-scale development. This should be held in mind by the reader. This is a study in the perception not of a purely planned city but of a city in evolution from spontaneous to planned growth, a confusing yet rich mixture of several kinds of development encompassed in one site.

## New Cities

New cities like Brasilia, Chandigarh, or Ciudad Guayana capture the imaginations of the citizens of their countries. Their very newness opens the possibility of breaking with the traditional weight of old cities; they become symbols of national aspiration, pride, and achievement. They attract dedicated groups of administrators and professionals and are announced with fanfare and high promises.

Yet this focus of attention also breeds controversy. New cities almost always enter the gauntlet of criticism as soon as they begin to emerge from the ground. Things always go wrong. No one can anticipate all the problems, conflicts, and discoveries that can occur in the development of anything as complex as a city. Visitors are disappointed, inhabitants complain, and the critics sharpen their pencils.

New cities have a raw, chunky quality.<sup>2</sup> Site clearance and construction are crude processes, the sequencing of development is spatially discontinuous, and trees and vegetation take time to grow. It often takes twenty or thirty years for inhabitants to change and modify them according to their own living

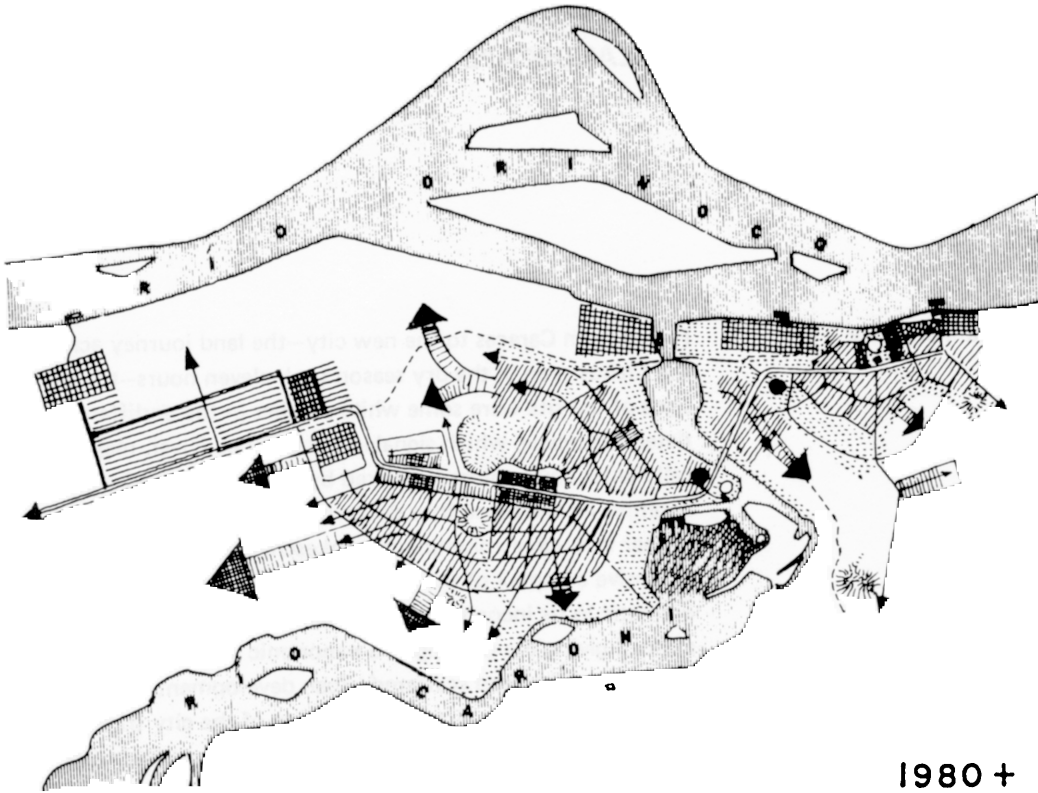


Figure 1.3 Outline of planned development, 1964, showing the proposed westward thrust of the city toward the heavy industrial areas.

habits. Only then does the work of professionals and people begin to fuse and take on life and depth, for small groups of professionals find it difficult to visualize how the inhabitants will view and use their designs. The history of new cities is replete with later-discovered misconceptions.

Ciudad Guayana was planned in a different way from most new cities. It was not planned by any single personality, or even by one profession, although we shall refer to the group as planners. It was probably the first attempt to bring a multidisciplinary team of economists, social scientists, lawyers, planners, architects, engineers, and others together in the planning of a new city. It was also one of the first attempts, albeit in too limited a way, to incorporate the attitudes and viewpoints of a city's population into the plan.<sup>3</sup> Yet, it will no doubt receive as much criticism as its fellows.