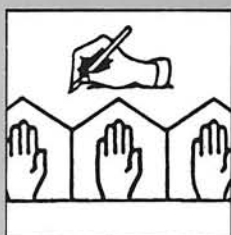
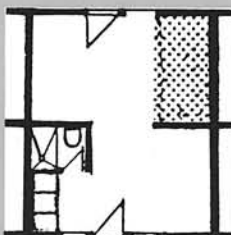
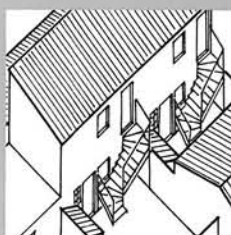
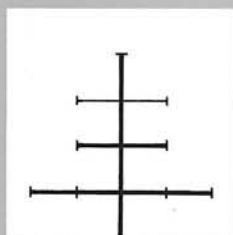
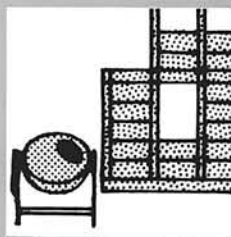
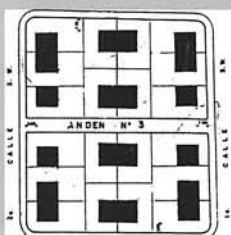
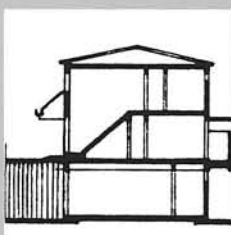


# Social Housing in Latin America

Editors: Marisa Carmona and Maria Blender  
In collaboration with Gerard Stalenhoef de Ayguavives



TU Delft  
Section Urban Renewal  
and Housing Improvement  
Atelier Carmona





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## A Comparative Analysis

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# Preface

Originally our intention with this book was to realize a systematic compilation of social housing projects in Latin America, and to put into effect a technical urbanistic comparison according to the objective conditions of each case and each particular country.

Contributions to this publication were to be realized periodically by students in the courses of the "Architecture and Building in Developing Countries"-specialization at our faculty. It was to be a documentation that would serve as a type of 'archive' and that would allow for yearly additions of new projects. Unfortunately the costs of such a publication are beyond the possibilities at this moment, therefore we decided to publish these first entries in the form of a book.

The central idea behind the realization of such compilation and comparison of social housing projects is to draw attention to our integral vision of the housing problem in developing countries. We think that by making this revision we could make manifest the limitations of certain western approaches to overcome the "under-development" and in particular the housing problems. These approaches, supporting a sort of anti-technological bias for the powerless population, are not so much founded in a determined position concerning the economic growth and its analogy -the reproduction of the working force- but are rather related to a specific reasoning of the structure of society and the ways in which all its different constitutive elements are interrelated. Here the analysis of housing issues moves away from the social process in which it is inserted and the dwelling is considered in an isolated way. This is to say, an analysis of a "dwelling-ist" type is realized, detached from the structural elements that conditionate and reproduce the miserable conditions of the habitat of large majorities both at macro- and micro-level.

This "dwelling-ist" type of analysis is functional to distinct systems of political economic regime, as well as in several stages of development. In various types of political regimes we can recognize at different times a conceptualization of the housing problem of the low-income sectors, conditioned by the different forms of

capital accumulation, that bases the solution of the problem essentially on the efforts of the affected people themselves. Consequently the role of the state should be substituted in this same area.

The dilemma has always been whether to organize the demand in order to expand the circulation of capital goods, or to organize the production in order to reach wider sectors of the population.

In every sort of economical-political system in Latin America there have existed housing "policies" directed towards low-income sectors. The types of policies can roughly be related to the two characteristic forms of accumulation of capital; the free-market system, essentially based upon the "comparative advantages" that open the world market, and the protectionist system of a more nationalist sort, which seeks a more balanced development based upon gradual import -substitution.

Under the first type of accumulation of capital, the "urban policies" center around the use of legal instruments to incite the private initiative and to develop some sort of public facilities. In general, the policies are directed at the advancement of productive capital. For this purpose, regulations with respect to land-use, localization of activities, networks of transport and communication, etc., are defined.

In the second type of accumulation the state plays an important role in the redistribution of incomes, through urban programmes directed towards the poorest sectors of the population. The urban policies combine public as well as private programmes (of investment) within the same market structure.

In the first case, the construction sector as such is advanced, the private sector is preferably stimulated and the canalization of external credits is sought. Social housing programmes are realized as far as they are subsidized (with or without external help), beneficial to the different groups of investors and fomenting the concentration of capital in a few key enterprises.

In this way some type of planned projects for low income sectors is developed, with more adequate solutions to the possibilities for payments of this sector (for example conducted auto-construction).

But the large majority remains dependant on the mercy of inscrupulous land speculators and land-lords that do not necessarily look for solutions with any technical or urban rationality in accordance with the low level of income of the population.

Within this type of competition of interests the price of land augments and the initiatives of the organized population are suppressed, limiting the forms of popular action.

The urban growth, due to the logic of migration that is produced at a regional level, due to the opening to the international market, is fundamentally absorbed within the occupied urban framework, considerably increasing the overcrowding in the urban slum-areas, particularly in the inner-city.

The second type of accumulation of capital is usually considered as of populist appearance. The industrial sector acquires major priority, restricting the construction sector in the sense that it should not sink below a determined asserted value, that does not differ from the rhythm of -faltering-increase of the G.N.P.

Programmes of infrastructure and civil works are given priority as well as elitist programmes of urban renewal.

The social housing programmes are formed as an important branche of the political instruments in support of the protectionist model of development. The housing programmes diversify according to the different possibilities for payment. The private sector organizes itself to attend to a population that has been mobilized by the governmental programmes of social assistance. Programmes of basic upgrading, new popular urbanizations, etc. are realized with the efforts of the dwellers themselves, receiving technical assistance from the state or from some humanitarian agency. Under this kind of protectionist regime, the need to increase its supportive basis forces the state to control the prices of peripheral urban, also leaving more room for the existence of land invasions and occupations.

Thus the larger cities of Latin America regardless of the type of urban policies they have known, have left the vast task

of the distribution of urban land and its consequent consolidation in the hands of inscrupulous speculators or to the initiative of pauperized groups of dwellers.

60% of the population of Bogota live in pirate urbanizations; 49% of Guayaquil, 46% of Mexico City, 40% of Caracas and Lima are occupied in a non-conventional way, etc...

The largest part of the areas that have been constructed in this way during the last 50 years are far from fulfilling the minimum norms and requirements for the supply with conventional systems of technical infrastructure and urban services. Concerning the provision of infrastructure, even if it were the most basic standards, this seems totally out of reach, because the state delivering the infrastructure is determined in a high degree by the interests of expanding capital.

The existence of electricity (legal or illegal household connections) and some communal water-taps and the non-existence of pavement and waste-piping in urban slum-areas explain the logic of this system in developing countries.

Electricity, the cheapest branche of infrastructure utilities followed next by water supply, allows the commercialization of capital goods, specially in the form of radio and TV for the very low income levels.

Drainage, street pavement and sewerage are utilities which give little chance of expanding capital and their costs per dwelling are dramatically influenced by the urban lay-out and the housing density. But both, a favourable urban planning and adequate densities are lacking in the peripheral spontaneous environments of the cities.

To insist on the formulation of solutions for habitability from a "dwelling-ist" position, promoting the handing out of lots, auto-construction and domestic technologies, in fact impairs the living conditions of large majorities, and accentuates the existing contradictions between those who hold power and enjoy the positive aspects of the vast urban concentrations, and those who have nothing but their working power and who suffer the negative aspects of the city: large distances to

work, lack of means of communications, absence of recreation-, education- and health-facilities and above all the definitive lack of basic infrastructure.

This publication offers a selection of some projects that have been planned and realized in Latin America. With this selection we want to point out once more the failing analysis of the urban, technical and infrastructural rationality, and to stress again the loss of "productivity" along the apparent easy way of placing with the dwellers the responsibility for their reproduction.

Delft, february 1987

Marisa Carmona

# Introduction

The foundation for this book was laid in a study project in 1985/86 at the faculty of Architecture at Delft University of Technology under the instruction of Marisa Carmona.

Our object is to provide general information concerning the housing problem in Latin America and the reality of housing provision for the students at this university who have chosen the specialization 'Building and planning in developing countries' and for everyone interested in this subject.

The first part of the book consists of a number of papers by different authors that introduce the determining elements and design aspects of housing provision for the urban poor; such as state policies, technology, housing typology and supply with urban facilities. For a better accessibility we have shortened or summarized the original papers.

In the second part we present several housing projects in Latin American countries by way of setting them in the national context and analysing their practical application. The structure of the presentations, which are ranged per country, is as follows:

Firstly a general report informs about every country; some aspects of the development of the national housing problem and the political measures to solve it; the report is introduced by a map with the locations of the presented projects and a table with significant data concerning population, economy and urbanization.

Secondly one or more housing projects are discussed. The presentation of each project starts with a summarizing page in the form of a chart. A group of symbols relating to the local geophysical qualities affecting building is followed by a number of blocks of symbols which represent the types of solutions referring to

- the urban design
- the used technology
- the organization of the housing activity
- and the level of the provision.

Another block consists of diagrams for the relevant results of an analysis of land use and the use of infrastructures.

The symbols and their use are explained in detail in the key on the flapleaf at the end of the book.

The following pages illustrate the mentioned types of solution and add information about the housing design and other subjects of interest. Because the available sources were insufficient for a complete analysis, not all projects are comparable in every aspect and sometimes we have had to work with assumptions.

Aware of the necessity of exchange of experience between countries with corresponding problems, we hope this comparative report can contribute to a better utilization of experience and to the success of the International Year of Shelter for the Homeless.

We want to thank Gualdino Duarte Pais for his assistance, Lidewij Tummers and Michael Middleton for correction and revision and Jacqueline Wijland for typewriting.

Maria Blender  
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March 1987

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# PART I





# The International Character of Housing Policies

## Marisa Carmona

Published as "Het internationale karakter van de huisvesting in de Derde Wereld" in: M. Carmona, P. ter Weel, A. Falu (ed.) DE STEDELIJKE CRISIS IN DE DERDE WERELD I Over het internationaal kapitaal en de nationale staten. Delft, 1981

The current global economic crisis has resulted in a definite move towards the internationalization of development problems, including that of the Third World housing problem.

Third World regimes appear to have opted for rapid economic growth based on the accumulation of export oriented capital rather than for slow growth achieved through import substitution. Until recently, and particularly during the Sixties, the development of problems of Third World countries were understood in terms of economic dependency which greatly influenced the decisions of the various political regimes on modelling their own forms of development. These development problems were included among others: relatively low growth rates, a high rate of unemployment, monopoly ownership of the means of production, accelerating inflation, burgeoning urbanization, inequalities in consumption levels, the strategic domination of the state apparatus by a small minority, etc.

Development problems were studied by national and international organizations with the aim of evolving development policies that would permit economic growth and rational and progressive policies of social distribution.

After the repeated failure of all attempts to diffuse the wealth of the dominant economies of the industrialized countries to the Third World, the case is now being made for not to relate dependence to development problems. It is somewhat revealing that in the Brandt Report (1981) only the shortest and least satisfactory chapter (only 10 pages out of the 255 pages) gives recommendations to these countries for dealing with extreme poverty and resolving agricultural crises.

Recently, numerous international conferences have been held on the theme of the restructuring of the global order. The failure of these measures has been used by contemporary Third World governments as an excuse to the majorities remaining outside of the benefits of development for not carrying out substantial changes in their economic and social structures.

In this article we would like to show how housing policies, and particularly those aimed at the low income sectors of the Third World population have been defined in a large measure by the international forms and structure of global political accumulation.

The crisis of the Thirties led a large number of Third World countries to seek autonomous national development through import-substitution and the modernization of productive structures.

These strategies were not only supported by the rising national bourgeoisies but also by the representatives of foreign industrial capital. The expansion of the internal market was seen as the key element for achieving economic development. This model of development presumed a replacement within the power structures of the agro-export oligarchy by a dynamic national industrial bourgeoisie, the transfer of surplus-value generated in the countryside towards the towns, the creation of new sources of employment, the redistribution of income and a determinate role for the state in the direct accumulation of capital and in the organization of the entire productive structure. (1)

It was assumed that the direct effects of this model of development, an increase in the number of jobs and redistribution of income, together with a concern for the basic needs of the population would be

progressively resolved within the institutional framework of representative democracy.

Within this perspective many Third World countries and in particular those which had achieved a relative diversification and specialization of their productive structures (eg. India, Philippines, Mexico, Brazil, Argentina, Chile, etc.) used urban policies based on and oscillated between two major conceptions:

1. Urban development was seen simply as a question of control of land-use, locations of activities and transport networks which could be managed by means of a Master Plan that controlled private enterprise and public investment.
2. The state was conceived of having an important role in the distribution of income through the realization of public works and housing programmes oriented towards the deprived sectors. These programmes would take place in a same market structure that combined both public and private interests which had distinct aims.

The housing policies based on these conceptions can be summed up as follows:

#### 1. The Free Market Policy

In this case housing was identified as a commodity and thus the housing problem was seen as a result of a disequilibrium between supply and demand. The problem was measured in terms of 'deficits' and the solution was seen as the building of the largest number of units possible through the activities of the organized private sector. Measures were evolved to stimulate the private sector by attempting to channel idle capital or foreign loans towards the construction sector and by taking advantage of the large existing pool of unemployed labour.

In this way the economic and technical relations involved in the financing, production, and commercialization of housing, were oriented towards those sectors of the population which had effective demand. This form of housing production generated great profits for property developers and the financial bodies which controlled all the phases of housing

production. They bought the land, built the houses, sold them and granted credit to the consumers.

With the deposits from the consumers, these agencies were able to pay off their national and international creditors who had financed the operation. The companies operating in this sector tended to maximize their profits by manipulating the land market and rationalizing operations (decreasing the use of skilled labour).

There was a tendency to formulate monopolies which became a powerful source of pressure on governments, because they represented and mobilized a significant part of the economy (at the level of industry and employment).

The price of housing, including those provided by the state was so high that even public housing projects for the lowest income sectors were too expensive for the vast majority of the population.

Given these types of social relations, housing has increasingly assumed a key position in political and economic respect which has distorted the national priorities of developing countries.

In this approach the origin of the housing problem is seen to be the poorer strata of the population who have insufficient purchasing power to constitute "effective demand". Programmes have been set up for these strata with housing standards that are more in line with their low incomes e.g. sites and services projects, core housing programmes, self-help housing projects. Along with the organized or unorganized labour-power of the users, national private enterprises and international organizations play an important role in these programmes.

#### 2. The Structuralist Policy

In the structuralist policy the housing problem is not identified as a result of the disequilibrium of the housing market, but rather as a problem related to the low rate of development.

According to this approach the new 'urban marginality' is an expression of the dominant form of socio-economic relations which is a structure incapable of resolving the determinant elements of the housing problem.

These elements, among others include:

- a. the insufficient income of the population,
- b. burgeoning urbanization,
- c. scarcity of state resources,
- d. a rudimentary technology and high levels of unskilled labour-power resulting in high building costs,
- e. political-administrative limitations; a characteristic of the institutional systems of developing countries,
- f. housing production that is often of a monopolistic and exclusive nature.

According to this approach the solution of the housing problem cannot be solved simply by stimulating the private sector, but only by more fundamental measures that attack the problem at its roots.

This means setting up priorities that stimulate economic development and propose housing solutions that are related to available resources, which are assumed to progressively increase in relation to the rise in employment.

The state here assumes an important role both in the financing and distribution of dwellings and semi-urbanized lots (sites and services and aided self-help projects). These programmes are oriented towards low income groups which are traditionally excluded from the housing market but which constitute an important electoral base necessary for realizing a progressive model for income redistribution. (2)

The subsidization of cheap housing and semi-urbanized plots is understood to be a form of income redistribution. However, the structure of the land market and the dominant relations of production within the housing sector remain unchanged. (3)

The forms of production of housing remain:

- a monopoly industrialized sector (property development),
- a traditional organized sector with a low organic composition of capital, a sizeable skilled labour force and a

- large mass of unskilled labour-power, an unorganized sector of unskilled labour that is directed towards self-help building.

During the Sixties urban marginality began to manifest itself in an alarming manner. In large Third World cities it expressed itself in the great contradictions in consumption levels, particularly in housing, education and health care. Rapid urbanization tended to increase further urban marginality in relation to the new forms that began to structure capital accumulation and labour relations in Third World countries. These new forms derived from changes in the logic of industrialization and the consequent loss of equilibrium in traditional agricultural structures. From a national industrial structure based on a low organic composition of capital, a high consumption of labour-power, free internal competition and protection from imports by tariff barriers a step was made towards a structure in which the more dynamic sectors of production rapidly began to reproduce a monopoly structure closely linked with imperialist capital.

The consequences of these changes were the rise of fixed capital, a monopoly of the internal market, unemployment and the transference of decision-making powers in the productive sector overseas.

The rise in 'urban marginality' and the growth of consumption problems led to the politicization of the housing problem in the Sixties. Politicians in all points of the political spectrum gave a high priority to urban problems in their electoral programmes - controlling urban speculation, legalization of tenure, financial assistance, price controls, 'popular' housing programmes, self-help and site and services projects, etc.

A climate of successful national liberation struggles in Africa and Asia and the hopes generated by the Cuban Revolution led to the intensification of the struggles and demands from the most deprived sectors, especially in the countryside and marginal urban areas, in Third World countries. The struggle for

a place to live and the local mobilization of the population reflected this new climate particularly in some Asian and Latin American countries.

During the Fifties massive and organized squatting on land occurred in Lima, Sao Paulo, Ceylon, Santiago, Manila, Mexico, Bogotá, Ankara, etc. (5) Migrants, the unemployed, workers and employees occupied vacant areas on the periphery of the city. Demands were made for the recognition of the communities, legalization of tenure and for the provision of basic infrastructures such as electricity, water-taps and the extension of public services etc.

Confronted with these demands both the market and structuralist theories and policies of the housing problem reveal economic and political difficulties in their attempts to deal with the climate of resistance which is an inherent urban consequence of the development strategy pursued.

When market policies are adopted, the widening of class inequalities is so great that the dominant institutional systems are incapable of containing the attendant social pressures.

When has been complied with the more rational recommendation to give the state greater powers of intervention in the desired forms of capital accumulation and to give priority to productive investments, the housing standards got varied and reduced radically (support for popular participation and self-help programmes). (6)

The result has been at best the partial realization of structural transformations on macro-level, or the failure of such realizations, or the generation of effects which were totally the opposite of those intended (internationalization of the market, strategic control by the transnational corporations, increasing poverty amongst agricultural workers, rising rural-urban migration).

Neither of these approaches has managed to diminish the growing social and political tensions, what only could be effected by changing the income distribution system and taking immediate measures on the alarming housing problems.

Particularly in the second approach, state intervention tries to arrive at the required equilibrium between the dimensions and forms assumed by social pressures, and the demands made by the private sector in relation to the reproduction of capital.

State intervention in the housing sector is directly guided to stimulate these specific conditions, that is the reproduction of the labour force necessary for capital in general. On the other hand, it also intervenes in those activities that are insufficiently profitable for private capital in the construction sector (industrial, financial, commercial and construction capital).

In a third form of intervention, the state activities are aimed specifically at expanding the base of popular support and the legitimization of power. (7)

In both approaches the state leaves ample room to manoeuvre for the spontaneous, legal and illegal and unconventional activities of the homeless. All the unconventional forms of housing and the urban habitat which are and have always been the traditional forms of housing construction by the insolvent social strata then become worth supporting: land invasions, illegal developments, sites and services, self-help building, etc.

The inability of the Third World political regimes to resolve the housing problem through autonomous capitalist development and modernization can be explained only in terms of the specific forms of capital accumulation in the periphery. (8) This inability is not linked directly to the specific limits of each development policy but rather to the structural conditions that frustrate conventional and unconventional (9) approaches alike. The inability to resolve the housing problem is thus linked to the forms of utilizing labour-power in general terms.

The apparently successful attempts of the Asian city-states (Hong Kong and Singapore) to build popular housing, rather than being mere exceptions, indicate the direct relation between the forms of capital accumulation and reproduction of labour-power under specific conditions -

in this case the role of the city states as overseas factories of the British Empire.

Since the Seventies (10) the structures of global capitalist accumulation have been in a process of transformation giving new roles to independent and underdeveloped areas in the international division of labour. The basis of this transformation has been the need for developed capitalist countries and corporations to take advantage in a more direct and intensive form of cheap labour power in the Third World (their so-called 'international comparative advantage').

The relations which characterized the import-substitution model (specialized exchange of primary and manufactured products) now became incompatible with the new conditions necessary for the liberal 'free market economy'. These conditions are formalized in the norms of the World Bank and IMF (as also occurred 20 years ago). The apparent success of these states, which have followed or been forced to follow these norms, and which in many cases are repressive regimes or dictatorships imposed directly by the USA and its transnational corporations (Hong Kong, Singapore, South Korea, Taiwan) serves as an example of the new political systems that may lay ahead.

The principal tendencies that have emerged are the internationalization of production and productive processes largely undertaken by the large transnational corporations through a process of negotiation that demands even more favourable conditions for the centres of capital. (11) The principal characteristic of this new conjuncture has been the blocking of the expansion of internal markets, and the reorientation of Third World economies towards the production of industrial goods for the world market in a way which maximizes their so-called "international comparative advantage" - cheap labour costs. In many of these countries a redefinition of protectionist policies has occurred and the process of accumulation has come to be dominated by national monopoly sectors in alliance with transnational corporations. This process is based on competition between capital, foreign loans,

and the superexploitation of wage labour. At the same time in the developed countries there are tendencies towards the protection of national industries, specialization in 'sophisticated' high technology branches of production, and a cyclical imbalance between full employment and demand. As compared with the past, the process of technology transfer involves the transfer not only of out-of-date technology but also that of advanced technology in the traditional branches of production (eg. textiles, paper etc.) in these countries. Modernization models cannot be developed in Third World countries because of these new global conditions.

The shift from import-substitution to export-oriented policies with the removal of restrictions on imports and flow of foreign capital has had among other things an effect on the medium and small scale enterprises which are oriented towards internal demand and which in general have sustained projects for national autonomous development. Class conflicts have intensified as a result of these policies which have led to increased proletarianization, new forms of urban marginality and the imposition of authoritarian political regimes.

In Latin America only a few countries remain which persist in developmentalist policies, albeit under new conditions - Costa Rica, Nicaragua, Mexico, Ecuador and Peru which remain democracies. Other examples in Africa are Senegal and Zambia, and India in Asia.

Under these new conditions housing policies have developed within the perspective of free enterprises with a subsidiary role being given to the state. The state is no longer obliged to secure the reproduction of the labour force necessary for the obsolete development strategy or to intervene indirectly in the distribution of income through self-help policies or controls over urban speculation. Neither does it feel obliged to create a base of political support amongst the most deprived groups in society. In this respect the speech of President Pastrana as early as 1971 (12) which presents an updated version of the liberal policies of 1958 is not surprising:

"aspects related to urbanization and urban



housing are undoubtedly of vital importance because development today is a phenomenon which is inseparable from urban growth, as the example of the highly urbanized industrial societies shows".

This policy institutionalizes the new forms of accumulation by creating a large mass of unskilled and unemployed workers capable of being integrated into modern international industry; it institutionalizes the development of agro-business in the agricultural sector and the final expulsion of the peasantry; and it develops and internationalizes the monopoly construction sector under large property development companies geared to satisfying the needs of only those sectors which have purchasing power.

It is therefore not surprising that Chile in recent years has abandoned master-plans, and left urban regulation entirely to the market. Moreover since 1976 the functions of the Ministry of Housing and Urbanism in the areas of extension services and control of building activity have also been abandoned. Indeed it is widely expected that the Ministry itself will be abolished in the near future.

The recent boom in construction activities which began at the end of 1980 which was brought on by the demand of the new elites is directly related to the new direction taken by Pinochet's free market policy. The aims of the regime to control inflation and attract foreign investment through export-oriented policies and the creation of an abundant, cheap and disciplined labour-force have not been as successful as was desired. Greater prospects for capital accumulation after 1980 were achieved through foreign commercial bank lending, bringing with it debt and the domination of the monetary system by the dollar. This in turn began to create considerable opportunities for the large property finance companies to monopolize the land markets and property transactions, instead of moving capital towards long-term productive investments.

A similar state of affairs could be identified in Uruguay. The 1968 National Housing Law (13) was the product of the struggles in the Sixties. It promoted social housing and the legalization of

popular organizations, and achieved some spectacular successes in creating economical housing (including mutual aid projects) in the climate of social mobilization.

Under the dictatorship this law proved to be inadequate. The free market philosophy in Uruguay found it impermissible to guarantee the long-term social reproduction of the least solvent sectors of the population through loans and subsidies; yet at the same time it welcomed the boom in construction activities for the elite which included apartments with swimming pools on a site of 400 m<sup>2</sup>. The mutual aid cooperatives and their representative body, the United Federation of Mutual Aid Cooperatives (FUCVAM), must seek out alternative political and financial mechanisms if they are to adapt to the new economic and social structures. Loans for this purpose are now being distributed for example by Holland and the Federal Republic of Germany.

Sri Lanka under the Jaya Wardene government is a very clear example of the dramatic change-over from an economy, oriented towards the domestic market and state intervention, to a export-oriented free market economy (with tax-free zones). This change-over is a triumph for the IMF and the World Bank and offers great profit making possibilities for foreign capital.

Current development tendencies are increasingly permitting a liaison of interest between key sectors of the industrial countries and less developed countries. The liaison does not contemplate a deeper examination of development problems and their relationship to existing economic policies - in particular the analysis of the longstanding housing problem, private settlements and the forms of self reproduction. This conjuncture of interests makes it very easy to attribute solutions to development problems on the one hand to the agencies of international cooperation, the transnational corporations, the World Bank, International Conferences of UN-experts; and on the other hand to the residents themselves, reducing the role of the state to that of spectator.

The romantic and ultimately reactionary nature of 'anti-technological' thoughts, that have emerged in the industrial countries about the 'Third World', contribute in a significant manner to the maintenance of their underdevelopment.

Finally, this conjuncture of interest has also produced a 'dialogue of the deaf' between those who advocate economic growth and those who reject the consequences. The first stand for the upgrading of the tax system, foreign credits for the expansion of export and import sectors, the fight against inflation, an inefficient use of resources related to the requirements of the market and a policy of privatization. The second call for more state intervention and point out the effects of policy on (un-)employment, the distribution of income, the concentration of wealth and the waste of resources on luxuries.

Housing policy does not escape this 'dialogue': the building sector has kept its army of the unemployed. As in the past, the absence of a long-term strategy has meant that the state rather than providing for the long-term development and strengthening of basic industry in general and the building sector in particular has instead turned to the building sector to mitigate unemployment and add a few frills to the production system. History repeats itself, housing policy is adapted to the new export-oriented forms in which the market has been internationalized.

## Notes

- (1) Those initially responsible for the 'developmentalist' or 'modernization' theory were the Argentinian Raúl Prebisch, ex-director of the Economic Commission for Latin America, and Felipe Herrera, president of the Inter American Development Bank. Their publications are available at CEDLA.

The economic origins of modernization theory can be found in Rostow (1967), Moore (1955) and Galbraith (1955). Sociological versions are presented in Redfield (1940), Hoselitz (1960), Gemani (1967) and Parsons (1951). The theory has also been expressed in planning concepts in the areas of: spatial differentiation in Ferde (1968), Soja (1968), Berry (1969); spatial diffusion in Taffe, Norret and Gauld (1963), Riddell (1970); and spatial integration in Friedmann (1967), Berry and Prakasa-Rao (1968), Hilhorst (1969).

The theory has been criticized by many authors including Prebisch, Dos-Santos, Cardoso, Faletto, Amin, Mandel, Kay, Emmanuel, Beltelheim, Frank, Navini, Szentes etc.

- (2) The institutionalization of a self-help policy is also based upon the extension of political-ideological forms of integration into the 'marginal populations' in two ways:

- the expansion of financial and production activities of the private sector with the purpose of expansion of the market and appropriation of newly-produced interests on land.

An obvious example is the high priority that the public service of electricity receives in major cities of the Third World, contrary to other services (eg. drinking water, roads, transport, schools, health-care etc.). This of course means a steady rise in the sales of domestic electrical appliances (radio, tv, refrigerators) and thus the introduction of new values (free market ideology, individualism).

- with the institutionalization of a self-help policy the struggle for reproduction is directed towards

consumption issues (roofs, roads, water) and away from more fundamental issues of production (unemployment, monopoly, and foreign ownership). State self-help housing projects have great potentialities for controlling popular resistance.

- (3) "Notas Sobre el Problema de la Vivienda" E. Pradilla in *Arquitectura y Autogobierno* 7 Julio/Agosto 1977 UNAM Mexico.
- (5) Amongst others:
- Lima : Desco's editions from 1964, Dietz, Quijano, Weisslitz, Nun, Natos, etc.
  - Sao Paulo: Singer, Toledo, Perlman, Portes etc.
  - Ceylon : George, Silva
  - Santiago : Van de Scheuren, Castells, Lawner, Leeds, Portes, Mareno, CIDU-editions, Ministry of Housing 1970-1973.
  - Manila : much information is to be found on the international competition for Tondo, in UN Habitat Vancouver Conference; also: Gervais, *Le Monde Diplomatique* (1980).
  - Mexico : Castells, Numoz, Oliveira, Stern etc.
  - Bogotá : Pradilla, Jansen, Grupo de Estudios 'José Raumbundi Russi'.
  - Ankara : Payne, Sewell.
- (6) This is the case with Belaunde and Sinamus in Peru with Indira Ghandi in India, Frei in Chile, Goulart in Brasil, Bhutto in Pakistan, Nagsaysay in the Philippines, Ferai in Argentina.
- (7) In this context it is not surprising that the inhabitants of Tondo - the largest slum of SE Asia (1968: 44,000; 1972: 165,000, 1978: 500-800,000) warmly welcomed Mrs. Marcos the night before the elections of 1978, despite the level of conflict between the slum-dwellers and the government.
- (8) Departing from the new that the concept of accumulation of capital embraces fundamental social and political elements. The concept in this

context includes not only purely economic processes (eg. production capacity, using variables like the aggregate levels of savings and investment opportunities etc.); it can also be formulated in terms of 'social group in conflict' and the influence that accumulation has on these conflicts.

- (9) 'Conventional' as used here refers to a planned and institutionalized policy for the low income sectors that includes financing, planning, and the regulation of property and land (official housing and sites and services programmes) with or without technical assistance and user participation. 'Unconventional' refers to popular activities (accepted in a variety of ways by the dominant class(es)) that relate to housing and sites and services programmes with or without technical assistance and popular participation.
- (10) The definition of phases is derived from D. Slater in "Imperialism and the Limits of Capitalist Transformation at the Periphery" *Industrialization and the State in Latin America*, team Carriere (ed).
- (11) Schweinberg, Catalan, Arrata, For Fortier, 'A Contrapelo del Desanillo' G. Carn, November 1980 *Le Monde Diplomatique*, Vuscavic 'Sobre la CEPAL' *Le Monde Diplomatique* 1981.
- (12) Speech of President Pastrana in 'Políticas de Vivienda del Estado Colombiano' E. Pradilla published by M. Castello (1974).
- (13) We refer to the 'Ley Nacional de Vivienda' of 1968 with the regulation and reorientation of the 'Direccion Nacional de Vivienda' (DINAVI). As a consequence of the Law FUCVAM emerged in 1970. Ten years later this organization included 120 housing corporations that together have distributed 6500 houses in Uruguay.



# The Politics of Urban Residence in Latin America

Rod Burgess

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## INTRODUCTION

The purpose of this article is to restate the significance of the institutional forms of political mobilization, and the domination-integration function of the state within a Marxist theory of the low-income settlement process in the Latin American city.

We have concentrated on the forms of political integration used by the state when confronted with popular urban demands, and the corresponding forms of institutional activity that these groups use to make these demands.

## CURRENT DIFFICULTIES IN THE MARXIST THEORY OF URBAN POLITICS

In the structuralist reading of Marx the elements of this urban system are identified as:

1. P (Production) - spatial dimensions of the production of goods, services and information.
2. C (Consumption) - spatial dimensions of individual/collective social appropriation of the product: housing, cultural and recreational facilities.
3. E (Exchange) - spatial dimensions of the exchange between P and C, within P and within C. (e.g. transport, commerce etc.)
4. M (Management) - process of control of relationships between P, C and E (e.g. urban planning agencies, municipal institutions etc.)

It is specifically through the management element that the urban system is articulated to the political system, and the relationship between the various elements regulated. (Castells, 1977)

The state is an expression and an instru-

ment of class relations, and as such it acts according to the relations of power between social classes, and generally in favour of the hegemonic fraction of the dominant classes. Castells (1979, 42-43) argues that state intervention 'policises the totality of urban contradictions, transforms the state into a manager of the means of daily life, and globalises and politicises the conflicts which emerge in this sphere'.

It follows from this that any adequate account of the issue of the access of low income groups to land, housing and the means of collective consumption must be able to unite in one theoretical structure, an account of the low-income settlement process for the Latin American city with the political activities of the state and the various social classes centred on their provision.

However, there also remain serious difficulties with this account of the political processes associated with the urban demands of the low-income groups in the Latin American city, and the state's response to them.

Firstly, it is absolutely sure that this account of the low-income settlement process is contained within an overall theoretical perspective. The function of property capital is to generate absolute and differential rent through normative changes in land use. Property-capital is most active in geographical areas suitable for commercial development, since it is in these areas and with this type of development that property capital can maximise its profits. It is of course in the 'inner city slums' surrounding the centre, and the central receptor areas for incoming migrants, that these opportunities are primarily concentrated.

The structural inability of low-income groups to acquire land and housing commodities developed by private and public sector alike, results in an exodus of low income groups from the centre of the city.

Several objections can be raised to this approach. First, it is by no means certain that the influence of property capital on the evolution of the urban residential structures in Latin American dependant social formations is of the same order as that experienced in the cities of advanced capitalist societies, although there can be no doubting to its strong presence. Second, though it offers a more satisfactory account of the low-income settlement process than that provided by bourgeois empirical theory (Turner, Manging et al). They interpret this outward movement in terms of the utility maximising behaviour of low income groups under a fundamental assumption of economic and social mobility with increased residence in the city. There are many empirical aspects of this account that need to be integrated with the expulsion model.

Secondly, the concept of the state employed by the French school has been heavily influenced by the structuralist interpretation of Marxist theory provided by Althusser and Poulantzas. The state is neither the 'neutral' institution of liberal theory, nor is it the passive and direct instrument of the dominant classes as seen from the Stalinist perspective. Rather the state is also an expression of society and thus both 'the cristallisation of the historical process and the expression of contradictory social relations which are at work in each period, and in each social formation' (Castells, 1979, 181).

On the one hand, we can agree with Castells (1977, 261) that the study of urban politics breaks down into two fields - the study of urban planning and the study of urban social movements, but it must be said that in the elaboration of this theoretical framework in Latin America there has been an inordinate degree of emphasis on the domination-repression function of urban planning, and a corresponding lack of interest in the structures of domination-integration that are also vitally important aspects of inter-class relationships.

Thus the relationship between urban planning and low-income demands for access to land, housing and the means of collective consumption, has been understood primarily in terms of domination-repression rather than domination-integration.

#### AN UNIFIED MODEL OF URBAN POLICIES

The merits of this analysis lie in its ability to articulate the activities associated with the low income settlement process with urban processes in general. However, though it stresses the politicisation of the urban process as a result of state intervention, it has concentrated on the 'repressive' functions of the state, and on the 'extrainstitutional' nature of the political processes associated with urban demandmaking by low income groups.

#### URBAN DEMANDS

At any one time in the urban system there will arise a series of demands from low-income groups based on access to or improvement in housing and the means of collective consumption, and the resources that facilitate this access. These demands will be addressed to the various institutions of the state because it is the state that is entrusted with their provision, with the regulation of the land market, and the solution of the housing problem.

Demands will be made for a whole range of indispensable services - access to bus routes, garbage collection, the construction of local schools, nurseries and health-centers, meeting halls, churches, police stations, cultural and recreational facilities and so on.

Sometimes the demand can be for a complete package - for a systematic and integrated redevelopment of the settlement in the form of an upgrading project.

As we have seen the state is entrusted with the provision of the material supports necessary for the simple and expanded reproduction of social labour power: it does this in ways that are designed to maintain the political and ideological domination of the ruling classes.

## POLITICAL MEDIATION

These urban demands will be mediated through the political system where they will find either an 'institutional' or 'extra-institutional' expression (Castells 1977, 372-373; Pickvance, 1976, 209).

Institutional action takes place within the existing politico-legal framework. As a consequence it will seek to separate urban issues from general social issues by pursuing institutionally defined objectives that have as their goal the planned intervention of the state. Institutional forms of political mobilization around urban demands usually involve the settlement being integrated vertically with political structures outside of the community (to political parties, both pro-government and opposition, to trade union structures, regional migrant associations etc.) Indeed horizontal connections with other settlements making urban demands may well be weak, and indeed kept weak (as a result of the politics of divide and rule).

Extra-institutional action takes the form of various types of illegal action and the formation and membership of illegal political parties. Mostly it takes the form of an "urban social movement" in which urban demands are linked to the political and economic aspects of class struggle, in such a way as to unite urban contradictions with broader political and economic contradictions (Castells, 1977, 378).

Finally it should be noted that the distinction between institutional and extra-institutional forms of political mediation tends to make static what is in effect a dynamic situation. Any settlement can shift its political allegiance from one type of institutional participation to another, or indeed to the extra-institutional form.

## THE POLITICAL ROLE OF THE STATE

Some of the most serious of the contradictions that the state has to resolve, arise out of popular urban demands, and the clash of class interests that arises in the process of capitalist urbanization.

Here the state can assure class domination through policies that are either based on integration or repression.

Castells gives three forms of integration:

1. The use of state resources for political purposes through a complex interaction of extended patron-client relationships, the governing party and the state.
2. Comprehensive control through the integration of settlement organizations with the vertical and hierarchical structures of the state at a national, regional and local level.
3. The state encouragement, sponsorship and organization of self-help projects.

The political initiative or response adopted by the state to urban demands will depend much on the balance of forces between the dominant and dominated classes, and the composition of the bloc in state power at a particular conjuncture. When the political expression of these demands takes the form of extra-institutional activity (an urban social movement) then the state will use (either before or after integration measures have been tried) all of the instruments of legal military and administrative repression in order to maintain "order and legality". Indeed the sponsorship of invasions and illegal settlements by the legal opposition may under certain conjunctural circumstances be a sufficient motive in itself for the governing party to call in the agencies of state repression (policy, law, army) to secure eviction.

Elsewhere where land has been invaded that belongs to powerful landowning interests, the state will most commonly use repression to defend the principle of private property. Where there is difficulty in securing this goal through the militancy of the invaders or because of proximity to elections, the state will use repression to limit the size and scale of the settlement, whilst at the same time regulating the conflict by securing financial compensation to the landowner.

The vital role of the state in adapting the urban form to the requirements of the reproduction of capital will often demand the eradication of squatter settlements and inner city slum housing in the process of

urban renewal, road expansion, etc. Here the state will use a series of legal instruments of repression to secure its goals (compulsory purchase, valorization taxes, increased rents), if necessary backed up police or military support.

The successes of these various measures will again be contingent on the conjunctural balance of class forces both within and between the competing social classes. The state can also maintain a constant repressive presence through strict adherence to planning and municipal codes (particularly in relation to illegal settlements), national legislation and by the strict policing of vacant lots.

#### Note of the editor

Rod Burgess refers to the following publications:

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(Translation of "La Question Urbaine" Paris; Maspero, 1972 & 1976)

Castells, Manuel "City, Class and Power" London, Macmillan, 1979.

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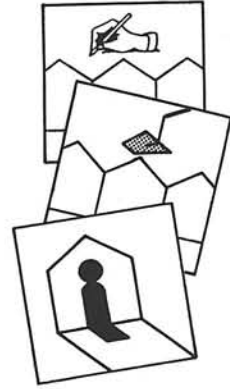
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# The Determinants of Latin American Housing Policies

## Emilio Pradilla

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'Housing Policies of the State' means the combined economic, legal, political and ideological activities of the constituent elements of the state and the social agents resp. classes that affect production, exchange, distribution and consumption of housing. Because of the complex articulation of social relations this greatly goes beyond what explicitly is recognized as 'housing policies'.

The bourgeois state has to guarantee the reproduction of the capitalist mode of production and so to maintain the contradictions between the classes and to conciliate the secondary conflicts inside the dominating class. The state is specified by the political regime which is defined by the level of development of these conflicts and the concrete correlation of forces derived from this struggle.

The intervention of the state in the housing process can modify its course, but cannot change its capitalist character. All analysis proceed from the precise determination of the degree, level and specific forms of state action in the different components of the housing process, and from the level of development of state monopoly capitalism in the sector.

The need of the state to legitimate its own action particularly before the exploited class determines the presentation of the state policy in form of a conciliatory ideological discourse. By identifying the real content of this discourse and by establishing its non-correspondence with real actions and its determinants, the conditions for the analysis of state policies are to be found.

The course of development in Latin America since the 19th century when the recently independent countries embodied the 'right to private property' shows a sharpening of the housing problem. All steps towards today's dependent capitalism (the initiation of capitalist agriculture, the entrance of foreign industrial capital, the domination of finance capital in the housing sector) increased the needy portion of the urban population (migrated peasant and a growing 'army of the unemployed') and reduced their access to the housing market.

The Latin American states recognize the reasons for the housing problem as: demographic growth, the low income of the population, the problem of finance and the valorisation of land; and they recognize the necessary reasons for intervening in the problem as: the need to increase the productivity of the workers' labour, the intensification of social conflicts around the housing problem and the requirements for economic and social development.

This understanding of the housing problem is the ideological justification for interventions based on the principle of private property in land and housing.

Analysis of the most direct interventions in the housing sector (the multiple interventions in the private financial apparatus and in the landed property, and the promotion of housing production) shows that the state stimulates private property in land and also patronizes the increasing rents that the landowners appropriate for themselves.

Stripped of their ideological cover the real functions of Latin American state housing policies are:

- a. to collaborate, through housing subsidies for workers and wage-earners or through the simple control of the state apparatus, in the reproduction of the labour-power that the different fractions of capital need for the continued operation of the system of exploitation. Its purpose then is to increase the productivity of labour, to reduce the real wage and increase relative surplus-value;
- b. to support the process of valorisation reproduction of that capital involved in the housing process (productive, commercial and financial capital) and in particular to regulate the flow of finance capital towards the housing construction sector;
- c. to preserve and expand the right to private property in urban land, that guarantees the right of appropriation of ground rents to its owners, and expand these ground-rents whenever possible;
- d. to conciliate the secondary oppositions between productive capital and landed property; and to support the process of consolidation and integration of landed property and finance capital;
- e. to mediate in the social conflicts that arise out of the housing shortage and the severe shortage of urban services in the houses of the working masses;
- f. within the limits that the natural development of dependent capitalism fixes for itself, to use housing policies as an anti-recessive mechanism through its effects on the production of construction materials, the utilisation of idle capital and the absorption of unemployed labour-power;
- g. to reproduce a housing ideology that legitimates its action, which, moreover, moves in the direction of increasing bourgeois political-ideological domination.

In terms of direct action, the state housing organisations act as:

- a. state capital companies that produce housing commodities for the middle sphere of circulation, fixing their prices according to the laws of the market;
- b. promotional finance capital that irrigates promoter capital or private building capital through the dual mechanism of the direct financing of construction, or through credit for consumption;
- c. a client-partner of private construction capital that realises its construction tasks;
- d. a client of national and foreign finance capital, from which it obtains the mass of necessary rotating capital and to which it guarantees the average rate of interest;
- e. the client of landed property from which it obtains, the land that it requires for its projects through the payment of capitalised rents;
- f. a credit institution that assumes the task and risk of recuperating the capital invested in housing through the amortisation payment, thus freeing productive capital from this task, and guaranteeing the rapid rotation of capital.

The real results of its actions are:

- a. the housing that it promotes is only accessible to a minority sector with middle and upper incomes which includes only limited sectors of the working-class and wage-earners with higher income levels;
- b. when it establishes self-building programmes, that are directed towards social sectors with relatively lower incomes, it reproduces the slum and aggravates the economic situation of the beneficiaries;
- c. it aggravates urban dispersion and increases the investment requirements for infrastructures and urban services, thanks to its locational policy;
- d. it is an important factor in urban land speculation because it generates new ground rents and permits their appropriation by non-productive land-owners.

The barriers to the solution of the 'housing problem' are:

- a. the over-exploitation of the working-class and the absence of incomes amongst wide sectors of the population who are subjected to underemployment and unemployment in conditions that determine the inadequate incomes of the majority of the population and prevent it from being converted into solvent demand for the finished house;
- b. political repression that victimises the popular movements for land, housing and urban services;
- c. the high price of the house determined by the capitalist conditions of its production, and in particular, by the inclusion within this price of all the profits of the diverse capitalist agents participating in the process;
- d. the presence of ground-rents, the parasitical profit obtained by the land-owner thanks to the private character of landownership;
- e. the low level of development of the productive forces in the sector that is determined by: the obstacles presented by the monopoly in urban land on the circulation of capital, the tendency to monopoly concentration activity; the dispersion of productive units, the variations in the rhythm of investment in the sector, and the limited size of the housing programmes;
- f. the dominant role played by finance capital in the housing process.



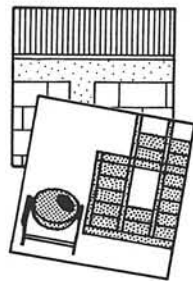
In these conditions, the majority of the population of Latin America have no other alternative than to continue to resolve their housing needs through recourse to the so-called 'subnormal' forms: the inner city slum and the shanty town. It has to continue to run the gauntlet by invading land so that it can free itself of the yoke of landed property, and if this is not successful as a result of state repression, it will remain the prisoner of illegal land speculators, extortioners and usurers.

The housing shortage of the workers and working masses will tend to be further aggravated by the maintenance of the existing model of capitalist accumulation and existing political tendencies.



# Technology and Low-Cost Housing

Miguel Lawner



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SOCIAL HOUSING IN THIRD WORLD COUNTRIES

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Shorted by Alice Erkelens and Maria Blender

In the debate over the most appropriate technology to face the crisis in housing in developing countries, the use of technologies labelled "local" or "intermediate" and by many conceived as rationalized primitive techniques but never precisely defined has been recommended. This terms are used to refute the negative effects of the indiscriminate transfer of advanced industrialized technologies to this countries. Could the use of these supposedly intermediate technologies prevent or at least reduce the process of deteriorating housing standards in the cities of Latin America, Africa and Asia?

## EXTEND OF HOUSING DEMANDS

In Latin America, to which we refer, the total population comprized 157 million people in 1950 and rose to 320 millions in 1975. During the same period the urban population increased from 25% to 63%. This growth of 160 millions represents exactly the population living in Latin America 25 years earlier. This type of accelerated urbanization carries with it a character of urban settlement that had been known previously: the so-called *barriadas* in Peru, *ranchos* in Venezuela, *poblaciones*, *callampas* or *capamentos* in Chile and what we generally call unauthorized urbanization.<sup>(1)</sup> Today this type of settlements represents the predominant character of urban growth experiences in Latin America and other developing regions, as a decreasing number of people establish themselves in a city in accordance with the conventional urban precepts.

The percentage of the urban population living in these unauthorized urbanizations is estimated around 30%, which corresponds to some 60 million Latin Americans in 1975. This could increase by another 150 towards the year 2000, if the ongoing process is not changed substantially. Even under the extreme assumption that fertility rates would decline to such a level as to impli-

cate a zero growth around the year 1995, the population in the region will keep on growing for a very long period. Only after some 50 years the rates currently seen in Western Europe could be expected and in that case the demographic growth could be slowing down in the following 100 years.

The conclusion emanating from the above analysis is, that demographic pressures constitute a determining factor in themselves, that for a long period to come they will continue to aggravate the housing demand, which incites the doubling of the forces directed at maximalizing the available resources, including technological resources. If not, the impact on the urban areas will be of such a character that the concept of a town as we have known traditionally, will be replaced by the emergence of a different type of urban agglomeration, wherein the conventional neighbourhoods will continue to constitute islands in the middle of an ocean of unauthorized settlements.

## UNAUTHORIZED SETTLEMENTS AND LOW INCOME POPULATION

The existance of *barriadas* or *favelas* should not always be associated with a low income, underemployed or marginal population.

But why do people endowed with saving capacity for housing establish themselves in illegal urbanizations or are involved in some invasion?

In our opinion the following factors are of influence:

### a) Speculation of land

Through speculation excessively raised land prices force large groups either to establish themself on land prohibited as residential area by the Planning Regulations or to resort to pirate urbanizers dealing in estates

outside the urban radius or in estates not developed and equipped as required by the Urban Planning Councils. Any urban policy with social content has to counteract the urban speculation to make sufficient land accessible for the low and lowest income groups.

- b) The absence of adequate financial mechanisms  
The majority of the countries are lacking adequate financial institutions to canalize the saving capacity that exists among various middle or middle-low income groups and to prevent these groups, dependant on the limited possibilities in the unauthorized urbanizations, to acquire an acceptable housing situation.

- c) Administrative corruption

Local authorities collaborating with the urban mafias push on the proliferation of illegally built neighbourhoods. The battle against it points at the interests of those groups whose powers emanate precisely from urban speculation: an important fraction of the dominant strata and the administrative apparatus.

#### DEFINITION OF A POLICY

The definition of a policy is the prior condition for making housing acceptable to low-income families. It is required to clarify the question whether housing is a right to which every citizen can aspire, like health or education services, or is it a good to be obtained in the market? The housing policies of the whole capitalist world are dominated by the commercial concept, which in poor countries leaves between 40% and 60% of the population outside a free choice in housing. They absolutely lack the financial resources or need to be subsidized.

The simplest solution would be raising the salaries. But this implicates the materialization of profound social changes which Latin American countries seem to be far from capturing. Instead a deterioration in the incomes of the population is observed, and the situation will tend to worsen if the neo-liberal models of development prevail by accentuating the concentrations of wealth at impossible limits

by amplifying the sector of the population affected by the insufficiency of its incomes.

An illustration can be seen in the changes in distribution of incomes in Brazil between 1960 and 1970. The average income of the poorest 80% of the population increased negligibly. For the 15% immediate superior population the average income rose some 33%, which corresponds with the national average, and for the top 5% the increase in income amounted nearly 80%. In this way the concentration of incomes is transferred from the low-income population to the high income population.(2)

If we don't want to leave a considerable percentage of the population outside the basket of solutions we have to take this regressive tendency into every consideration.

#### LIMITATIONS OF SELF HELP BUILDING

Based on John F. Turner, self-help building often is promoted as the most appropriate system to meet the needs of the strata without financial resources. The propagation of self-help building has led to the creation of some specialized agencies with the aim, not so much to build popular housing but to "assist" and "organize" the users, effecting a reconciliation of public action with the self-help building. In my opinion, the approach to present policies that coexist as exclusive is a mistake.

There will always be an important section in every society devoid of sufficient income to finance a minimal dwelling and incapable or not prepared to integrate into some kind of self-building. It would be absurd to deny that the self-help building has been the only solution open to innumerable modest families whom the prevailing system did not leave any other option. But it is a different matter to publicly proclaim the self-building as ideal in order to solve the low-cost housing problem in the developing countries.

Ever since Turner carried out his research in the Limanese *barriadas* during the 50s, enough time has passed to be able to evaluate if the gradual improvement in these *barriadas* is actually coming about,

attaining to levels comparable to those of other conventional settlements. It has been assumed that the *barriadas* would experience a consolidation in terms of urban infrastructure, as well as a substitution of transitory materials in their dwellings by distinguished materials.

According to the 1972 National Census of Recent Settlements (3), there is still a very limited number of dwellings relying on the appropriate drinking-water provisions. The lack of water not only affects the health of the inhabitants, but also their savings since the provisioning by truck or tricycle is more expensive than the service by water-pipes.

With regard to the quality of the dwellings the same census recorded that 48% of the *barriadas* rely on dwellings of permanent materials, while almost 20% keep on living in homes of carton or mats and another 18% live in adobe houses seriously risking their life, given the seismic condition of the area.

But the most astonishing figure is the one referring to density, showing 2000 inhabitants per hectare in settlements where there are predominantly one or two storey buildings. The problem of overcrowding is serious and each *barriada* tends to become denser.

In summary, Lima confirms what some Peruvian planners correctly called "changing metropolitan Lima into shepherd's huts". (4) According to the census of December 1976, 54% of the population lived in a dwelling officially qualified as a shepherd's hut. (5) 25 years of *barriada* history in Peru leads to the conclusion that its alleged consolidation similar to a conventional urbanization has not occurred. These are settlements that will never reach a peak, since already they are beginning to age.

Because the general living conditions of the lower strata have deteriorated, the families' dwellings on the land

Because the general living conditions of the lower strata have deteriorated, the dwelling on the land of the families which have experienced some degree of consolidation, transforms into a commodity suscep-

tible to extract supplementary rents and contributing to the meager incomes they earn. The first *barriadas* obtain an attractive location once the city grows towards the periphery and they start to play the same role as the shepherd's huts joined to the central city center. They serve as transitory repositories for recently migrated families or for very low-income groups, that only can pay for renting one room or for the right to lodge on the inner courtyards of these first *barriadas*.

#### REVISION OF THE EXISTING NORMS

Within the definitions of a housing policy for the large needy masses the standards and norms that prevail in Latin American countries and which in general have been transferred from socio-economic realities and fysical environments that usually differ very much, have to be revised.

This is a dynamic factor that evolves with the development of the society. Every country has the duty to constantly revise and adapt its prevailing standards and norms, preventing them from becoming an obstacle to the prevailing programmes or creating a squandering of the available limited resources. There are different types of standards:

- a) Standards of space that fix the minimum size of plots, the number of buildings or units per surface or the number of persons per room and/or per hectare. The minimum sizes of plots in popular settlements have been reduced considerably, from about 200 m<sup>2</sup> 30 years ago to approximately 100 m<sup>2</sup> nowadays, or even 24 m<sup>2</sup> in the case of a New Delhian programme. The standards of space have been modified without the interference of a scientific evaluation capable of guaranteeing the minimum conditions of quality that have to preserve the environmental conditions.
- b) Technical standards that establish the proprieties and the strength to be fulfilled by the diverse construction materials, the quality and quantity of the public services, the minimum isolation levels for acoustics

or heat or ventilation.

Under this item one will stumble upon the commercial interests of monopoly industry supplying building materials or upon crazy things like norms transferred from countries with cold climates to tropical regions.

- c) Standards for equipment that establish the action radiuses of community services such as schools, health centers, and others. Within this item the cultural customs of every country weigh heavily and they may make demands for some type of special services that are not common to other societies.

In short we decide on the most profound revision of the standards and norms prevailing in the developing countries, divesting ourselves from any prejudices, searching for the best adaption to the specific determinants of every reality and looking after the interests of the minimum preservation of the quality of homes and environmental conditions. Action in this way will increase the rendement on the available resources without any other investment than the one necessary to finance the research on this subject, an aspect in which the international assistance can make a great contribution.

#### ON THE APPROPRIATE TECHNOLOGIES

Let us understand this concept as the search to achieve the maximum efficiency in the use of the available resources (human, financial, natural and technical), to produce a product at the lowest possible costs, within specified norms of quality. The final costs of a house are composed of items such as land, infrastructure, selling, administration, general expenditures, professional salaries, profits for contractors, etc. Building materials and manual labour are the items where the applied technology have the most influence. According to Strassmann (6) these items can be estimated at 48% of the total costs for a conventional house supplied in the market of any Latin American country.

If we would develop, for example, technological innovations of such a kind that they will permit us to raise the producti-

vity in these items by 30%, we would obtain a final saving of 14,4%. This analysis is useful only to place the technological variable in its precise dimension and not to idealize its possibilities by presenting it as magic wand that by itself will reduce costs. The technician has the task to maximize the use of the last screw, but he has to be concious of the necessity to act upon all components of the final sum.

There exists the erroneous tendency to classify the technologies into two broad fields: conventional and prefabricated. The truth is that even in the industrialized most advanced countries, these two types coexist, although the prefabricated systems form an overwhelming majority. Between those two extreme fields in building there is a great variety of intermediate conditions, resulting from the combination of conventional parts or stages with prefabricated ones.

In Chile, for example, the systems that we call rationalized, consisting of the improvement of the conventional type of building systems, have been developed sufficiently by way of optimizing the design as well as the building sequence on the site. These objectives are achieved through the employment of the techniques of standardization and modular coordination in the design and the use of programming techniques in the building, such as the critical path system.

In summary, without reaching for the technological most advanced systems, it was possible to reduce the building prices approximately 20%.

A subsequent step in the development of the system that we call industrialized implicates a qualitative change since part of the work has been industrialized in factories. We are referring to external as well internal parameters and also to the roofing structure, built with light modular elements, small and of moderate weight (in general capable of being handled by one person or through smaller equipments), fitted together mechanically.

Through these industrialized light systems a reduction in the quantity of constructive

work to be done on the site and a major speed in the building process have been achieved. Both achievements are relevant when massive housing plans are being confronted, like those formulated under the administration of president Allende in Chile. The speed on the job also has economic consequences since it generates a faster circulation of capital which, in capitalist terms, implicates a major utility.

A dwelling with a surface of some 40 m<sup>2</sup> built on the basis of those industrialized, light systems can be transported in one piece by a couple of medium size trucks which greatly reduces the incidence of transport of the total costs and permits installation in regions far removed from the main centers of production. This is an additional advantage compared with the tedious systems of prefabrication based on reinforced concrete panels, and wherein transport becomes a real limitation that reduces the radius of firms to a very small distance.

In terms of investment the light systems require a very simple ground plan, without sophisticated equipment, so that they are in a better position to resist the possible depressions in the market.

The development of the industrialized type of systems requires an industrial base of highly diversified building materials in order to produce a variety of wooden plates (bound or pressed), plain or corrugated sheets of asbest-cement, plaster, galvanized iron, aluminium, etc.

The majority of the countries classified by the World Bank as Middle Income among those on their way to development, have attained a degree of industrial development that permits them to implement easily systems that are similar to those stated above.

In our opinion this type of systems can adequately get along with the possibilities of the great majority of these countries and they are free from the problems created by more advanced systems. They do not require large investment capitals, they do not generate dependance on very sophisticated equipments, and they do not substantially reduce manual labour or demand a high level of specialization.

In the countries with a still incipient industrial development, we consider it indispensable to implement the building materials (basic and intermediate) industry in the most extensive and most rapid way possible. We are convinced that this is the basis for whatever subsequent improvement in the building productivity. This does not mean implementing everything everywhere. Those countries with soils that permit the production of bricks have to strive to putting up a brick industry; those with forestal resources to putting up a wood industry as soon as possible; those that are able to produce metals (smelted or rolled) to do it. Here is another fertile field for international aid.

Some people mistake the expression "local resources" for primitive resources and recommend for example the rationalization of primitive technologies such as those utilizing bamboo canes or palm leaves or straw.

The error lies in transferring technologies that are appropriate to rural areas to an urban context. On the one hand they assume that manual work will never be compensated, a situation that does not exist. The moment that manual labour will be compensated, however badly, this type of systems will not withstand the slightest comparison with the systems based on elaborated building materials.

For us the same judgement counts for proposals of the waste recycling type like those framed out in "Garbage Housing" (7) by Martin Pawley, who is a supporter of building houses on the basis of food tins or empty bottles or using old coach-work of the popular Citroën Dyane. In these proposals the consumption of manual labour is just as monstrous as in the foregoing case. It is not worthwhile to attempt to work out how many food tins would be necessary to build only one of the millions of houses that are needed today or how much manual labour is required to assemble the 200 food tins that would cover, for example, one square meter of ceiling vault.

The fundamental mistake from which the approach that rationalize primitive techniques as well as the one suggesting the recycling of waste depart, is the one to make misery acceptable for ever.

Many African countries, for example, just starting to break away from the backwardness created by the colonial exploitation they have been put through, are looking rightfully for the most rapid form to build up the industrial basis that permits them to raise the living standards of their population. Who could possibly recommend them an adverse attitude and suggest to them instead to rationalize their poverty?

Apart from this, also ideological values are standing in the way. Why would a modest African person have to accept to live in a house built of empty Coca-Cola bottles? Who would do this in Düsseldorf or in Copenhagen?

Many developing countries lack the necessary capital to start off the exploitation of natural resources, that exist in their soils. Our task is to contribute to making this happen as soon as possible.

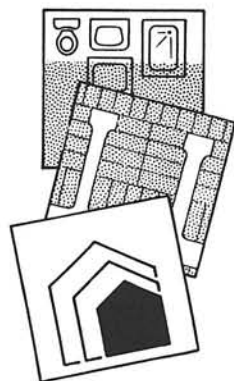
#### Notes:

- 1) "Population and the labour force in Latin America". Some Simulation exercises. CHARLES ROLLINS, Cepal Review, First Half in 1977.
- 2) "Economic Development in Latin America", Original data from 1960 and 1970 censuses. CELSO FURTADO.
- 3) "Censo Nacional de Pueblos Jóvenes", I Volumen. Datos de Vivienda. SINAMOS, Peru, 1972.
- 4) "Tugurización en Lima Metropolitana". DESCO, Centre de Estudios y Promoción del Desarrollo. Lima, 1979.
- 5) "Evaluación del Plan Desarrollo 1975-76" PERU, Ministerio de Vivienda y Construcción. OSP. Diciembre 1976.
- 6) "World Employment Program Research", W.P.Strassmann, ILO, Geneva, 1974.
- 7) "Garbage Housing", MARTIN PAWLEY, The Architectural Press Ltd. England, 1975.



# Evolutionary Housing Principles and Criteria

Francisco da Silva Dias  
Nuno Portas



Main chapter of "Habitação Evolutiva"  
first published in 1970 by the  
Portuguese Laboratory of Civil Engineering LNEC  
Abstract by Maria Blender  
and Gualdino António Duarte Pais

## DEFINITION OF THE PROBLEM

1. Social purposes  
Economic characteristics of the needy population

The Portuguese urban population in need of housing can be classified in three groups regardless of their income:

The first group contains the people who can -directly or by the credit system- rent or build a house. They do not need a state intervention, except during the physical planning of the territory and in order to assert quality and safety in the construction.

The second group -people who can not buy or rent a house because of the limitations of the free market situation, but who can buy a non-speculative house- needs state intervention in order to decrease the interest rate on loans or to increase the credit possibilities.

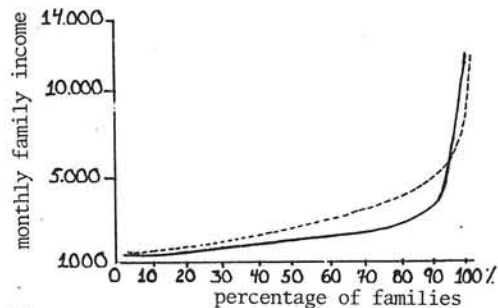


Figure:  
Income distribution in Portugal in 1970  
according to two different official  
estimations

The third group are the people who have no regular income or who have a regular income only at subsistence level. They can not rent a house but they have a capacity of initiative and they are able to work. They need an intervention of the state. The state can base its strategy simultaneously on three aspects:

- It has to guarantee that people can stay until they reach urban integration. In order to get this, people may use the equipment and they also may work. The housing policy of the state has to stimulate simultaneously investments in services and goods.
- Improvement of the community facilities such as for health and education.
- A study on the technical and social possibilities of an "evolutionary housing" in order to determine a relation between the realized structure and the mobility of social structures, specially in relation to the size and income of the families.

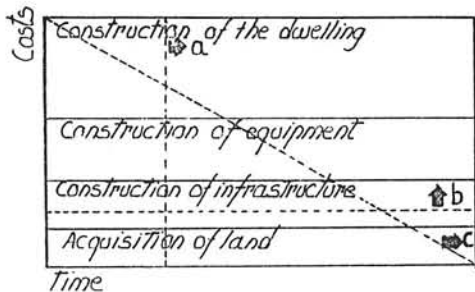
2. Strategy in relation to the variety of time and application of viable means

Construction or renovation of housing consists of the following integrated phases:

- acquisition of land
- construction of infrastructure
- construction of equipment
- construction of the dwelling

These phases are related with the sequence of time and the global costs. There are three possibilities of operating:

- a) The different phases are realized vertically. This implies an uneven distribution of means. The population in need of housing increases, for only a little proportion can immediately be completely served.



b) The different phases are realized horizontally.

Development of land is done first for the whole population while construction of equipment and dwellings is deferred.

c) The successive phases are vertically graduated, from the availability of land till partial investments in the dwellings. Contrary to the other strategies this one incites individual investments of labour and financial means and is therefore the most economical one.

### 3. Technical-economic conditions

The system to develop has to comply with the following points.

Concerning the internal organization of the house:

- low initial costs (the costs for the land, equipment and construction of a basic unit)
- maximal utilization degree in every phase of development
- flexibility in the internal organization.

Concerning the urban lay-out and urban integration:

- economic and social profitability
- a high capacity for the creation of urban spaces
- a high capacity for integration in the city.

Concerning construction process and building materials:

- simplification of the construction process
- industrialization of the most complex construction elements
- coordination of dimensions.

### 4. Occupation of the land

Two types of factors determine the way of occupation:

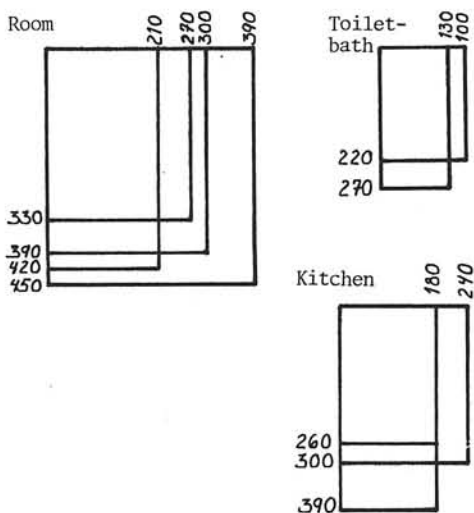
firstly climatic factors and local conditions, such as view, slopes, etc; secondly socio-economic factors. Environment and urban comfort are determined by the relation between open and closed spaces, the volumes and the lay-out. The use of the spaces is conditioned upon the habits, cultural level, income, age and business of the occupants.

### DEFINITION OF THE INITIAL NUCLEUS

#### 1. Functions and requests of the spaces

An appropriate initial nucleus is composed of four spaces:

- a room, which in the beginning covers, besides the functions of a living- and dining-room, the functions of the sleeping rooms. The surface is minimally 14-18 m<sup>2</sup>.
- a kitchen
- a toilet-bath
- a courtyard or veranda or playground, covering different functions corresponding with the level of development of the house.





## 2. Determinants of development

The development of the initial nucleus is determined by the composition of the family and the available economic means of the family.

A favourable location of the three poles equipment, dwelling and work entails

- a higher qualification of the work and a higher productivity
- more free time
- a lower rent to productivity ratio
- social security
- an increase in communal participation

A disagreement between composition and economic means of a family and the satisfaction of basic needs can be absorbed by varying the indices of occupation, of privacy and of physical comfort (in the environment and in sanitation).

Some of these indices are difficult to quantify but it is possible to give limits.

- Index of occupation: between 8 m<sup>2</sup>/inh. in certain phases of development and 16-20 m<sup>2</sup>/inhabitant.

- Index of privacy: between a one-room-situation and a optimal capacity of one sleeping room for two persons.
- Index of physical comfort: the external walls of 25 cm and the internal walls of 15 cm ceramic hollow blocks; a roof covering of tiles over cement slabs or over a construction with covering; sanitation in between a reduced situation (water supply and sewerage) and a completed water block (kitchen and toilet-bath, with hot water).

Some of these limits can only be allowed with the prospect of an improvement of the situation in time.

## 3. Operations of development

The initial nucleus can be developed through amplification or through subdivision of the house or by means of finishings and equipment.

Two types of initial nucleus can answer quantitative necessities: a divisible nucleus and an amplifiable nucleus.

The integration of immigrated population reckons with different steps:

- a) an individual with unsecure employment e.g. in the building sector lives with others close by the job

b) foundation of a family; man and wife both work, living in a shelter

c) expansion of the family; the family moves or tries to amplify the shelter

d) eventually an increase in the family income.

## 4. Distribution of the resources

Calculation of the initial investments

The most important factors determining the costs are:

- useful area
- finishings and equipment
- construction process.

A reduction of the initial costs can be achieved by leaving the construction of parts of the finishings and equipment for later.

The amplifiable nucleus

Low costs are achieved through initially building only a minimal necessary surface and the accompanying elements.

Infrastructure:

water supply, sewage disposal, electricity, eventually the foundation walls for the whole house.

Superstructure:

a living-dining-sleeping room plus a water-block; this is about one third of the final surface.

Finishings:

doors and windows and the basic finishings of walls and ceilings.

Equipment:

pipd water, sewage disposal and electricity installations for the existing superstructure and necessary for a minimal sanitary comfort.

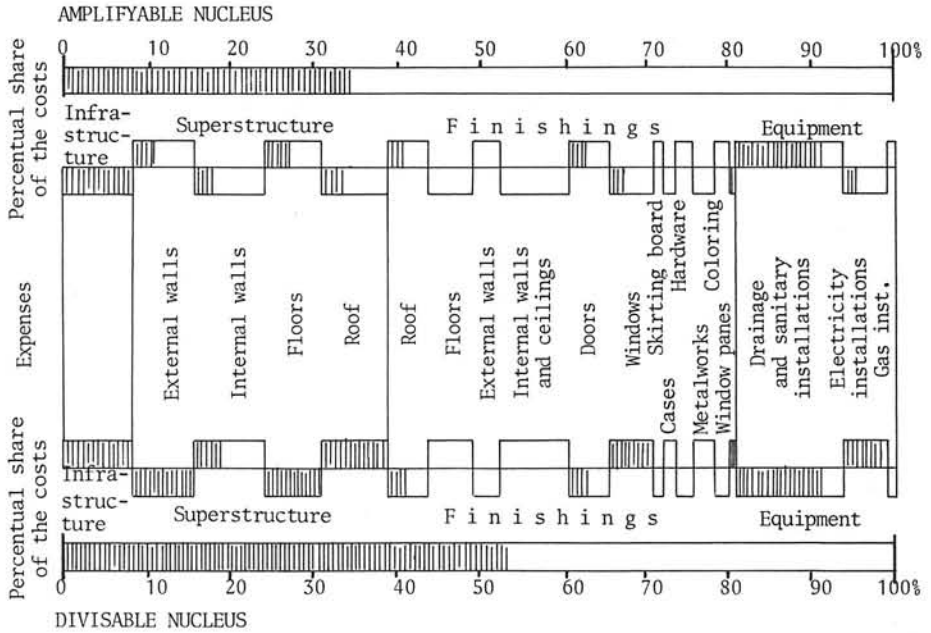
The costs of such an amplifiable nucleus amount about the 30-40% of the final costs of the house.

The divisible nucleus

Low costs are achieved through deferring the construction of partition walls and equipment.

Infrastructure:

complete.



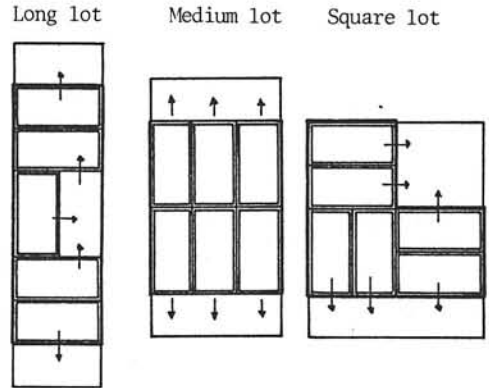
Superstructure:  
complete external walls and roof.  
Finishings:  
doors and windows and the basic finishings  
of the walls and the ceilings.  
Equipment:  
piped water, sewage disposal and electri-  
city installations for the existing super-  
structure.

The costs of a divisible nucleus amount  
about 50-60% of the final costs.

#### CLASSIFICATION OF TYPES OF SOLUTIONS

##### 1. Internal organization of the houses

In order to obtain an optimal typology it  
is necessary to determine a relation  
between the houses (denominated 'built  
modules') and the open spaces (denominated  
'empty modules'). The latter ones enable  
ventilation and entrance of daylight.  
Recognizing this relation and the form  
of the lot we can discern three character-  
istic types of lay-out:



characterized by a sequence of built and empty modules (generally there occurs a courtyard)  
characterized by a parallel formation of built and empty modules  
occupation in "L"-form, the built modules are developed with view on the empty modules

There exists a range of variations for  
each of these basic types.

Functions and relations of the different types of spaces:

Built modules

type 1:  
living, eating, separation of spaces

type 2:  
cooking, washing;  
necessary connections:  
kitchen - courtyard, kitchen - living room, toilet - rooms

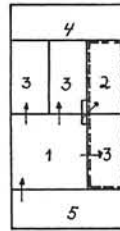
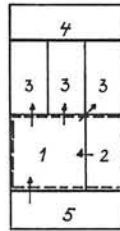
type 3:  
sleeping, hobbies

B Empty modules

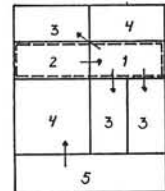
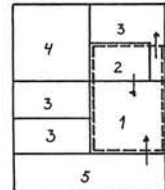
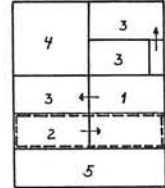
type 4:  
drying clothes, stay,  
ventilation, entrance of daylight

type 5:  
public or semi-public spaces  
for entry and social contacts

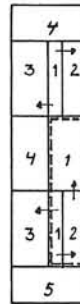
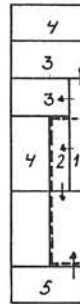
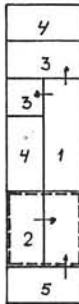
[ ] initial nucleus  
1,2,3... type of the module  
→ necessary connection



Medium lot



Square lot



Long lot

2. Development scheme

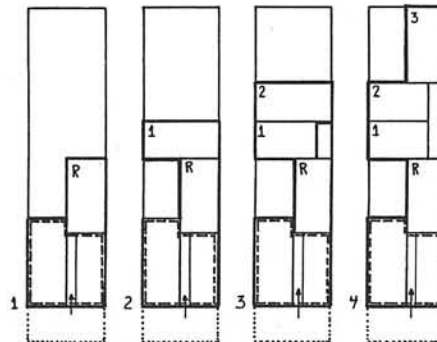
Thus we start with the requests of functions and surfaces, with the relations between initial and final costs, and the operations determining the development. With this we try to set up solutions based on a scheme of internal organization of the house, and on the expected development.

In every phase the following issues have to be known:

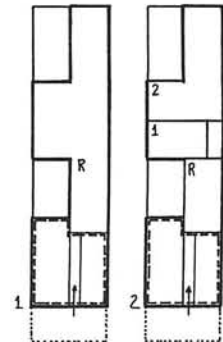
- level of satisfaction of the requests of functions and surfaces
- the actual costs as percentage of the final costs
- the contribution of the dwelling to the urban tissue.

LONG LOT

1 Exterior services (connected to the road)



Amplifiable nucleus



Subdivisible n.

This is in order to control and guarantee the housing of the population and the functioning of the urban facilities, the affordability and the possibility of development.

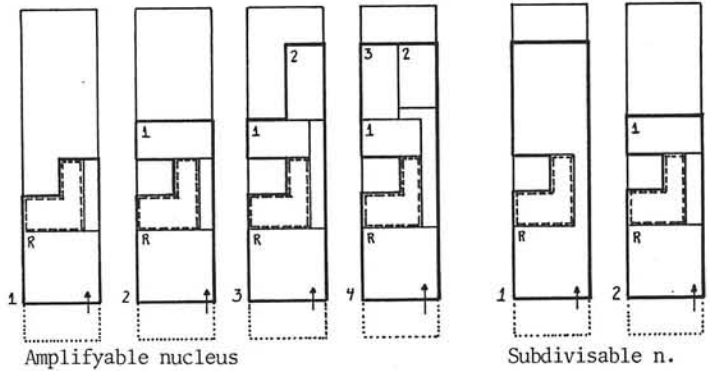
The following plans represent the steps of development for the mentioned types of lay-out.

Note:

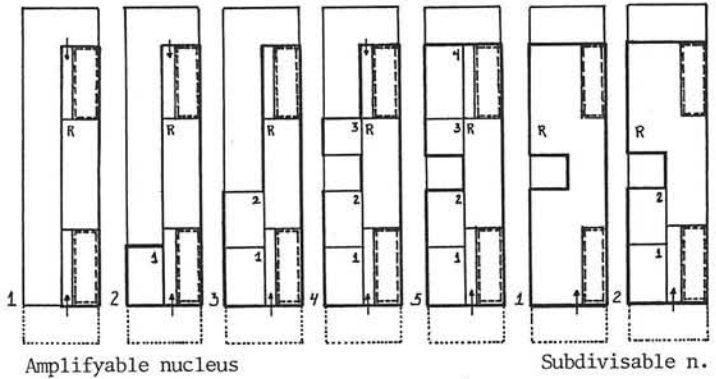
In practice the development might differ more or less from the presented scheme.

R = Room  
 see space type 1  
 1, 2, 3...  
 = Sleeping rooms  
 (space type 3)

### 2 Interior services (connected to the courtyard)

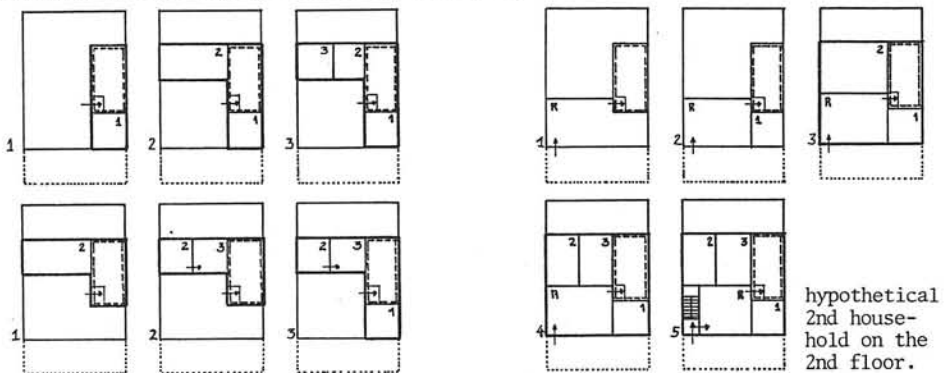


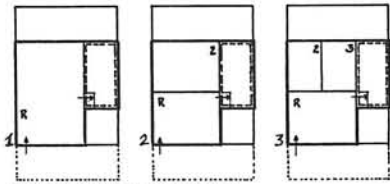
### 3 Lateral services



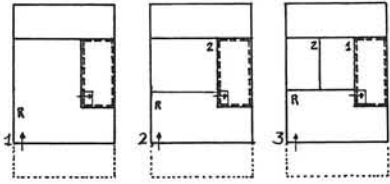
### MEDIUM LOT

#### 4 Posterior services (connected to the courtyard)

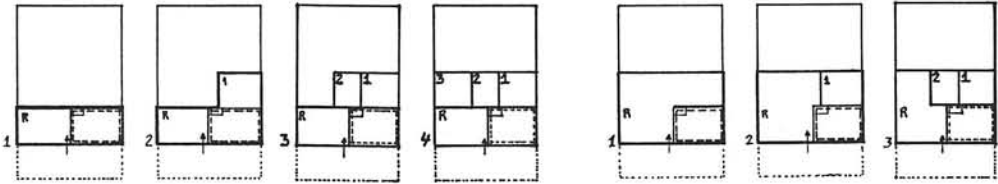




Subdivisible nucleus

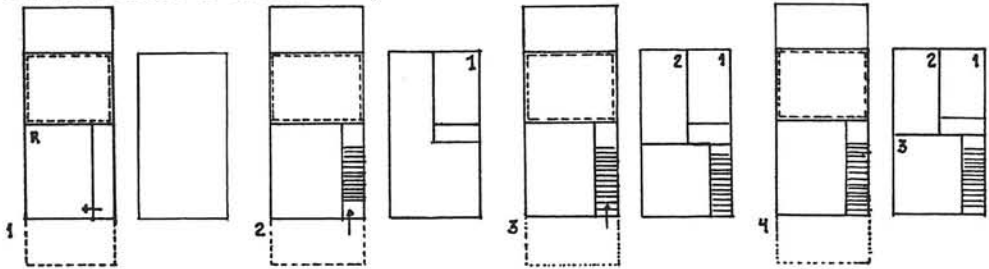


5 Anterior services (connected to the road)

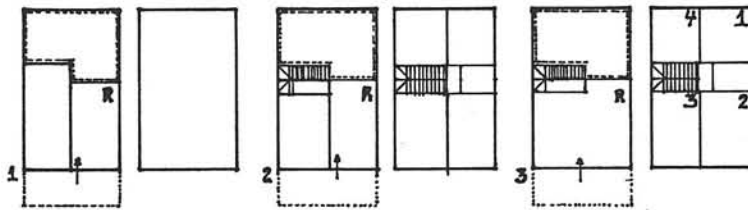


2 storeys

6 Lateral access to the 2nd storey

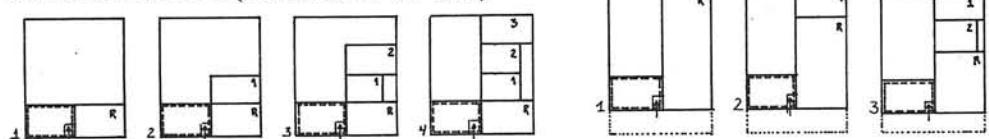


7 Central access to the 2nd storey

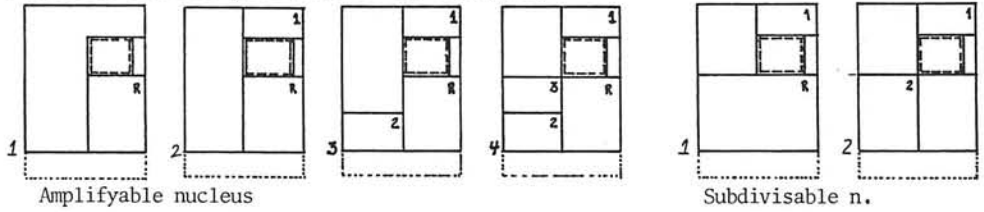


SQUARE LOT

8 Anterior services (connected to the road)

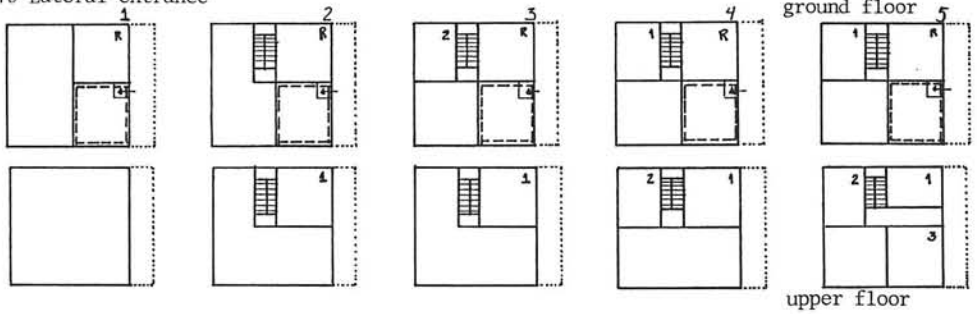


9 Interior services (connected to the courtyard)

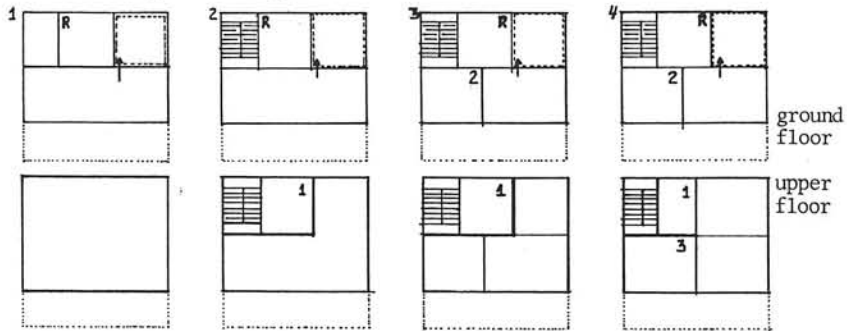


2 storeys

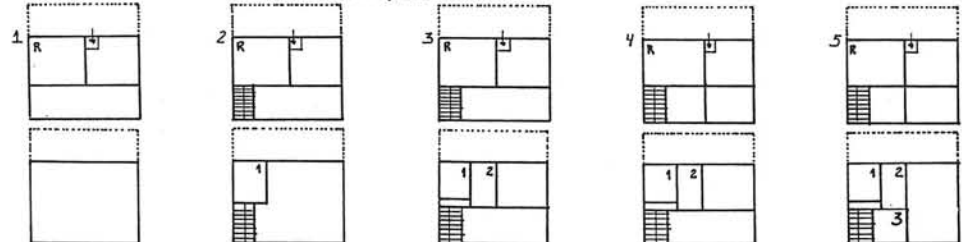
10 Lateral entrance



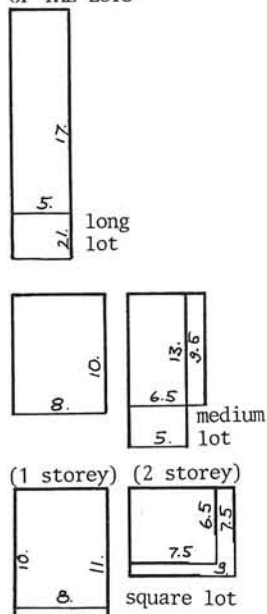
11 Entrance by the courtyard



12 Posterior entrance to the courtyard



## MEDIUM DIMENSIONS OF THE LOTS



## ANALYSIS OF THE PRESENTED DEVELOPMENT SCHEMES

TYPE OF LOT SCHEME NO.	Long lot			Medium lot				Square lot				
	1	2	3	4	5	6	7	8	9	10	11	12
OCCUPATION max. capacity	1 storey 6 6 6			1 storey 2 storeys 6 6 6 8				1 storey 2 storeys 6 6 8 6 8				
SURFACES (m <sup>2</sup> )												
built surface	69	67,5	81	63	63	49,5	48	62	68	48	57,2	49,7
private open space	16	22,5	36	27	27	16,5	28	25,8	28	15,8	11,2	12
lot surface	85	90	108	90	90	66	66	75,8	96	63,8	58,5	61,7
direct access (front x4,5m)	22,5	22,5	27	40,5	40,5	24,8	27	33,8	20	33,8	29,2	42,7
total area affected by the housing	107,5	112,5	135	130,5	130,5	90,8	93	105,5	116	96,5	87,8	104,4
floor surface	69	67,5	81	63	63	99	96	62	68	96	76,5	84,5
useful surface (floor s. excl. circulation s.)	55,5	62,5	74	60	60	75	80	54,5	64	78	58	68
INDICES												
floor surface per inhabitant	11,5	11,2	10,1	10,5	10,5	16,5	12	10,3	11,3	12	12,8	10,5
useful surface per inhabitant	9,2	10,4	9,2	10	10	12,5	10	9,1	10,7	9,8	9,7	8,5
ratio useful s. to floor surf.	0,8	0,92	0,92	0,95	0,95	0,8	0,8	0,88	0,94	0,8	0,8	0,8
ratio built s. to open space	0,23	0,3	0,33	0,43	0,43	0,3	0,19	0,42	0,41	0,52	0,2	0,24
gross density (houses+access; inh./ha.)	558	533	592	460	460	601	860	547	517	828	681	765

### 3. Characteristics of the houses after the phase of consolidation

The different schemes correspond with differentiated modes of use of the surfaces and varying densities. Thus they suggest different applications.

With 'long' lots, high densities can be achieved, for the short frontside of the lot results in a small surface for access use. The ratio useful surface to floor surface is low because of the surface necessary for internal circulation. The small surfaces for the direct access and the large built surfaces are the reasons for relatively low urban investments and relatively high investments for the dwellings.

'Square' lots, occupied in 'L'-form, allow a higher gross density than 'medium' lots. In the cases of two storey occupation the ratio built surface to useful surface is relatively low because of the high level of development of the internal circulation. The densities achieved with

two storey houses are the highest, but a hypothetical second storey on the one-storey-types would increase the density even more.

It should be remarked here that the presented schemes do not have the function of examples. They are illustrations rather than optimal solutions.

## ARRANGEMENT OF THE HOUSES AND URBAN DEVELOPMENT

### 1. Relation housing - public spaces

Starting from the types of plots we can establish norms for design, conditioned by three types of factors.

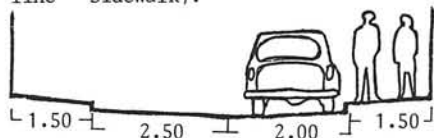
A- Factors related with the contents and the economy of the communal spaces

a) Access for people, goods and public services:

- Only for pedestrians  
(minimal 3 pedestrian modules, that is 3 x 0,75 m, maximal acceptable distance for garbage collection and emergency services: 25 m).
- Only for pedestrians with the possibility for car traffic (low speed area, priority for pedestrians, less than 50 m distant from an access to regular car traffic).

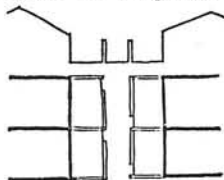


- Pedestrians and cars  
(The dimensions vary with the position of the way in the urban tissue; an only residential street, used one way with a maximal extent of 100 m permits the profile sidewalk - parking - low speed line - sidewalk).

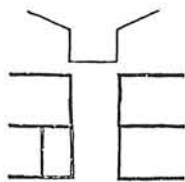


- b) Privacy - prevention of disturbances from the public spaces and the neighbour houses:

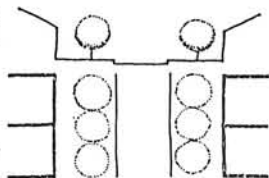
- Private open spaces as buffer zone between house and street



- Design of the openings in order to allow ventilation and entrance of daylight and in order to prevent disturbances and bad views.

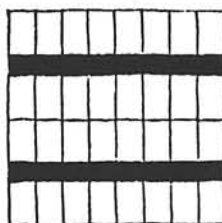


- Greater distance between the elevations and use of green, which is attached to lower densities and higher maintenance costs.

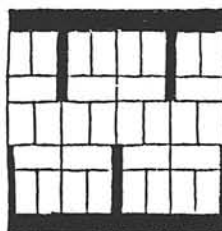


- c) Social life on different levels: on the daily level (in the close by neighbourhood) and on the occasional and periodical level (celebrations, market, etc.).

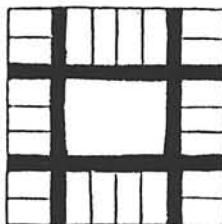
According to these factors it is possible to define four basic types of urban spaces.



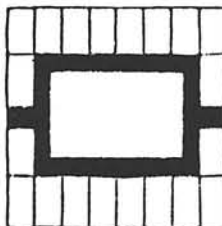
'street'  
(elevations without considerable interruption) can intensify social contacts between neighbours and social life on a larger scale, if there is a commercial center, and it can bring about problems of having too little privacy.



cul-de-sac design ('streets' in combination with dead-end-streets) enable more extended blocks.



'praca'  
(a square in the grid which is not built) favourable for functions such as commerce and public services; highly recognizable.



'largo'  
(squaring as result of broadening of a street) favourable for recreation functions and for a high level of privacy.

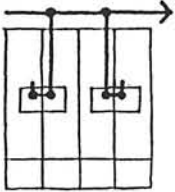
B- Factors related with the formation of social groups based on neighbourhood relationship

We think of 'intermediary spaces'; these are public open spaces, accessible from the neighbourhood close by.

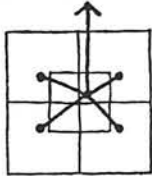


C- Factors related with the economy of the infrastructure and construction elements

The connection with the public networks can be arranged in two ways.



type 1: 'band'  
appropriate to long lots and houses along the street



type 2: 'nucleus'  
appropriate for dead-end-streets and square lots

2. Need of facilities related with the housing

When only the surfaces affected by the dwellings are concerned, it is possible to achieve densities of 770 inhabitants per hectare; but we also must consider urban facilities related with housing. Other facilities (related to the whole city) can be neglected in this context.

The following table specifies the requested spaces for urban facilities.

TYPES OF EQUIPMENT	CONCERNED POPULATION	CRITERIA FOR DIMENSIONING
1. Infant education	0,05 x total population	15 to 20 m <sup>2</sup> per pupil
2. Primary education	0,07 x total population	20 m <sup>2</sup> per pupil
3. Neighbourhood centre	one for 10.000 inhabitants	1000 m <sup>2</sup>
4. Welfare buildings	one for 4000 inhabitants	300 m <sup>2</sup>
5. Religious buildings	0,15 x total population	2 to 4 m <sup>2</sup> per user
6. Crèche	one for 25.000 inhabitants	1500 m <sup>2</sup>
7. Nursery	one for 15.000 inhabitants	2500 m <sup>2</sup>
8. Commerce	total population	2 m <sup>2</sup> per household
9. Sport and recreation park	total population	19,2 m <sup>2</sup> per household
10. Playgrounds	total population	6 m <sup>2</sup> per household
11. Public gardens	total population	7,2 m <sup>2</sup> per household

3. Characteristics of development of urban equipment

The problem of non-planned-and difficult to estimate changes in the development of the population can be solved through multi-functional spaces with the possibility for rapid adaptation.

4. Outline of a typology of spaces for equipment

Assuming that the interrelations between functions of the intermediate equipment, related with the dwellings, allow integration, we can develop proto-types of spaces for compatible functions. With the resulting multi-functional buildings it is possible to answer to the requests of spaces at once.

Space type A:

involves functions for small groups of users (2 to 20 persons), orally communicating and with a small range of movement; it requires natural ventilation and lighting and corresponds to meeting and round game rooms, offices, consultation and crèche rooms.

Space type B:

involves functions of commerce, information, social contacts of not defined groups; with a medium range of movement of individuals and small groups; partly natural lighting and forced natural ventilation are possible for the corresponding rooms for expositions, market, canteens, cafés, etc.

Space type C: involves meeting and information functions for large groups with a wide range of movement; lighting can be natural or artificial and ventilation can be forced natural or mechanical; the corresponding localities are conference halls, theatre, gymnastic and dancing halls, cinema, etc.

Space type D: for functions corresponding with B and C, but in the open air; it requires visual limitations, control of access, appropriate pavement and the necessary equipment.

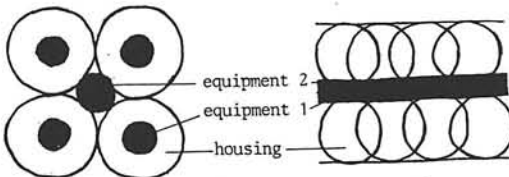
#### RELATION HOUSING - URBAN EQUIPMENT

The connection between the dwellings and the urban equipment is a basic condition for the development in an urban tissue. The different equipment buildings are important as landmarks in the city and for the identity of the location, and the use by the population vivifies the social life.

The dwellings are the most repetitive element, with individual use and limited formal variation. They play a neutral role in the development of the urban tissue, framing the outstanding buildings.

The necessary connections between the houses and the equipment can be typified in two dominant schemes of formation:

1. 'cell'-relation  
The groups of dwellings with equipment are functioning as defined units, and the addition of these units forms the urban tissue.
2. linear relation  
The groups of dwellings together with the equipment nearby form a strip.



Starting from the different functional requests of the urban equipment, its locations in relation with traffic routes and the intensity of the urban life concerned,

we can identify three types of equipment referring to the localization:

1. Equipment demanding frequent interchange of goods and contacts such as commerce, secondary schools, churches, bus stops and train stations, need pedestrian and vehicular connections.
2. Equipment requiring more quiet zones, such as crèche, infant and primary schools, has to be within reach by foot.
3. Open air equipment requires distance away from vehicular traffic (for instance sports and recreation parks, public gardens, playgrounds, etc).

The factors that determine the extent of the equipment, such as population, radius of action, economical and functional dimensions, are varying. Therefore it is difficult to achieve a rigid quantitative relation between groups of dwellings and the equipment.

Contrary to the punctiform distribution, the linear distribution allows principally more different solutions referring to use, it eliminates a rigid segregation of zones and favours the meeting of the groups concerned.

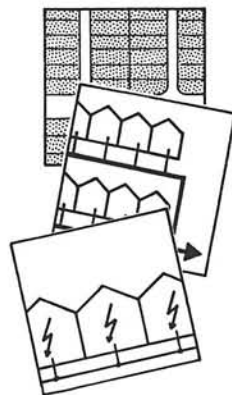
Irrespective of the chosen scheme of formation the following elements must be guaranteed:

- urban circulation network and public transports
- urban equipment answering the demands of use
- demarcation of the plots and the roads in the residential zones
- construction of the urban infrastructure.

# Costs of Urban Infrastructure Networks and their Impact on a Macro-Economic Level

Juan L. Mascaró

Last chapter of "Infrastructure Costs: A Starting Point for an Economic Urban Design" Thesis presented to the Faculty of Architecture and Urbanism of the University of Sao Paulo, Brasil, FAUUSP, 1979. Free translated by Elsa Bisscheroux-Mahecha



## 1- Variations on infrastructure network costs

Up to now we have studied each of the infrastructure networks separately. We have seen the variation of costs in each of these according to the parameters that influence them.

In these studies we have seen that the topography as the soil resistance (within certain logic limits), the form of the city and that of its basin or sub-basin, have very little influence. Thus only two important variables remain which are determinants of the network costs for every served unit. These variables are: The type of adopted road network and the housing density.

The most common road network is - in our countries - the grid pattern (and its possible variations). As we have seen in previous studies, this type of pattern implies an increase in the costs of the networks of 20 to 30%, depending on the case, compared to those road patterns where the fronts of the plots are always in the same direction. It is the case of the so-called "fish-bone" road pattern, where there is a primary road to which the secondary roads (usually with cul-de-sac design) come in a more or less perpendicular way; here the fronts of the plots are generally parallel. In this case the service networks run only through the secondary roads and need only 40 to 50% of the networks which brings with it a save of 30 to 40% of the costs.

Table I.

Medium costs of urban networks according to density (in dollars, 1977)

Network	Costs per unit density <sup>1)</sup>				Costs per hectare			
	density 15/75	density 30/150	density 60/300	density 120/600	density 15/75	density 30/150	density 60/300	density 120/600
Pavement	1.099,60	571,30	305,20	159,30	16.494	17.131	18.327	19.124
Drainage	388,40	207,20	106,20	54,40	5.976	6.215	6.375	6.534
Water supply	87,10	47,80	29,20	19,80	1.307	1.436	1.753	2.367
Sewage disposal	488,70	247,00	126,10	63,80	7.331	7.410	7.570	7.649
Gas supply	217,80	121,40	66,60	39,20	3.267	3.641	3.995	4.701
Electricity	168,90	125,70	97,10	63,80	2.534	3.769	5.823	7.665
Total	2.460,50	1.320,30	730,40	400,30	36.908	39.603	43.842	48.040

1) Densities: units per hectare/inhabitants per hectare

Note: the costs include only the urban networks but exclude the unitary works.

Figure 1.

Costs of the urban services per dwelling (in US\$,  
january 1977) in relation with the population density

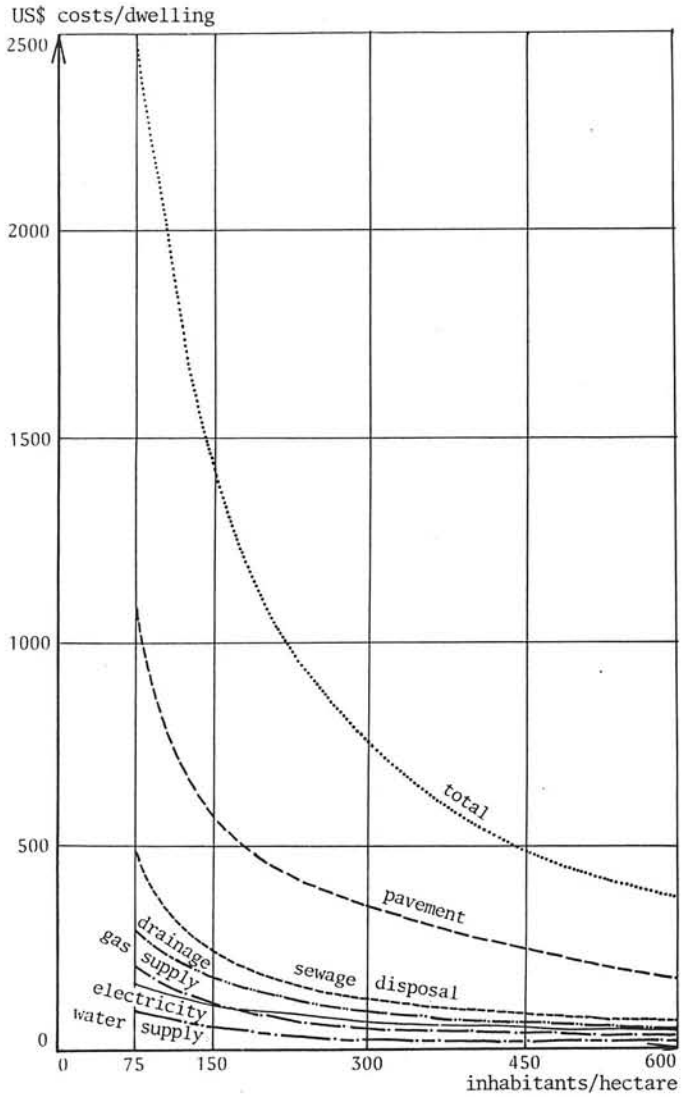
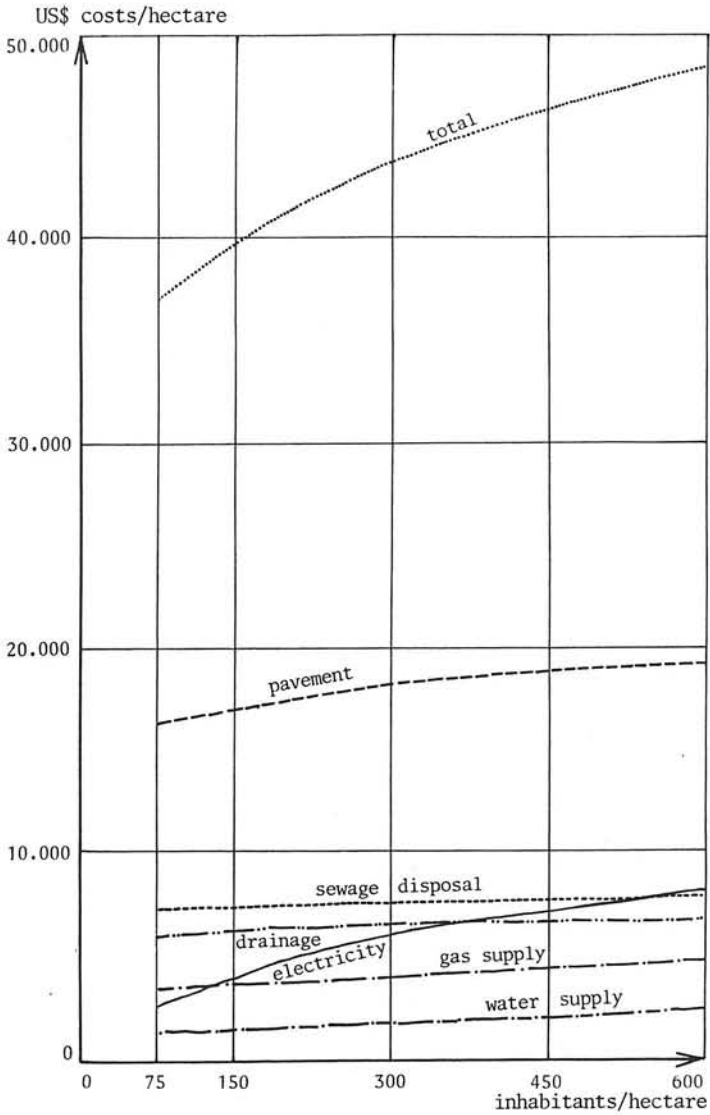


Figure 2.

Costs of the urban services per hectare (in US\$,  
january 1977) in relation with the population density



This road pattern has the additional advantage that the main traffic roads seldom have to be opened because they only contain some master pipes. The secondary roads, mainly the dwelling distribution roads, contain most of the pipelines; in these roads most of the openings for connections and damage repair occur.

The grid pattern that we have inherited from the colonial period, when there was no infrastructure network, is for the present (having a completely different service and transport structure) the most anachronistic and uneconomic one.

In all the studies the costs per hectare of the infrastructure vary relatively little with the population density. The costs of the great majority of networks is more related to its extension (amount of meters per hectare, for example) than to its capacity (amount of liters or cubic meters per hectare). In this way, the urbanization of one hectare for 500 inhabitants will only cost a little more than the urbanization of the same area for only 50 inhabitants. Most of the pipelines have, for technical reasons, minimum diameters which cannot be diminished, having

thus the capacity to absorb the needs of high average densities. For this reason to diminish these densities does not imply any decrease in the costs per hectare.

An extreme case, worth-while mentioning, is the sewage network for which the costs per hectare are practically the same for any density, having the aggravating aspect that in order to avoid sedimentation in cases of networks for low densities, it is necessary to make some special works (to overcome obstructions). Therefore this sewage networks can become more expensive per hectare than the networks that are serving higher densities.

The relatively constant costs per hectare make the costs per dwelling strongly variable with the density - almost inversely proportional to it - as we can see in table I and figures 1 and 2.

The costs of the urban network system are divided as shown in the tables II and III. Here we can see that the costs of the road system - which includes the pavement and the drainage network - carries between the 55 and 60% of the total network costs.

Table II.

Costs per user at urban level for medium size cities (in dollars, 1977)

Network	Costs for the networks		Costs for the connections to the houses		Medium costs for the complementary equipment		T o t a l	
	min. 1)	max. 2)	min.	max.	min.	max.	min.	max.
Pavement	305	1.100	-	-	-	-	305	1.100
Drainage	106	388	-	-	-	-	106	388
Water supply	29	87	29	176		191	249	454
Sewage disposal	126	489	6	46		380	512	915
Gas supply	67	218	27	156		450	544	824
Electricity	97	169	37	170		400	534	739
Public lighting	7	29	-	-		20 80	27	109
Total	737	2.480	99	548	1.441	1.501	2.277	4,529

1) Density: 60 units per hectare

2) Density: 15 units per hectare

Therefore, if we want to save on the implementation of the urban infrastructure networks, we should have to try to do it mainly on the road network because its costs are higher than those of the other network systems (water supply, sewage, gas and electricity) altogether.

In order to save costs it becomes then more important to study all the possible alternatives of pavements and road patterns that will permit that an important part of the roads will only be paved for light and occasional traffic. This can be achieved, among others, with cul-de-sac patterns. On the remaining systems the major part of

the costs lies outside the network and therefore outside the planner's field, as we can see in table III (the average for the other systems is around 65%, that is almost two-thirds of the costs; the impact of the other systems on the total costs makes the road pattern look a secondary problem and thus the density the principal one. It is worthwhile mentioning that in most of the Brazilian cities, because of their average low densities, the incidence of the road network in the total infrastructure costs is higher and in some cases it is necessary to invest 2/3 for this network and 1/3 for the others.

Table III.

Share of the network costs in the total costs of each supply system (as percentage)

Network	Share of each network in the total network costs		Share of the network costs in the costs of the complete supply system	
	low density areas	high density areas	low density areas	high density areas
Pavement	41,38%	44,35%	100%	100%
Drainage	14,38%	15,65%	100%	100%
Water supply	3,93%	3,50%	12%	19%
Sewage disposal	17,10%	19,73%	25%	53%
Gas supply	9,09%	8,79%	12%	26%
Electricity	13,16%	6,81%	18%	23%
Public Lighting	0,96%	1,17%	26%	27%

Table IIIa.

Average share of the different elements in the total costs of urban systems (as percentage)

Network	Networks	Connections to the houses	Complementary equipment	Total
Pavement	100,0%	-,-	-,-	100,0%
Drainage	100,0%	-,-	-,-	100,0%
Water supply	15,5%	25,5%	59,0%	100,0%
Sewage disposal	39,0%	3,0%	58,0%	100,0%
Gas supply	19,0%	12,0%	69,0%	100,0%
Electricity	20,5%	15,0%	64,5%	100,0%
Public lighting	26,5%	-,-	73,5%	100,0%

2- National urban infrastructure shortage and its evaluation

Going back to table II and analysing the total costs of the installations we see a cost per family of about 2200 to 4500 US dollars (1977). A large part of the underground pipelines are laid after the paving and this means an increase in costs of about 30 to 40%; this fact is not considered to

the total calculation and that is why the above mentioned values can be seen as minimum.

According to the existing urban infrastructure data that was available in 1970 only the electricity network served an important part of the population. Table IV shows the amount of services and its increases in 1970, which also indicates that the 500 new families coming to the city every year,

Table IV.

Existence and increase of services during the last decades in Brazil

Service	1 9 4 0		1 9 5 0		1 9 6 0		1 9 7 0	
	existing net	annual growth	existing net	annual growth	existing net	annual growth	existing net	annual growth
Electricity network	1.186.014	105.170	2.237.710	244.283	4.860.546	308.817	7.768.721	276.550
Piped water	958.293	...	1.474.687	...	2.740.005	...	5.592.606	205.895
Sewage disposal	...	...	849.149	...	...	...	2.290.573	72.071

Note: no information available about pavements, drainage, public lighting and gas supply  
 ... : no information available

Table V.

Deficit of urban services in Brazil in 1970

Service	Deficit in amount of users	Deficit in million dollars of 1977
Electricity	1.298.922	960
Drinking water	3.863.899	1.754
Pavement	4.932.644	7.340
Sewage disposal	6.330.222	5.792
Public lighting	7.398.965	865
Piped gas	9.762.523	7.970
Total	-	24.681

Note: The deficit in millions of dollars was calculated considering the costs of each service in according to the population density. It was not considered the costs of breaking open and repairing pavements. In this case the costs would increase with 10%.



will have to enter in a long waiting list (characteristic of the urban life in developing countries). This fact has no short term solution because this shortage is in economic terms about 25.000 million dollars

(table V); this means that even if the inversion would be of 2% of the GNP per year, the average waiting time would be still of 12 years.

Table VI.

Indicators of urbanization and their relations for Latin American countries

	P o p u l a t i o n			Gross National Product		Gross National Product per inhabitant	
	Estimation for 1975 in inhabitants	Average annual growth rate (%)	Relative urban population (%)	1973 to 1974 in million US\$	Average annual growth rate (%) 1960-73	1973 to 1974 in US\$	Average annual growth rate (%) 1960-73
Latin America							
Argentina	25.036.300	1,2	82,5	36.551,3	4,7	1.482,9	3,0
Barbados	242.000	0,3	45,0	184,9	3,3	770,5	2,9
Bolivia	5.633.800	2,7	30,9	1.481,1	5,3	270,8	2,6
Brazil	107.145.000	2,8	61,2	79.172,3	7,4	795,5	4,4
Chile	10.253.000	1,8	80,5	10.910,4	3,8	1.083,2	1,8
Colombia	23.415.800	...	66,8	10.325,6	5,7	450,6	2,7
Costa Rica	1.990.000	3,0	42,2	1.459,9	6,1	754,9	2,8
El Salvador	4.108.400	3,7	39,8	1.712,0	5,6	434,3	2,0
Ecuador	6.690.000	2,9	42,0	2.791,6	6,6	429,4	3,4
Guatemala	5.852.000	2,8	31,4	3.531,0	5,7	620,1	3,0
Haiti	4.583.800	1,6	22,0	696,0	2,2	154,1	0,4
Honduras	2.712.000	2,2	32,5	989,3	4,3	372,7	2,0
Jamaica	2.014.000	1,5	52,9	1.992,7	5,2	1.004,4	3,6
Mexico	60.094.000	4,2	61,2	44.823,3	6,8	771,2	2,9
Nicaragua	2.143.400	2,8	52,1	1.361,3	6,8	652,9	3,9
Panama	1.667.700	3,1	50,4	1.702,2	7,5	1.052,1	4,3
Paraguay	2.646.900	3,5	36,1	948,2	5,1	383,0	2,0
Peru	15.615.000	3,0	63,5	7.493,3	5,6	494,5	3,0
Dominican Republic	4.725.000	3,1	46,3	2.793,0	6,9	612,2	3,6
Trinidad and Tobago	1.096.400	1,3	56,6	1.185,1	3,4	1.101,4	1,5
Uruguay	2.764.000	0,7	80,8	2.568,7	1,0	936,1	0,3
Venezuela	11.993.100	3,1	82,6	16.536,4	5,4	1.421,6	3,0

Source: Progreso Sócio-Económico na América Latina. Banco Interamericano de Desenvolvimento 1975

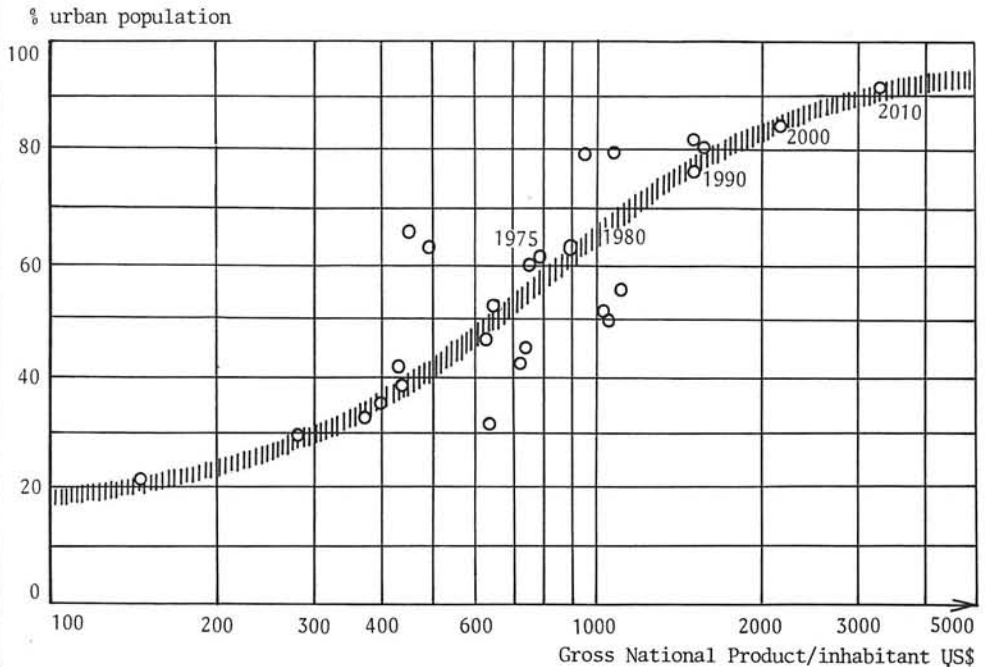
### 3- Possible savings with an active urban policy

Table II shows total costs per family between a minimum of US\$ 2200 and a maximum of US\$ 4500, which as we have already said, will be actually higher because of the extra costs for openings of the pavements for damage repairs. This is due to the fact that we make the pavements first and then the drainage, water supply, gas and sewage networks. This means an increase of about US\$ 500 per unit (30-40% higher).

We need to point out that the lack of a narrow coordination between network location and building times also creates problems of remotion, interruption and repair of the different services. This fact though difficult to evaluate need to be taken into account. A perfect coordination between building codes, land use laws, municipalities and infrastructure enterprise plans would at least partly correct the actual shortage, in spite of the large number of families coming to urban areas every year.

Figure 3.

Relation between rent per capita and urbanization rate in Latin American countries



Source: Progreso Sócio-Económico na América-Latina. Banca Interamericano de Desenvolvimento. 1975

Note: The points indicated with 1975, 1980, 1990, etc. stand for the probable urbanization rates in Brazil related with the probable rents per capita.

Table VI and figure 3 show a strong correlation between urban population and 'per capita' rent. One of the logical consequences of the economic development in which our countries are engaged is exactly this growth of the 'per capita' rent, which as shown in figure 3 would surely also increase the proportion of the urban population on the whole.

#### 4- Correlation between rent and effective infrastructure services demand

As well as the other goods and services that a community needs, the effective urban infrastructure demand is related to the effective population rent. Figure 4 summarizes the position of the urban infrastructure services, giving the per-

centage of services in relation to the average family rent. Here we see that from the pipelines to be installed, only that of the water supply is laid before the paving. The others are left for later with the resulting increase in price that we mentioned before.

The probable evolution of the effective demand, in numbers, is given in table VII. The estimated actual provision and its growth per decennium (in quantities of new services) are given in table VIII. Figure 5 shows the average growth per year.

We see in this case that in fact and for long term, the necessary increase in percentages will diminish (as shown in figure 6) gradually, approximating a constant average increase of 2% per year of the effective service demand.

Figure 4.

Percentage of serviced dwellings in relation with the average monthly rent per family (in minimum salaries) in the city of Sao Paulo

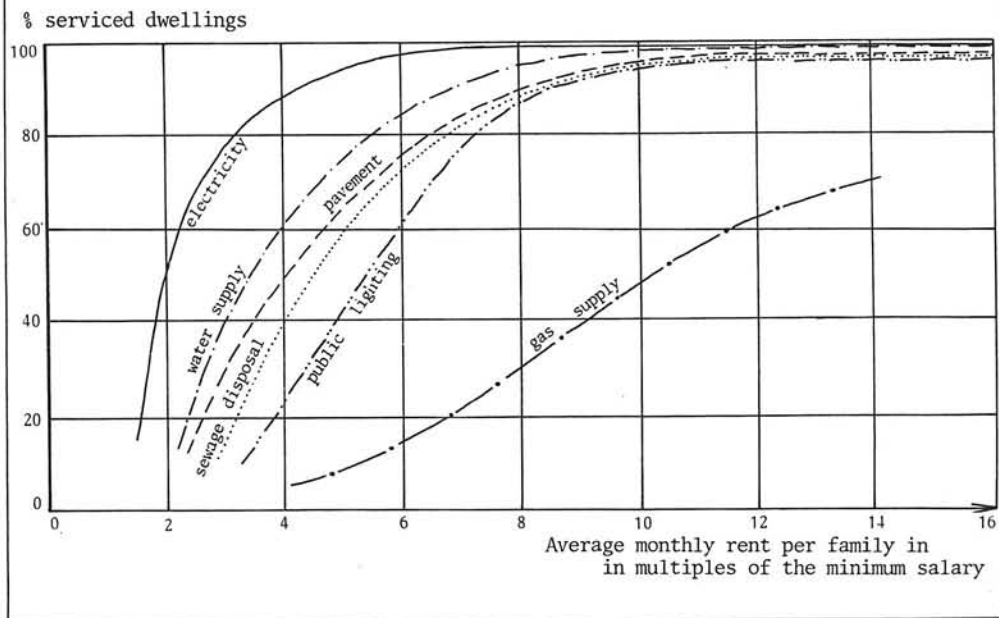


Table VII

Probable urban service demand in different years (amount and percentage)

Network	1 9 8 0		1 9 9 0		2 0 0 0		2 0 1 0	
	%	number	%	number	%	number	%	number
Electricity	95	14.049.075	98	19.477.010	98	24.690.022	98	30.096.900
Water supply	78	11.535.030	90	17.887.050	96	24.186.144	98	30.096.900
Pavement	67	9.908.295	80	15.899.600	92	23.178.388	96	29.482.700
Sewage disposal	60	8.873.100	78	15.502.110	92	23.178.388	96	29.482.700
Public lighting	45	6.654.825	68	13.514.600	92	23.178.388	96	29.482.700
Gas supply	10	1.478.850	19	3.776.115	38	9.573.682	58	17.812.500
Number of dwellings	100	14.788.500	100	19.874.500	100	25.108.900	100	30.711.200

Figure 5.

Average annual increase in necessary urban services to attend the probable effective demand (new services to be realized)

Thousands dwelling units to be increased yearly

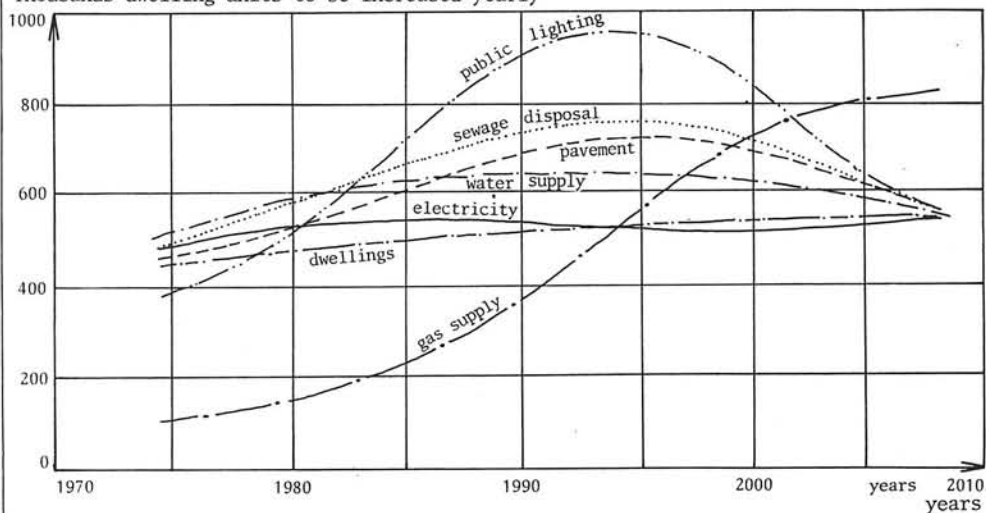


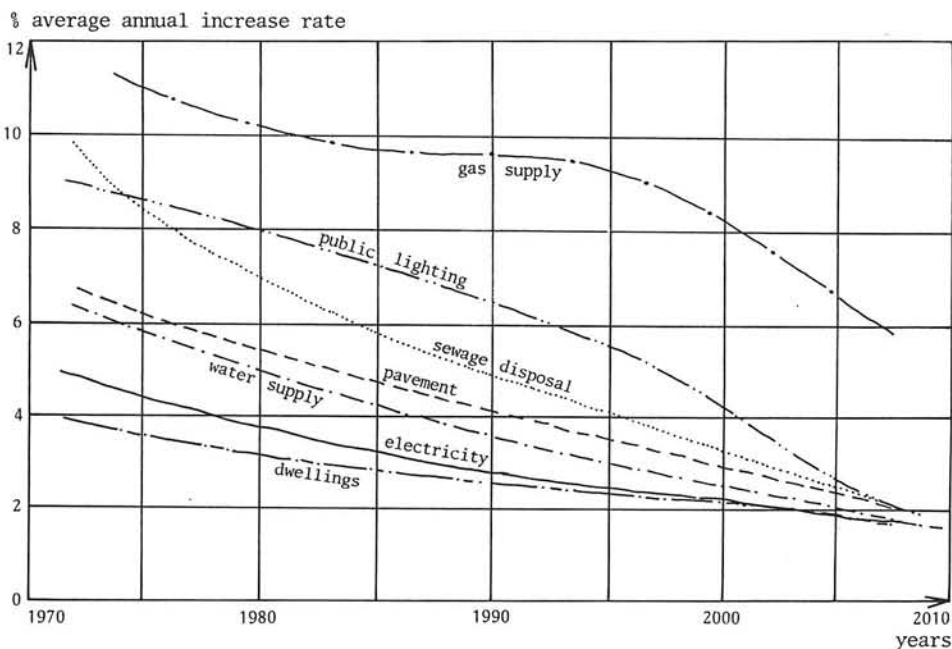
Table VIII

Necessary increase in urban services in order to attend the probable effective demand in each decade (new services to be realized)

Network	1970 - 1980	1980 - 1990	1990 - 2000	2000 - 2010
Electricity	5.071.657	5.427.935	5.213.012	5.406.879
Water supply	5.122.589	6.352.020	6.299.094	5.910.756
Pavement	4.564.599	5.991.305	7.278.788	6.304.312
Sewage disposal	4.926.982	6.629.010	7.676.278	6.304.312
Public lighting	3.777.450	6.859.835	9.663.728	6.304.312
Gas supply	965.033	2.297.805	5.797.527	8.238.818
Number of dwellings	4.512.160	5.086.000	5.319.400	5.517.300

Figure 6.

Evolution of the average annual increase rate of services



5- Annual investments in order to serve the urban infrastructure services effective demand

If we apply the present costs per service to the quantities of new services of the effective demand, we will have the amounts needed to be invested every year in the development of the urban infrastructure. In this case -Brazil- an annual average investment of 1.778 dollars would have been necessary between 1970 and 1980. For the next decade this investment would

be of 2.452 million dollars (table IXa). These are the enormous investments that represent 2% of the GNP every year. If we take into consideration that these investments could drop to 900 and 1.177 million dollars, respectively for the same periods mentioned (table IXb), we see that in this case the amounts would not be far from the actual possibilities. Such comparison shows, without going into further comments, the great importance of an active cooperation and planning between municipalities and infrastructure enterprises.

Table IX.

Necessary annual investments to cover the probable effective demand (in 1000 US\$)

a) without an effective and adequate urban policy

Network	Between 1970 and 1980	Between 1980 and 1990	Between 1990 and 2000	Between 2000 and 2010
Electricity	374.800	401.120	385.240	399.570
Water supply	232.570	288.380	285.980	268.350
Pavement	679.210	891.510	1,083.090	938.080
Sewage disposal	450.820	606.550	702.580	576.840
Public lighting	41.170	74.770	105.330	68.720
Gas supply	79.520	189.300	477.710	678.880
Total	1.778.570	2.451.630	3.039.730	2.930.440

b) having an effective and adequate urban policy that would optimize the infrastructure costs

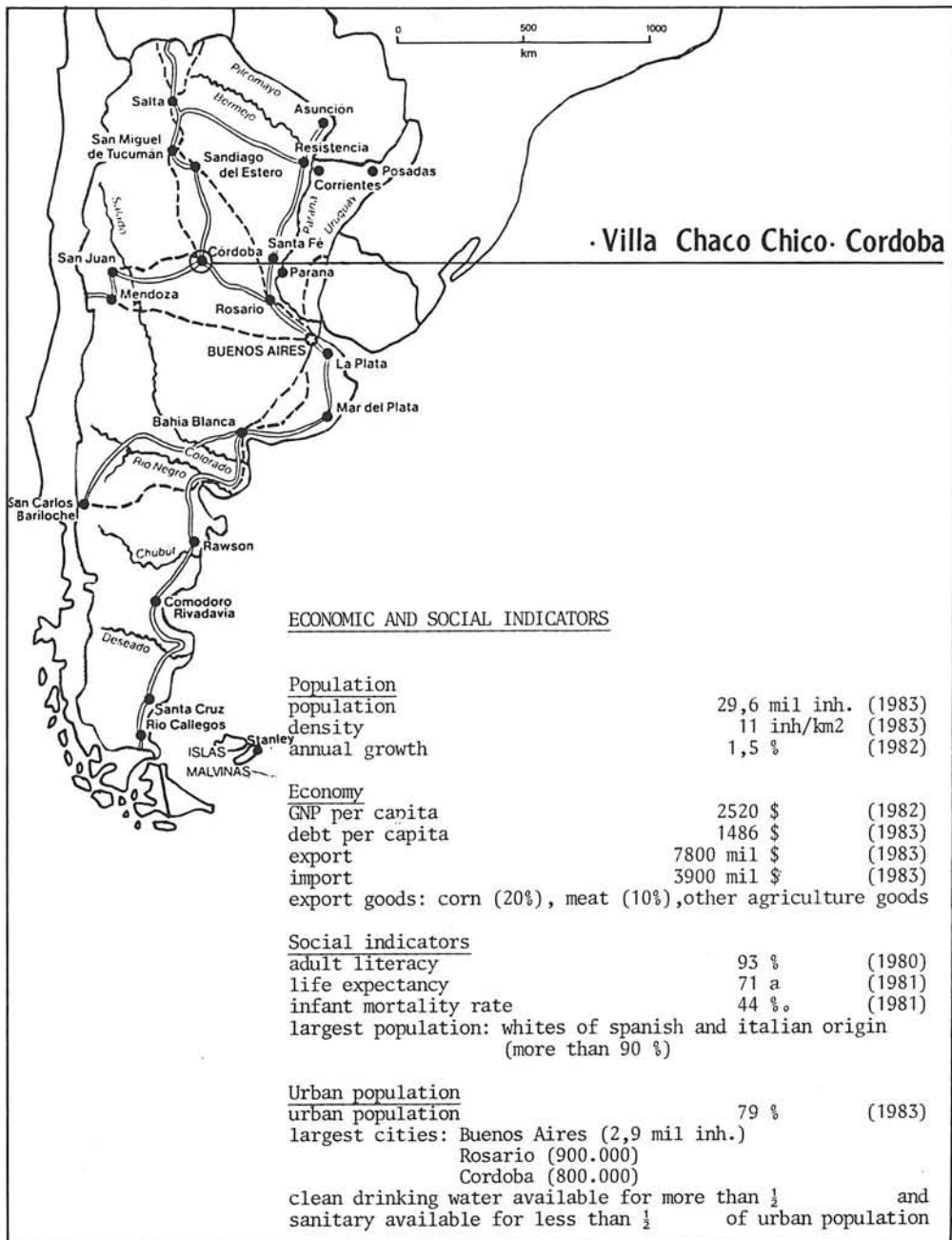
Network	Between 1970 and 1980	Between 1980 and 1990	Between 1990 and 2000	Between 2000 and 2010
Electricity	270.820	289.850	278.370	288.730
Water supply	127.550	158.160	156.850	147.180
Pavement	187.610	246.240	299.160	259.110
Sewage disposal	252.260	339.400	393.030	322.780
Public lighting	10.200	18.520	26.090	17.020
Gas supply	52.500	124.970	315.380	448.190
Total	900.940	1.177.140	1.468.880	1.483.010

## PART II





# ARGENTINA



## HOUSING POLICIES IN ARGENTINA

By Alicia Paolini

By the end of 1984 in Argentina a housing deficit of 2.700.000 units existed. To this amount we should add an 125.000 units estimate as an annual increase for decay and population growth according to the official figure of october 1985.

One third of the population lacks housing, lives overcrowded or lacks the elementary services. Of the 2.700.000 units mentioned above, 1.000.000 are "existing" dwellings that need improvement or extension, and 1.100.000 are huts or precarious dwellings without a legal tenancy of the plot: 'villas miseria'. This represents 35% of the population, what is 11 million inhabitants.

Only one third of the population that lacks housing has enough saving capacity to be awarded a loan for housing programmes of 15 years; the other two thirds need either longer amortization terms or different levels of subsidy.

The deficits are bigger in larger cities, especially in Buenos Aires, where there is a greater technological development and major concentration of population.

There has been an average of 115.000 units built yearly in the period 1970-79. In 1985, 150.000 units were promised but only 35.000 were built. This was only enough to replace the units affected by the construction of highways. Private construction was almost stopped. This included some 5% of the total construction in 1985.

The existing deficit is not only that of dwelling units, but also that of infrastructure (drinking water networks, plots, electricity, sewage, roads), community facilities (health, education, social life, recreation, culture, commerce) and functions such as garbage collection and public transports. Inadequate financing and extremely high rents also exist. These deficits result in a faster deterioration of the existing dwellings.

The lack of medium and long term planning and coordination in the provision of infrastructure creates insufficiency and produces unnecessary additional costs. The provision of infrastructure is planned for a fixed density; but when this density is increased because of changes in the market values, the infrastructure needs redesigning to adapt the settlements to the new situation. This produces more and absurd expenses, such as for highways, changes in land use, etc.

The state contributes to land-speculation by developing in non-residential zones housing programmes with all services in order to increase land values. The implementation of infrastructure obeys market laws and not a centralized planning. When the installation of new infrastructure occurs, the dweller of a unit becomes also owner of part of the street and must pay taxes, which he usually cannot afford, for the use, the maintenance and improvements of the street. He will be then forced to move out of the house producing migration from the centre to the periphery.

### THE BUILDING INDUSTRY

Considering the potential capacity of the building industry, it would be possible to overcome the deficit, nevertheless the industry is nowadays in crisis producing only one sixth of its capacity of 200.000 units per year.

Argentina does not import any building material. All of the materials are locally produced: wood, steel, glass, cement, aluminium, insulation materials, etc. They are produced with the use of high technology. There are enough possibilities for the utilization of a wide range of construction systems, including light and

Argentinian housing production and costs compared with inter- national standards. TABLE 1.

	% of the G.N.P. dedicated to housing	dwelling units produced per 1000 inhabitants	housing costs related to annual income p.c. A.I.C.
inter-national standards	4	9	3 to 5
argen-tinian standards	4	4,2	9

Source: Programa Nacional de Tecnología de Vivienda, SECYT

heavy prefabrication methods. The potential building capacity is greater than the demand. As consequence of this there is a high capital investment in relation to the number of dwellings which are produced with the investment. Thus the housing problem in Argentina is not based on lack of a productive building sector. (See table 1.)

Of the 11 million people in need of housing, 7 to 8 million are unemployed. The building industry is working at 30% of its capacity, supporting industries, such as cement plants are working at 70%, which means that investments in constructions in general are more likely to be reduced than to be directed towards other sectors of the industry.

#### STATE INTERVENTIONS IN HOUSING

'Fondo Nacional de Vivienda' FONAVI (National Housing Fund)

In 1985 there was a programme to finance 65.000 units and 100.000 units annually the subsequent years. The level of habitability is not to be reduced, so the success of the programme will depend on the Fund's resources and the possibilities to reducing the housing costs. This programme has to be executed by the 'Instituto Provincial de la Vivienda' I.P.V. (Provincial Housing Institute).

#### Progressive Dwellings

Financing of materials and labour for those people owning a plot is received from the municipality. Monthly payment was to be 9 to 15 Australes (0,85 austr. = 1 US \$) without interest. This programme was subsidized by the state and administrated by municipalities, co-operatives, mutual funds, etc.

#### Bank Loans

The 'Titulo de Recaudación Inmobiliaria' T.R.I. (Housing Fund Certificates) was created to redevelop and maintain an attractive capital market in real estate. Therefore mechanisms are created in order to organize the demand.

The Central Bank authorizes all banks to join the system, that allows them to deliver given building works (finished or in execution) on the market and in return receive new building works. It is similar to the French system with an adjustment combined index of 9% annual interest.

#### For Renters

It is intended to provide legal security to both tenants and landlords (reduction of 20% for the tenant and tax reduction for the owner). The relation between owners and renters in Argentina is 80% to 20% (in Germany and other developed countries this is 50% to 50%).

## Housing Upgrading

The Pilote Plan for Housing Upgrading provides basic units and is financed by public savings.

The basic unit should neither be precarious in quality, nor temporary and should provide an area adequate to the size and composition of the family. This is to say that basic units are of definitive character.

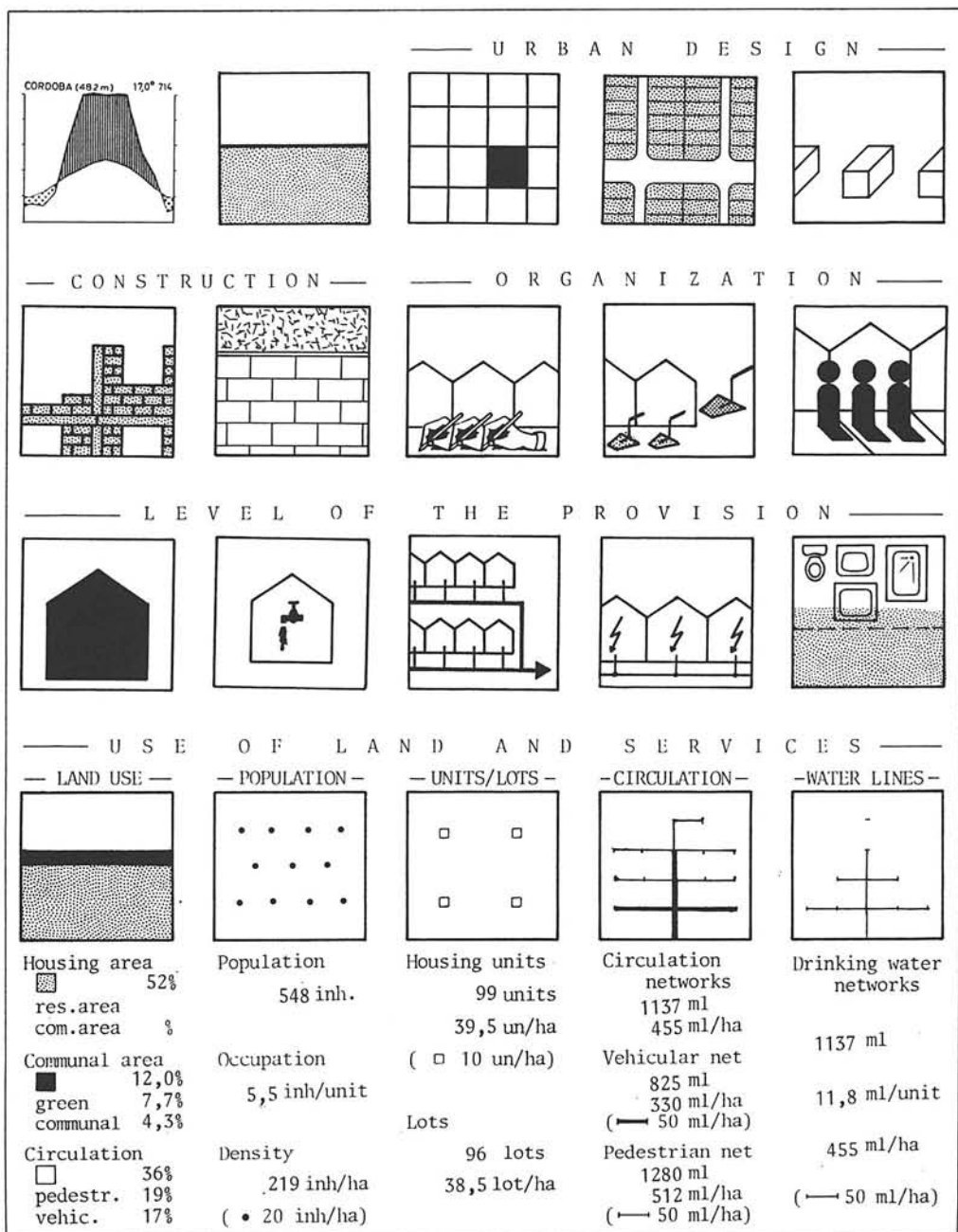
## Problems

The intervention of banks gives them a rentability of 30% less than what they obtain compared to commercial operations. In 1984 an agreement between the government of Argentina and the IMF (International Monetary Funds) stated that public investments should be made a variable of the G.N.P. For housing, 1% of the G.N.P. was prescribed, however if we consider that several financial adjustments were needed to make this 1% the net result is 0,48% of the G.N.P. which is only good for 18.000 housing units. As we stated before, 240.000 units were promised, a plan for 140.000 units was later prepared, but the resources are enough only for 18.000 units.

1975  
2.5 ha

# ARGENTINA

## · Villa Chaco Chico · Cordoba



VILLA CHACO CHICO

CORDOBA

CEVE / AVE 1975 / 1976

By Gerard Stalenhoef de Ayguavives

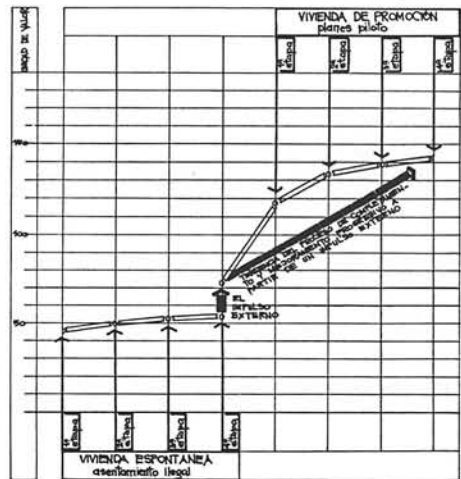
This project was set up by the co-operative "20 de Junio" under the direction of CEVE (Centro Experimental de la Vivienda Económica : It is known as the experiment 'Villa Chaco Chico' in Cordoba (1975/1976) CEVE is a subdivision of AVE (Asociación Vivienda Económica). This low cost housing organisation is a private non profit organisation. The CEVE started in 1966 with the objective of solving problems in the marginal sectors. For this purpose CEVE carries out: - research in building and social development-processes through housing programs and the creation of new working possibilities;

- plans of social development by means of housing; at the same time it offers technical assistance to community projects;
- propagation and transference of knowledge acquired through research and experience.

From the 125 families only 96 could obtain a new dwelling, so 29 families had to leave. During the first period of the project, 33 members of the 96 of the co-operative have built their own dwelling. Before the project started, much research was done to find adequate solutions for the most economic dwelling. Many national and international organisations took part in this research, or subsidized the organisation. CEVE researched the pilot plan for Cordoba according to the wishes of the users. One of the conclusions was to develop an organic plan. Another study to find out the motives and relations in the existing squatters in this area was done (see chart). CEVE, according to its ideology, aimed at a social integration in the settlement. Therefore participation of the potential users and of the community was very important. The dwellers could participate at two levels:

1. the process of planning and decision making, and
2. the home-building program

The specific goal in Villa Chaco Chico was to rehabilitate the existing 'tugurios'. A census taken in 1970 revealed that the population living in slums ('villas de emergencia') in the city of Cordoba amounted to 16.004 persons distributed in 47 settlements. In 1978 SEPAS (State Promotion and Social Work Board) took a census on 'developing populations'. From the results it can be concluded that in Cordoba 31.098 persons were living in slums. In other words during 8 years period the population almost doubled (195%). The increase of the total population of Cordoba was only 35%.



On the base we represent the different stages in the process of marginal inhabitation; from the spontaneous construction of the first protectional roof, until the moment that they have lived various years in planned housing. The axis represents the value-units, these units are a indication of the squaremeters of the construction and its quality.



## SITUATION

Most of the inhabitants of Villa Chaco Chico, identified by the geographic situation, have lived for over 30 years in slums. The co-operative bought the ground and started to develop plans for this area. Results of the researches in combination with the goals of AVE cristalized in criteria for the design.

"According to AVE two aspects of housing must be analyzed as a development factor: housing as a product and housing as a process. Housing as a process is closely related to getting the sites and services, in order to provide a solution to the problems of the people involved and at the same time a way of individual and groupal development. We can mention the importance of social activities and the social goals and achievements of AVE such as participation, training of the community etc. Housing as a product provides two basic elements:

- physical and legal security, growing stability and confidence in the future, self confidence and self respect as well as social recognition both for individuals and for groups;
- better physical conditions of life, sanitary improvements, privacy, better protection from weather conditions, reduction of promiscuity, better and more appropriate environment for the development of family and group relations.

These achievements will only be effective in cases where the house is an adequate product for the needs and real possibilities of the dwellers:

- at first minimum due to the limited financial possibilities of the dwellers, but able to reach a larger number of families;
- able to grow so that it can follow the integral development of the individual acceding to it;
- suitable housing conditions to fit cultural patterns of this social group, in agreement to planning and having a convenient urban design, not imposed by the standards and customs of other social groups;
- applying an appropriate technology that enables an efficient use of available resources: human resources, material resources, price and financing adjusted to the income of the sector, cheap and easy maintenance."

Some of the achievements of the research of CEVE are three different building-systems, development of organizing, social technologies and evaluation of projects. According to the tendency of rationalisation of traditional buildingsystems the three best systems are:

- BENO-system, based on the prefabrication of resistant plates built in situ, starting from a common brick and a mortar;
- FERROCEMENTO system, which adds simple industrialized procedures to typical features of conventional building, trying to diminish the job in the site; by means of a major workshop process, it accelerates and simplifies the assembly of houses;
- MAS system which, by means of simple techniques based on blocks ('mampuestos') facilitates the assembly of houses by non-experienced workers; it is specially suitable for self-help housing with a minimum of technical assistance.

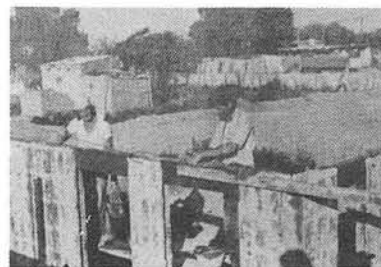
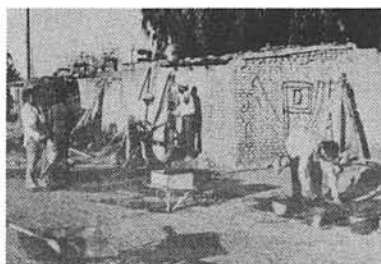
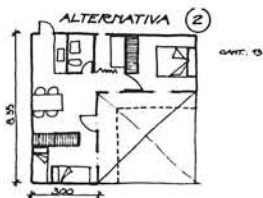
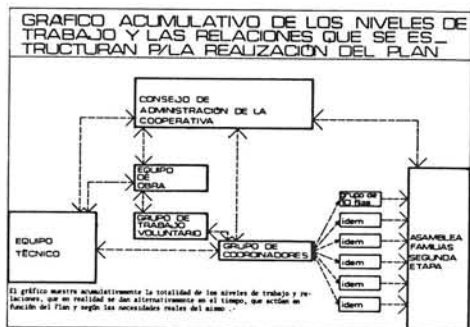
Different technical groups took part in the planning. Because of its good results in the research the BENO system was used as the most adequate and appropriate system. In two steps the co-operative has finished the project. The results of this experiment (75/76) were discussed in the evaluation. This resulted in the third step: finding new solutions for mistakes in the building

and for the missing elements of the plan (this was caused because of a lack of subsidy).

A 'social result' of the experiment was the formation of a well organized and close community. Participation in the essential discussions has been a success during the months of preparation, several groups (with an average of 80% of the people) have discussed on the problems and the wishes of the inhabitants. When constructing the dwellings this participation continued. People who had worked in a working-team took part in other social activities.

SOME DATA

- total area: 2,5 ha.
- total costs of the first 13 houses of 56 m<sup>2</sup>: 59.300 \$ (in 1975)
- length of 13 lots: 180 m.
- wideness public street: 15 m.

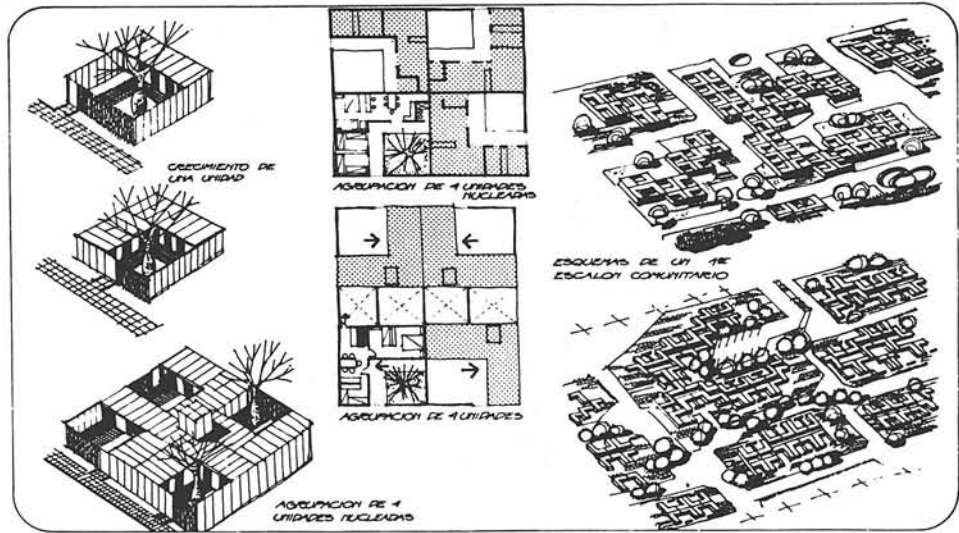






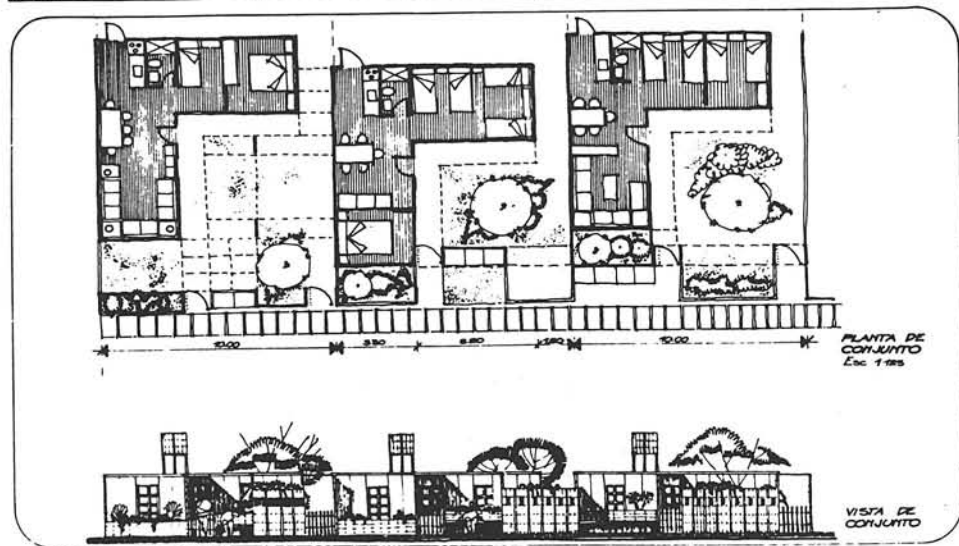
**SISTEMA BONO**

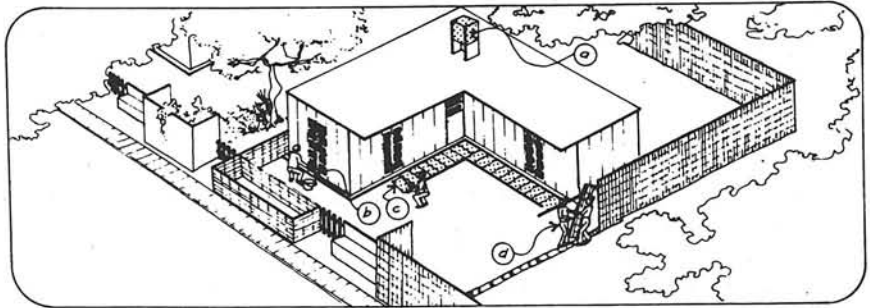
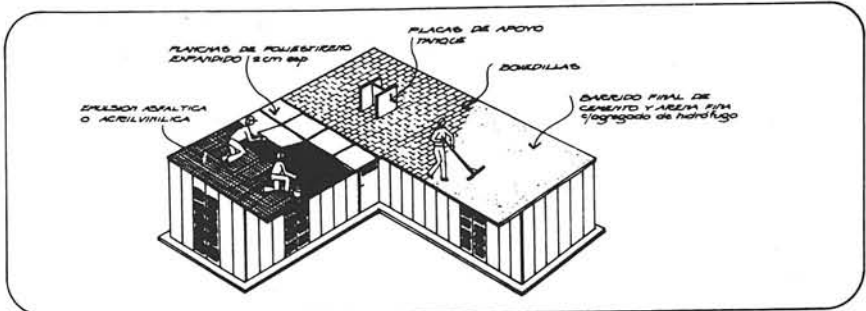
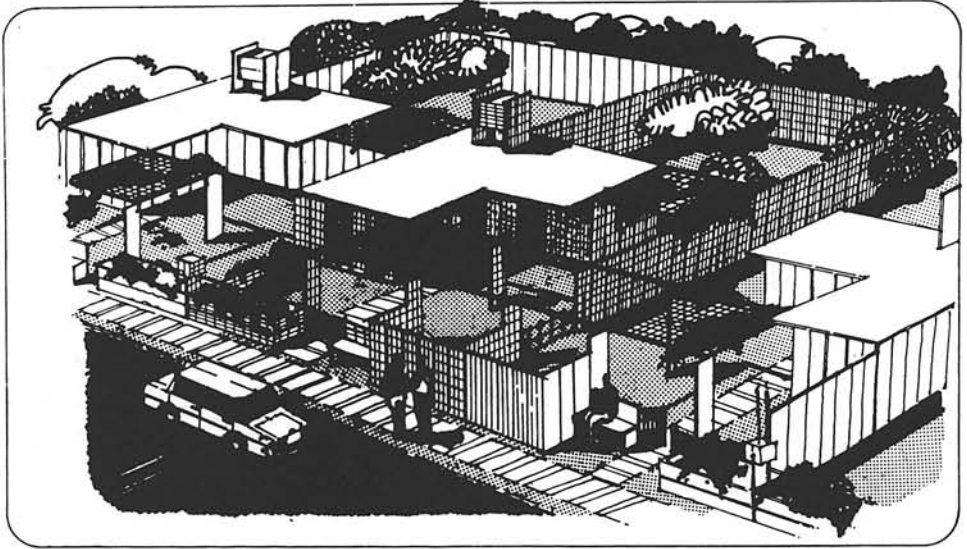
**MODELOS DE AGRUPAMIENTO URBANO**

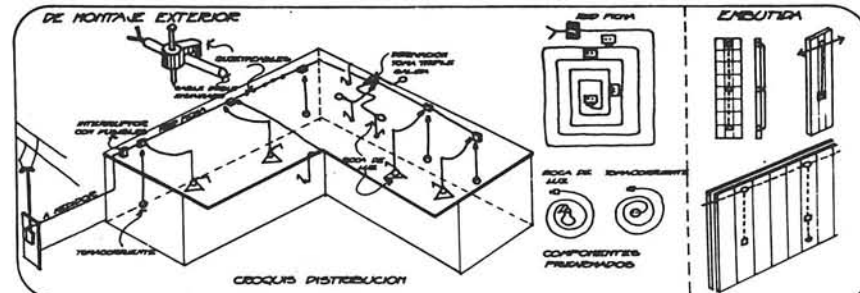
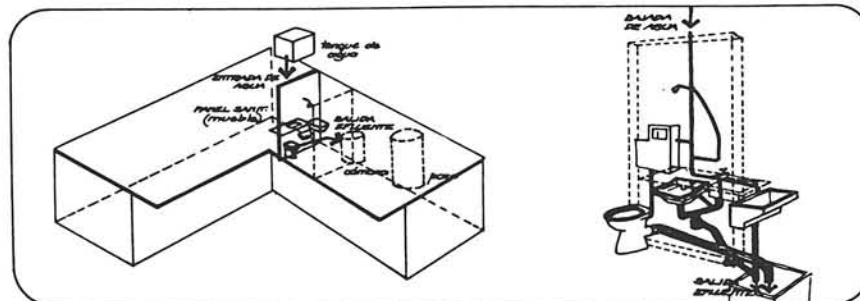
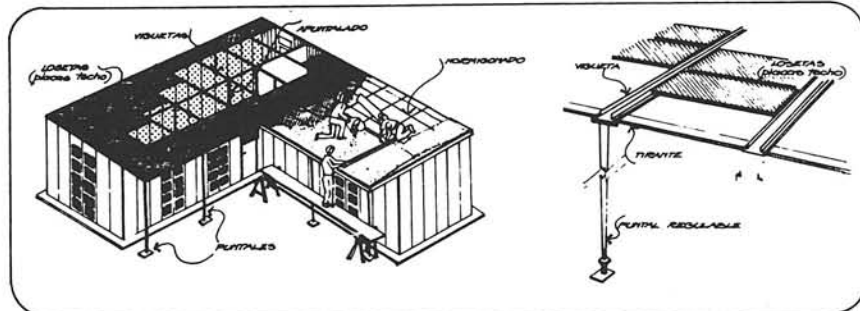
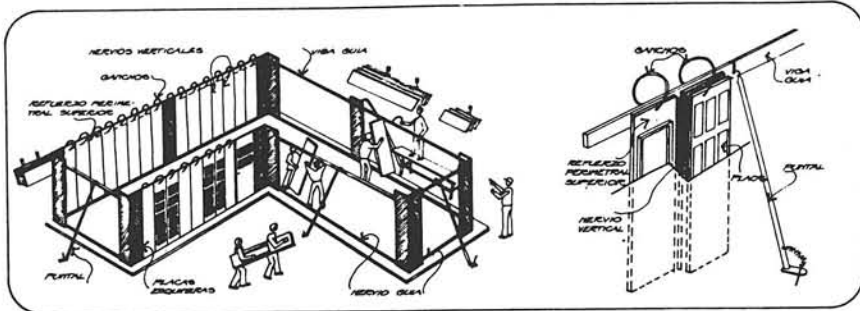


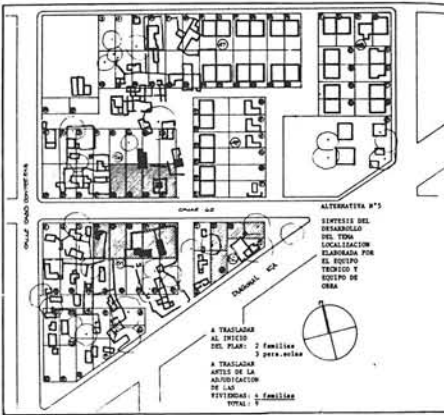
**SISTEMA BONO**

**ESQUEMAS ORGANIZATIVOS Y DE EQUIPAMIENTO**







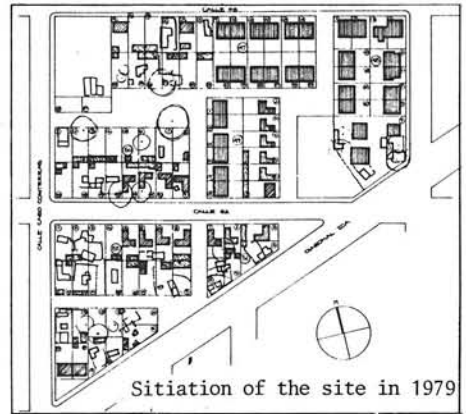


Development of the site

KEY	
	dwellings to be demolished
	lots to be used
	dwellings realized by self-help (1st phase of the plan)
	dwellings realized until the roof with resources provided by the Provincial Government
	improvised dwellings located on the rearside of the lot



Situation of the community, after the CEVE/AVE work in 1976



Situation of the site in 1979

sources, photographs and drawings:

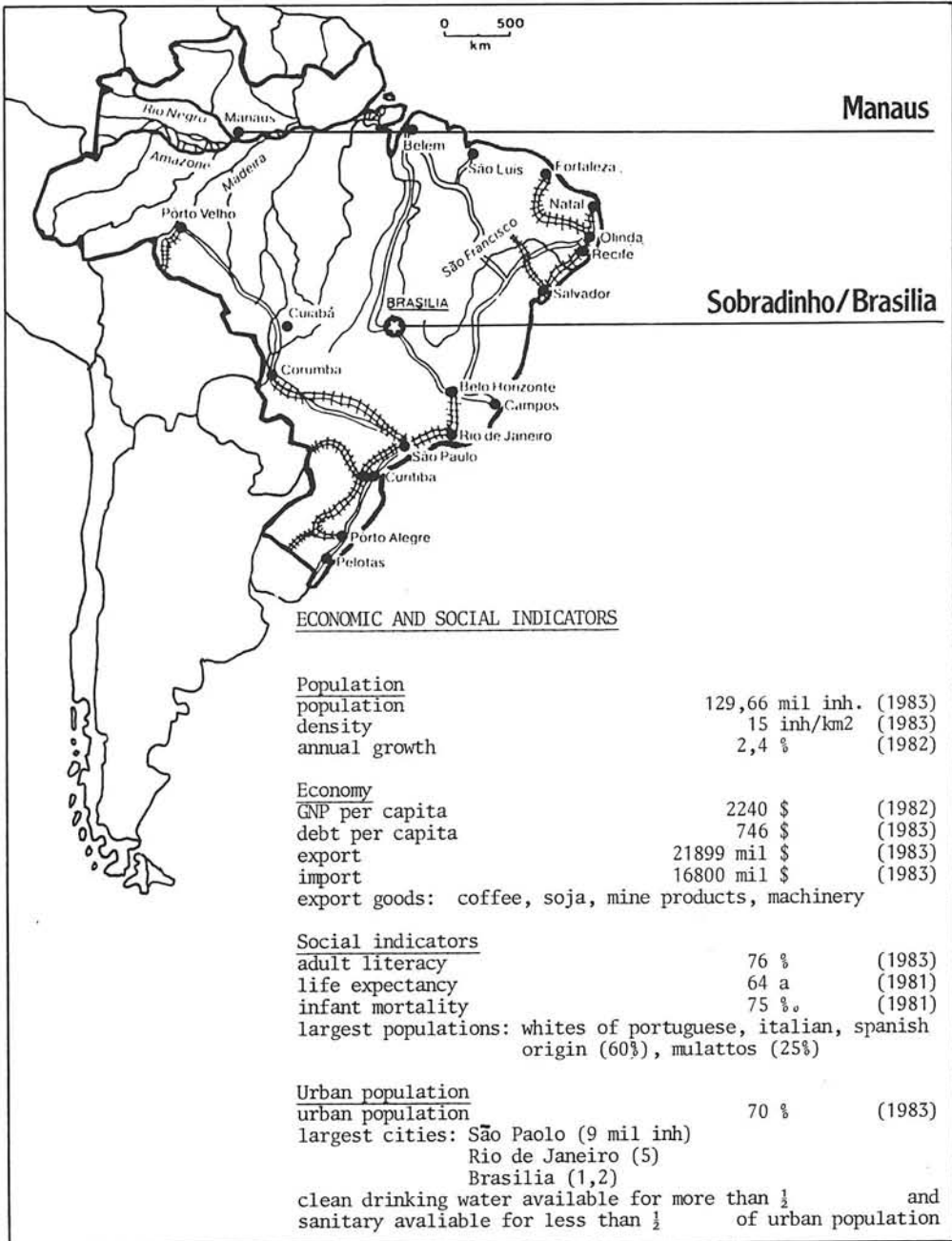
AVE, Low Cost Housing Association, a presentation of AVE in: *Stedelijke Crisis in de Derde Wereld 3*, editor: Marisa Carmona, Delft, 1984;

AVE - CEVE, la vivienda de promoción in: *CIAS, 297 (XXIX) okt.*, Buenos Aires 1980

CEVE / AVE, Sistema BENO, manual 1, Cordoba, N.N.

C.J.J. Buthet, M. Baina de Borri, *Experiencia de Asistencia Technica para un Plan de Viviendas y Promoción Humana*, Cordoba, N.N.

# BRAZIL



THE GREATER SAO PAULO  
PRELIMINARY CHARACTERIZATION AND SOME  
ASPECTS OF LOW-COST HOUSING

Aspect of "Preliminary Characterization of the Greater Sao Paulo" by Instituto de Pesquisas Tecnológicas do Estado de Sao Paulo S/A - IPT; 1982.

Shorted by Maria Blender.

I Introduction

Today Brazil has 9 metropolitan areas. Sao Paulo is the most important one because of its dimensions and the intensity of its problems. This paper provides a framework on the Greater Sao Paulo encompassing socio-economic and demographic data in general and also some aspects of housing with particular emphasis on the ones concerning the low-income population.

Sao Paulo with all its contrasts, contradictions and discrepancies represents a good case study of a Third World metropolis. Wealth, prosperity and economy run alongside with extremes of poverty, deprivation and scarcity. Looking only at the economic's statistics Sao Paulo seems to be very similar to metropolitans in the First World. Nevertheless one should bear in mind that the distribution of all resources is extremely distorted and that the concentration of social and economic benefits is one of the highest in the world. According to figures from the 1980 Census ten percent of the families in Brazil hold 50,6% of health. The upper 1% itself holds 16,9% of th wealth.

II Socio-economic and demographic aspects of the Greater Sao Paulo

The Greater Sao Paulo (G.S.P.) comprises 37 municipalities (Map 1). Data from the 1980 Census indicates that the population of this area increased at a annual growth rate of 4,46% in the period between 1970 and 1980. This growth rate, although high is small compared to the decade before, when it reached 5,44%. The present population growth rate of the Greater Sao Paulo

is similar to that of any other metropolitan areas in Brazil. This growth rate of th G.S.P. is surpassed only by the ones of Curitiba (in the south) and Belo Horizonte (in the southeast).

The metropolitan area of Sao Paulo represents a high concentration of population. In 1980 it housed 12,6 million inhabitants. This is 11% of the Brazilian population living on 0,1% of the Brazilian territory. United Nations experts estimate that by the year 2000 Sao Paulo will be the 2nd largest metropolis in the world having reached by then 25.8 million inhabitants.

In 1950 the Greater Sao Paulo was not even listed amongst the largest cities in the world. At that time its population was 2,7 million. Throughout the 50s the growth almost doubled. The population then reached 4,7 million inhabitants in 1960, and 7,1 million by 1970.

This population is not evenly distributed across the Greater Sao Paulo area, but tends to concentrate within 10 of the 37 municipalities which it comprise. The highest percentage (70%) is located at the municipality of Sao Paulo, followed by the municipalities at the Southeast (an industrial urbanization) (an industrial conurbation) along with two other municipalities - Guarulhos (in the northern region) and Osasco (in the center). Altogether they hold 90% of the population of the Greater Sao Paulo.

This concentration of population dates back many decades. In the last decade some of these municipalities which presented a very high rate of population growth may now indicate a slight change in trend. Some experts have interpreted that these municipalities with smaller population density will replace the "saturated" ones.

In the metropolitan area of Sao Paulo is concentrated wealth as well as population, 32% of Brazils capital investments are located there, as well as 11% of employment and 41% of national industrial income. Annually the per capita income in the metropolitan area is approximately 3.400 US\$. This is higher than in Venezuela and Mexico. Internal gross product of the area is 42.500 million US\$ annually. This is higher than those of Portugal and Greece.

But this does not mean that the population is generally wealthier. Not each inhabitant has the same share of wealth.

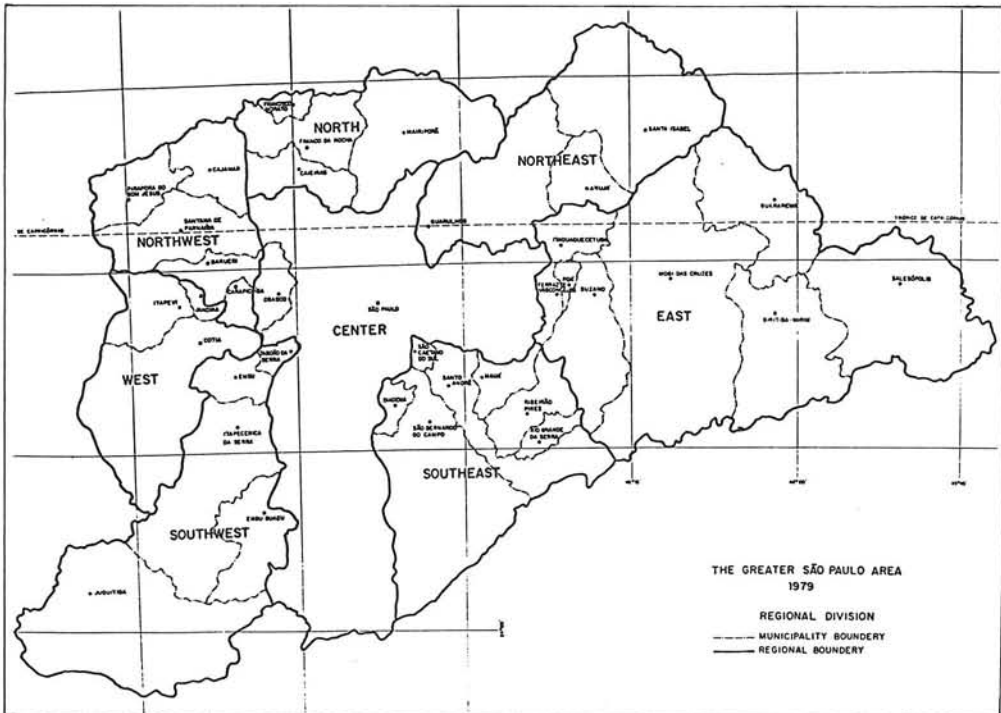
The metropolitan area grows, be it in economic or demographic terms, faster than the state and the national rates. In the 70s while its population was growing 4,46% a year, the state's population grew 2,9% compared to Brazil's rate of 2,5%. In 1970, 9% of the population of the country was housed in the metropolitan area, in 1980 the percentage was 11%. In 1970 11% of the dwellings in Brazil and 47% of the dwellings of Sao Paulo state were located in Sao Paulo while in 1980 these percentages had reached 12% and 53% respectively. Employment rate grew 6% a year at the metropolitan level between 1970 and 1980, while at the national and state level it was growing 5% a year.

This distribution of income has remained concentrated in the lower income brackets (up to 3 minimum wages, m.w., a month). Data from 1979 for the metropolitan area

indicate that the percentage of the population earning less than 2 m.w. a month has diminished since 1977 when it represented 26% of the population compared to 24% in 1979.

The working population has grown by 2% between 1977 to 1979. In 1977 this represented 54% of the population from ten years of age and up and in 1979 it represented 56%. The distribution of income among the working population also changes with a slight increase in the percentage of workers earning between 2 and 5 m.w. and a slight drop in the percentages of those earning up to one m.w. (the lowest income bracket). This is a noticeable improvement in the income distribution, although the percentages of working people at the lower income brackets are still relatively high.

As far as the labour market is concerned the industrial sector concentrates most of the employment followed by "commerce" and "services". The agriculture sector is





negligeable. The industrial plants and commercial enterprises are distributed across the G.S.P. following the same concentration pattern as that of the population. Industry development showed a boom starting in the 50s. The commercial sector had a very similar development. The G.S.P. is characterized by a great industrial and commercial activity. The "services" sector is a very dynamic area, and it is growing as fast as the employment market.

Jobs being concentrated in some municipalities mean that some of the smaller municipalities, where the population has been growing at a fast rate, are probably used only for housing. In other words, part of the working population probably has to commute to work because of the uneven distribution between the job market and the population in some of these municipalities.

The revenues from the municipalities that comprise the G.S.P. are one more indication of the concentration of economic activities, 75% of the total revenue collected as taxes in the G.S.P. come from the municipality of Sao Paulo, and 90% of all revenues in the G.S.P. come from 5 municipalities. These are the same 5 which consume 71% of the energy for industrial purposes in the G.S.P.

The auto industry is responsible for most of the industrial activity. In the late 50s the industrial boom was sparked by heavy subsidies to attract foreign investments in automobile production. In the Southeast region of the G.S.P. the main plants of General Motors, Ford, Volkswagen and Mercedes Benz among others are located. Besides all the industries that provide parts for the automobiles industries, there is a diversity of industrial activities from household appliances to textiles, pulp and paper and food industry.

### III Basic characteristics of housing in the Greater Sao Paulo

Data from the 1980 Demographic Census revealed that there are 3.000.381 occupied private dwellings<sup>2)</sup> in the Greater Sao Paulo. As far as tenure is considered most

of them are owner occupied (53%) followed by rented (37%) yielded and others (10%).<sup>3)</sup>

As far as quality of these dwellings there are a few indicators to look at. The existing data indicate that for the lower income strata these dwellings are generally overcrowded (more than 2 persons per room).

Items of infrastructure such as electricity indicate that in 1978, 98% of the dwellings had electricity regardless whether it was formally connected (through the Electricity Company) or as an extension (clandestine) from another dwelling. Treated water was available (formally connected through the water company) in 79% of the dwellings.

Most of the dwellings had indoor piping and the percentage of such dwellings has been increasing. Sa with other items dwellings served with treated water are concentrated within the wealthier and most populated municipalities - Sao Paulo and the southeast region.

Sewage network reached in 1978 52% of the dwellings in the G.S.P. according to the statistics. One must aware that although there is a network for sewage collection, there is no treatment to it. Sewage is thrown "in natura" into the rivers and streams of the Greater Sao Paulo. Basically the collecting network serves the same municipalities mentioned above, in other words the most populated, highly industrialized ones. The infrastructure and services within this municipalities is not even distributed. They exist within upper class and middle class districts. The dwellings not served by sewage network often have pit-latrines (22%) and septic tanks (18%).

Districts that lack treated water, also lack sewage networks. As result consumption of contaminated water ( even in areas that do have treated water but lack sewage facilities) is a frequent event. Areas that lack treated water and sewage, also suffer from other deficiencies, such as non-existing or erratic garbage collect, precarious road access, lousy transportation and precarious housing located in a unfavourable situation in terms of topography (the steeper the land, the cheaper it is). Data available for garbage collect indicates that in 1978, 88% of the dwellings were served by it. Two aspects have to be emphasized:



- 1- these statistics ignore the frequency of collection, in upper and middle class areas collection occurs 3 times a week, whereas in the poorer areas it is erratic at best, varying from once a week to once a month;
- 2- not all streets are served, in the poorer areas garbage trucks only go by paved streets (main avenues) and frequently one would have to walk a distance to reach a point of collection.

As far as the other infrastructure items such as telephones, transportation and hospitals, the Greater Sao Paulo has the following:

- 1- telephones: in 1978 there were 1,5 million telephones installed, of these 1,3 million in the municipality of Sao Paulo. The telephone inhabitant ratio was 187 telephones per 1000 inhabitants in the G.S.P. and 228 in the municipality of Sao Paulo.
- 2- transportation: in 1977 the transportation system in the area made 18,7 million trips a day; 54% were made by buses; 35% by automobiles; 5% by subway and 6% by suburban trains. Until June 1981 there were 2,4 million cars registered within the G.S.P.
- 3- hospitals: in 1980 there were 4,5 hospital beds per 1000 inhabitants in the Greater Sao Paulo.

In the Third World infant mortality rate is an important indicator of health and conditions. In the G.S.P. area the infants' mortality rate (defined as the number of children that died before they were one year old, per 1000 live born) has been declining according to the statistics from 1977 to 1979. Nevertheless it is still very high and in certain areas even increasing. In these areas where the rate is increasing are the municipalities where the yearly geometric growth rate is increasing and which lack most infrastructure items (for instance: Itapevi - West region, Ferraz de Vasconcelos and Poa - East region). The children's mortality rate is probably much higher if one considers as an appropriate threshold on age of 5 years instead of on age of one year.

Housing alternatives for the low-income population (usually defined as the one whose monthly income goes from 0 to 5 m.w.) comprehend the types of tenure described above (see note 3) with some specifications. Ownership for instance can be attained through different processes, self-help being the most frequent one. It is characterized by acquisition of a plot of land in a legal or an illegal settlement<sup>4)</sup> and by the families management of resources in the actual production of the house, regardless of whether the family provides the labour for the construction. Self-help can also occur in yielded land specially in cases of extended families. Other alternatives of ownership besides self-help are: acquisition of a plot with a building (be it a one room dwelling or a full house) from the private sector; acquisition of an apartment, a house, a core house or a plot with service ("sites and services") from the public sector. Rental refers to: rental of a full unit (a complete house); of rooms with collective use of bathroom and/or kitchen facilities, be it in the periphery of the cities or in deteriorated areas downtown within owner occupied units or not. Another type of tenure among the low-income population is "squattering", characterized by illegal occupation of land or abandoned units. Yielding can refer as mentioned above to the land or the unit or even to rooms within a unit.

Historically and in terms of frequency the most significant alternatives used by the low-income population seeking shelter have been: self-help, rental of rooms, yielded housing and finally occupation of land in this order. It is very difficult to give exact figures for each alternative. The Census provides figures for general aspects of dwellings, such as tenure in a broad term regardless of differences such as ownership of the land, size of the dwelling, and socio-economic aspects of the population. Local authorities either have not attempted to keep statistics or have ran into conceptual difficulties when trying to define each alternative. Statistics for self-help have never been kept. There are only rough estimates. Because the houses are illegal these projects (for building permits) cannot be submitted to the approval

of local authorities. In fact these settlements are not officially recognized as existing for tax purposes. Self-help produced in legal settlements are considered to be a minority. Local authorities do have information about building permits for what they call "economical housing", that is houses whose area totals up to 72m<sup>2</sup> built in legal settlements. Available data indicates that 52% of the building permits for housing in the Greater Sao Paulo refers to these "economical housings". One could safely admit that most of these are cases of self-help. In 1975, officials estimated that some 2,5 million plots of land in the G.S.P. were illegal. This represents roughly half of the settlements of G.S.P. (data from the Secretaria de Economia e Planeamento - 1979). Only within the municipality of Sao Paulo 4.600 illegal settlements were identified. Each one of these can hold as much as 5000 plots.

Housing in the private sector not only lack figures but estimates as well. The public sector, has produced from 1966 untill early 1982, 45.549 units (apartments, houses and core-houses) for the population with a monthly family income of up to 5 m.w. in the G.S.P.

For rental of rooms and units by the low-income population, again there are no figures. The last attempt to measure this alternative was carried out in 1973 by only the municipality of Sao Paulo.

The 1980 Census did isolate one type of "tenure" that refers specially to the low-income population. That is the illegal occupation of land -"favelas"- or slums. All data indicates (as mentioned in previous documents) that this alternative is expanding very much, and probably substituting other alternatives as far as relevance is concerned. According to the Census figures the slums have grown only in the municipality of Sao Paulo, with 446% between 1970 and 1980, while the population grew by 44%. These Census' figures are considered consevative for they ignored the small nuclei of slums - those which have up to 10 shacks and which are the most frequent type of slums in Sao Paulo. The distribution of slums across the G.S.P. indicates that slums

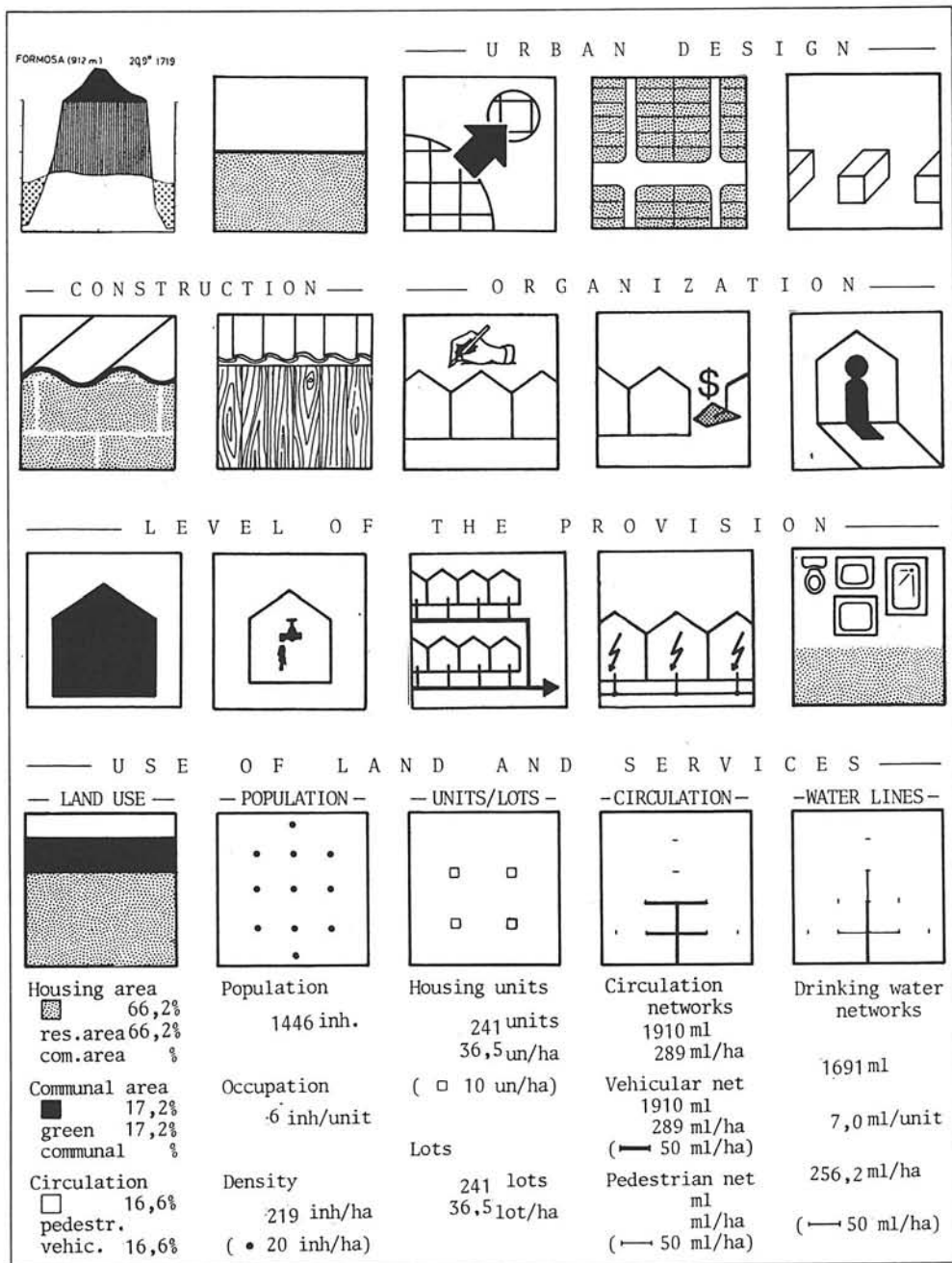
are growing mostly in industrialized municipalities where both population and employment is concentrated. In Greater Sao Paulo 71% of the slums are within the municipality of Sao Paulo; 90% of all slums of the G.S.P. are located in 4 municipalities: Sao Paulo, Sao Bernardo de Campo, Diadema (both in the Southeast region) and Guarulhos (Northeast region). They are concrete evidence of the inequities of the economical model of development adopted.

#### Notes

- 1 one minimum wage, in june 1982 was roughly 100,- US\$.
- 2 FIBGE used the following definitions for the Census:  
 'Dwellings' are any structurally independent living quarters, including housing constructions that are movable, temporary, improvised or under construction.  
 'Private dwellings' are inhabited by up to three families. Rented rooms, flats in blocks, etc. are considered as 'groups of private dwellings'.  
 'Collective dwellings' are inhabited by more than three families or by groups which do not form a household.  
 The Census dealt only with the characteristics of the 'permanent private dwellings' ignoring make-shift dwellings and other ones.
- 3 Types of tenure according to FIBGE:  
 Ownership: the owner occupies housing of its own, regardless of whether it is totally paid and whether the land belongs to a third person.  
 Rented: the dwelling is rented, even if the rent is paid by a third person (except if it is the employer).  
 Yelded: the owner consents with the use of the house by someone else without charging.  
 Other: other forms than defined above.
- 4 Illegal settlements are the ones which have not been approved or even submitted to local authorities either because they do not obey the legislation (or requirements) or because the land title is not clear.

1985  
6,6 ha

# BRAZIL Sobradinho/Brasilia



LOW-COST HOUSING  
IN SOBRADINHO

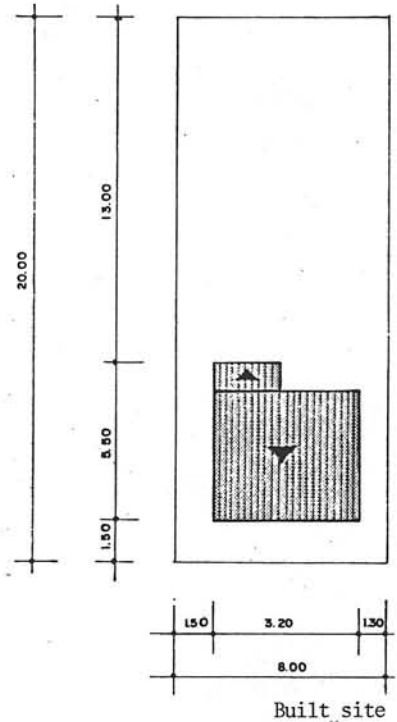
By Gualdino Duarte Pais

The presented housing project is located in the satellite town Sobradinho nearby the capital Brasília and is financed by the National Housing Bank.

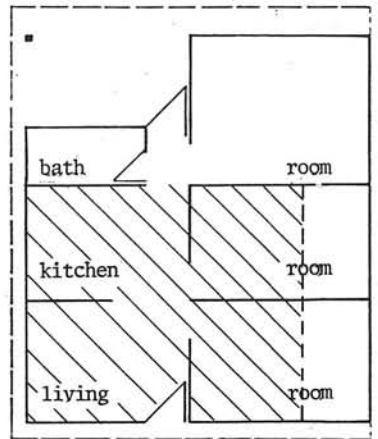
Brasília (together with Belo Horizonte and Curitiba) has been growing much faster than other Brazilian cities during the past decennia, that is for its function as new capital and in the course of the steady migration from the North-East of the country to the Centre-West since the 1940s. In the early 1960s, when the enormous housing problem in Brazil has manifested, the government's response has been the creation of the National Housing Bank (Banco Nacional de Habitação, BNH) in order to implement a low income housing programme. In five years' time the BNH has grown to the largest institution in the world with a primary responsibility for housing development. Besides that it is responsible for sanitation and other aspects of urban development.

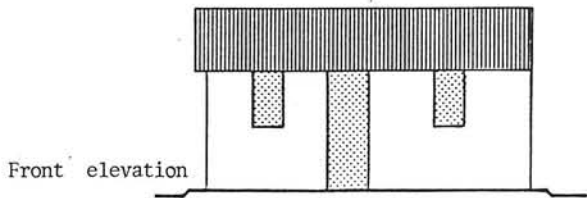
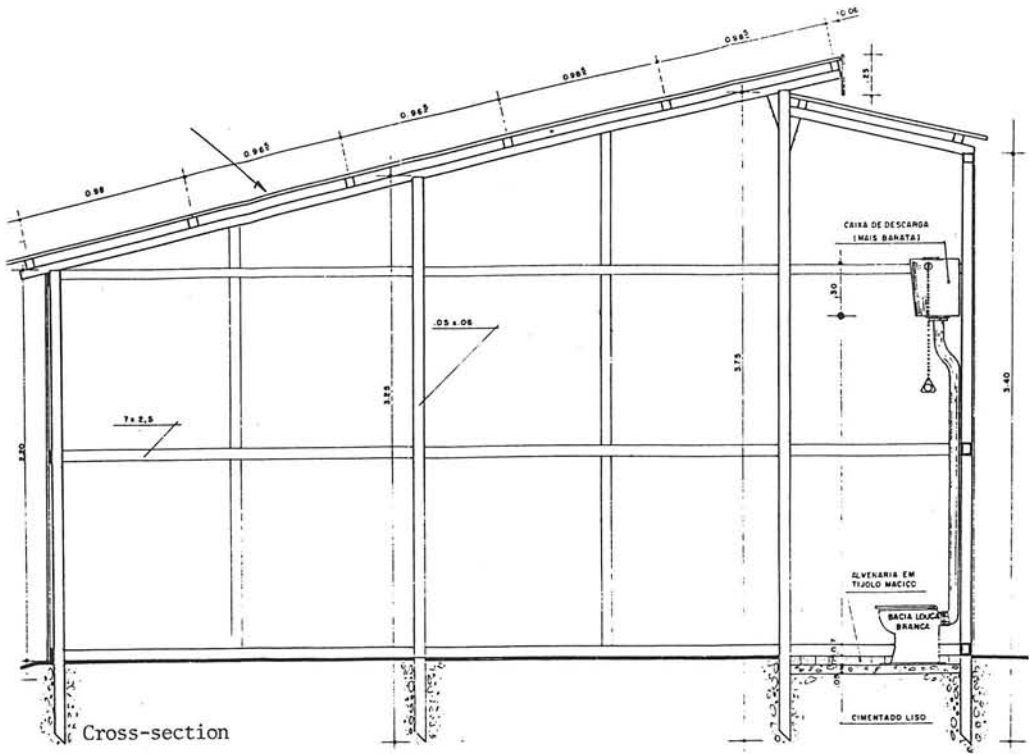
The BNH is totally government owned. It obtains a large part of its funds through a compulsory savings system: employers have to channel 8% of the wage costs to the BNH. The bank lends to state, municipal and private housing agencies, which, in order to prevent speculation, construct housing only for purchase and give loans only to new properties. The high level of inflation rates in Brazil has led to indexation of all savings and loans.

Analysis shows that lower-income groups have contributed more to the funds of the bank through the forced savings than they have benefitted by them. For the present the BNH has become insolvent, its investments are suspended.



Dwelling with amplification

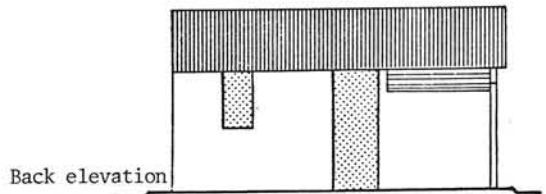


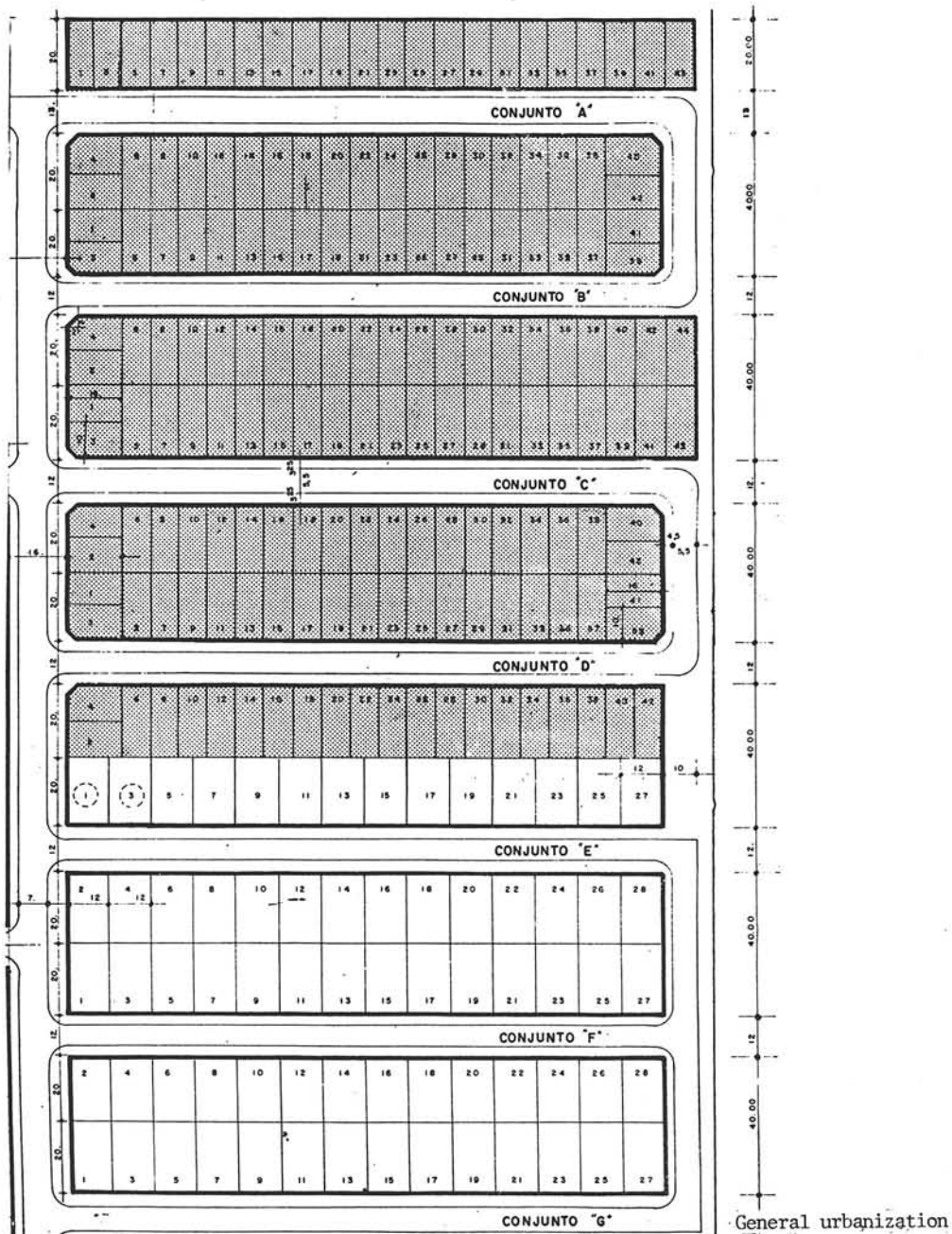


Sources

Planning documents  
and

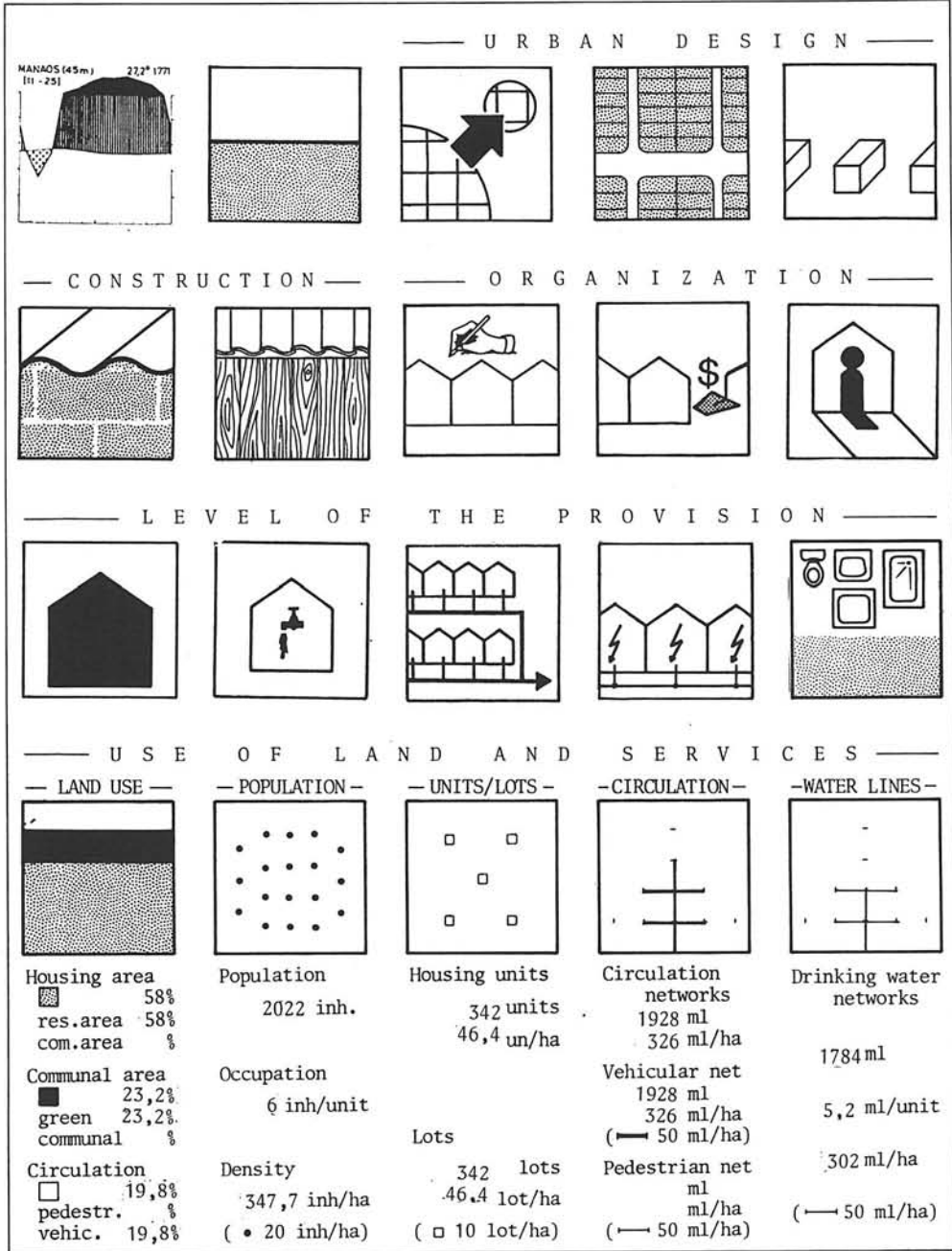
Mark Boleat "National Housing Finance  
Systems" London: Croom Helm, 1985





1985  
5,9 ha

# BRAZIL Manaus/Manaus



"LOW - RENT" - HOUSING  
IN MANAUS

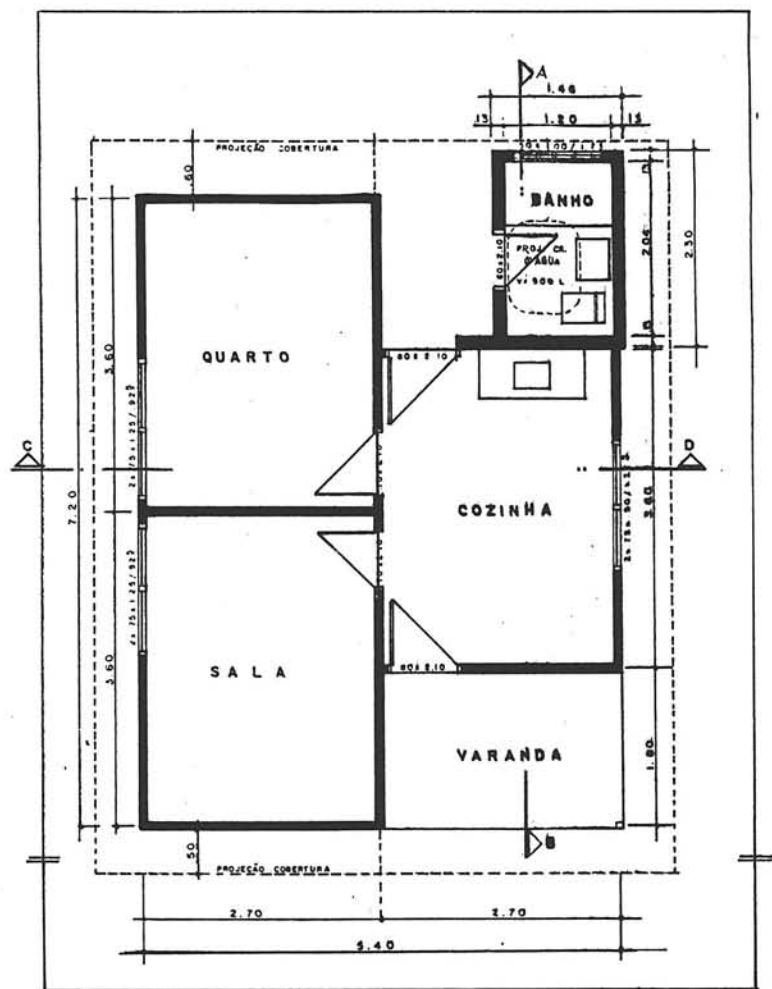
By Gualdino Duarte Pais

This project, located in Manaus, the capital of the state Amazonas, is financed by the BNH as part of a Low Rent Programme.

It consists of one-family-dwellings on lots of 160 m<sup>2</sup> (8 m x 20 m). About 20 lots form a 'manzana', the 'manzanas' are arranged in 'nuclei' of differing extensions (50 - 500 lots).

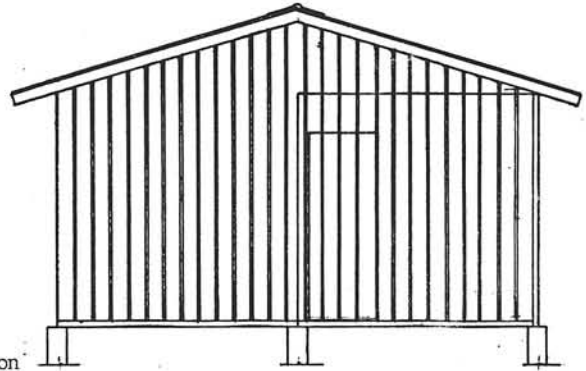
The dwellings have a kitchen, a sleeping- and a dining-room, built from timber; the toilet-bath has to carry a 500 litre water reservoir and is from a massive construction.

We have analysed 'Nucleo 13', a little part of the whole settlement.

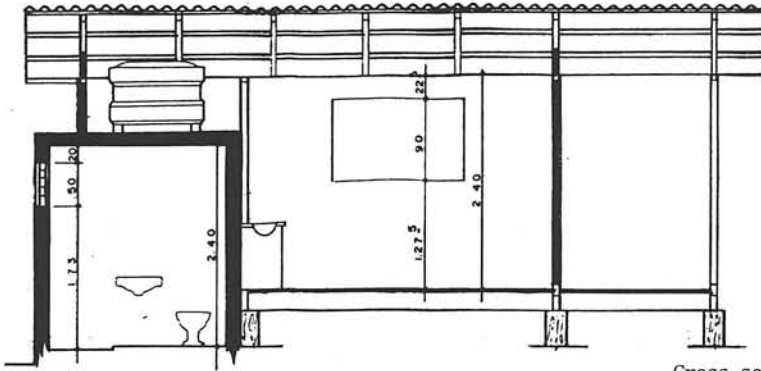


Ground plan

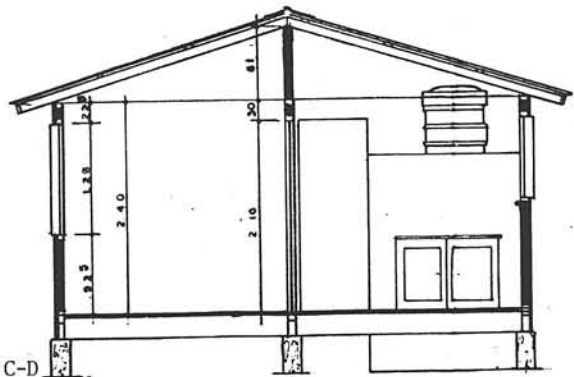




Front elevation

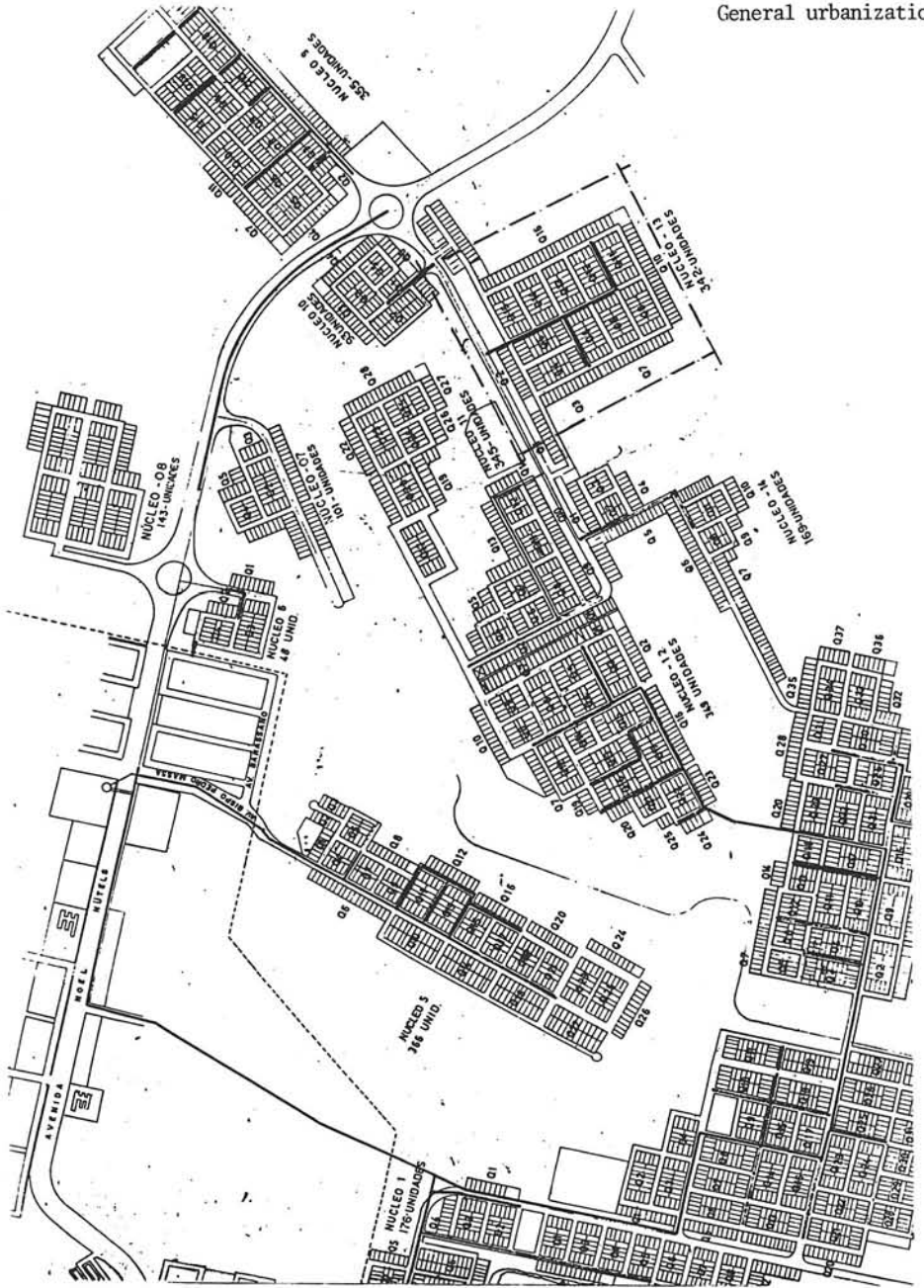


Cross-section A-B

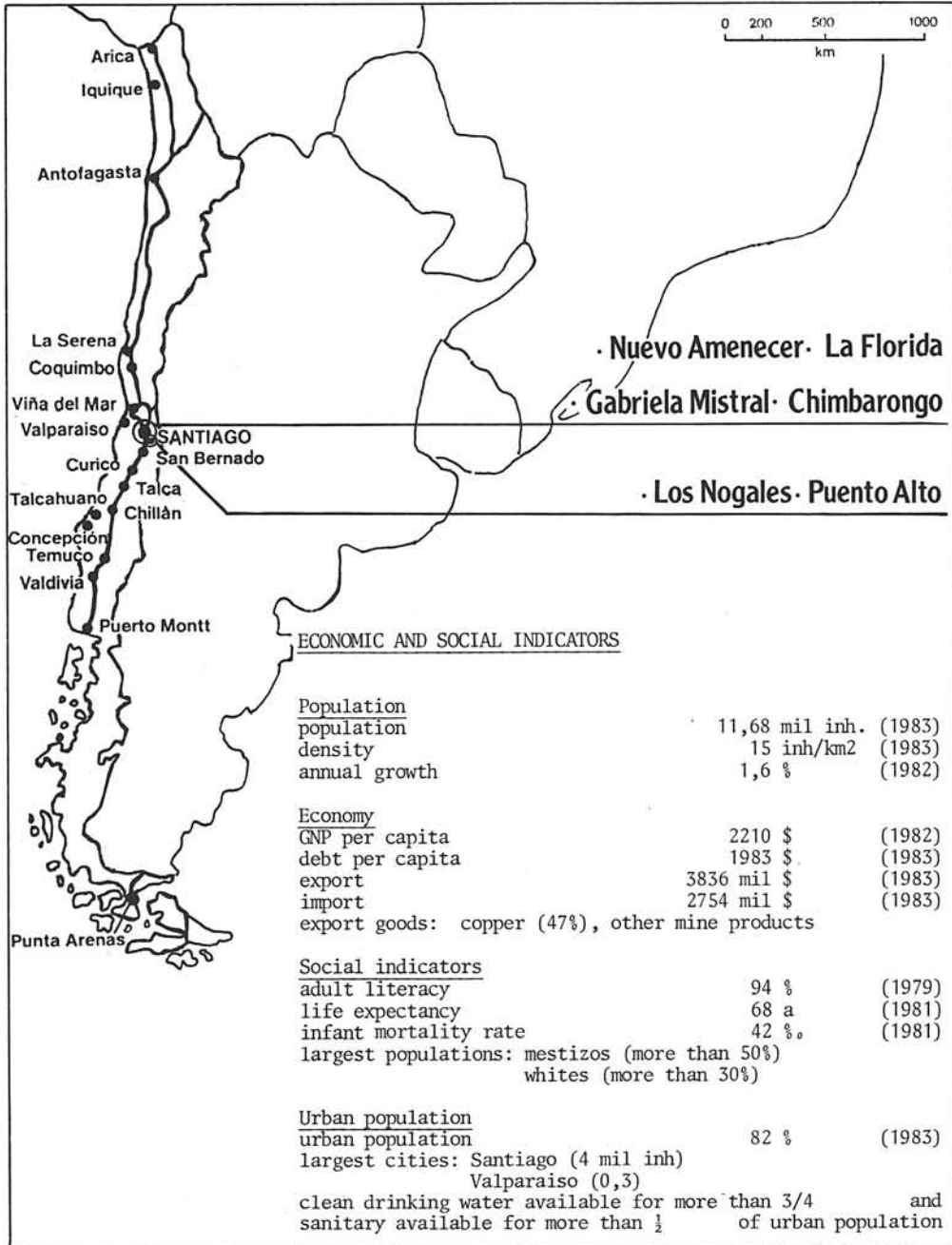


Cross-section C-D

General urbanization



# CHILE



THE HOUSING POLICY  
OF CHILE

By Marisa Carmona

The housing policy of Chile has suffered great changes in the last 12 years. Until 1973, the country developed towards a social system based on popular participation and state control of main national resources. It was a country that was close to meet the challenge of housing the big majority of the population. The country developed for more than 7 decades a system which gave the state a large place in the control of the relation between production and consumption capacity of the population.

The first social housing legislation dates from 1906 and in 1930 an urban land law was enacted. In 1948 measures

started in order to stimulate the private sector and in 1953 the Housing Corporation (CORVI) was created in order to answer the housing demand of low and middle incomes.

"Planos reguladores" were also started in the main cities in order to control urban processes. In 1959, a liberal government organized the production of "social" housing for middle income, giving large support to the building industry and real estate enterprises together with the initiation of the agrarian reform in rural areas with a low level of agricultural exploitation. In 1964 with the christian democratic government (motto: revolution in liberty), a great impulse is given to community organization and popular participation in the 1970 there were about 800.000 families, 1/3 of the country population, who belonged to social organizations, whose existence arose from the housing problem.

This government initiated an extensive housing programme, which main goals

Housing solutions according to the income level of the population, Chile, 1965.

Income	% Families	Housing Solution
0,0 - 0,4 s.v.1)	11,5	Without any solution
0,4 - 1,0	18,2	
1,0 - 1,5	17,3	Site with prime services 2)
1,5 - 4,0	39,3	The same plus a 'basic unit' 3)
4,0 and more	13,7	Social dwellings 4)
		Outside the programme of the Ministry of Housing (private sector)

Notes

- 1) s.v.: "sueldo vital", the minimum wage, fixed by the government every year; it is supposed that an average family is able to subsist with this minimum, in fact 2 s.v. were not sufficient for a family of 5 persons (in 1965).
- 2) A site of 160 m<sup>2</sup> (9x18), with drinking water supply ( one water tap for about 15 dwellings), gravel-walks and common electric power supply; every household has to dig a pit with a latrine in the rear of the site. The idea of this programme, called OPERACION SITIO, was, that families could improve their dwelling en environment with the self-help-organization of the inhabitants and with the help of the state.
- 3) A pre-fabricated wooden dwelling of 18 m<sup>2</sup>, called 'mejora'.
- 4) A family unit of 42 m<sup>2</sup>, in general ground-floor-dwellings in duplex houses, or flats of 55 m<sup>2</sup> in 4-storey-blocks.

are the organization of the demand and the support of building and industrial activity. This resulted in a large differentiated programme of housing solutions with big differences in standards according to incomes. (See table 1.)

The economic strategy of this period is the deepening of capitalistic relations in order to broaden the effects of its benefits to wider stratas of the population. This strategy had founding contradictions with the ongoing process of internationalisation of capital. The result is a rapid pauperisation, unemployment and losses in the purchase potentiality of the very poor. About 1/3 of the population is not able to purchase a minimal housing programme, i.e. just an empty lot.

The socialist regime that followed, tried to carry out changes in the structure of property, leading to spression of the monopolistic (international) land-owning power. Precisely in the persistency of this power and centers of political and economical domination lies the crux of chilean under-development.

The main changes produced in the country are the nationalization of the main resources (copper, nitrate, iodine, iron, etc.), the purchase by the state of the great strategic or distribution enterprises or monopolies, the nationalization of private banks, insurance and foreign trade and the agrarian reform involving expropriation of all the larger estates over 80 ha of basic irrigation and all badly exploited farms.

With respect to housing, this is considered a "right" of all citizens, therefore the state shall control the housing market in order to open the accessibility to the large majority. Amongst the measures taken were: the state control of saving- and loans corporations, to support the private enterprises and cooperative movement, the system of state-built dwelling allocation (regarding housing needs), the establishment of a building workers union together with a regional system of fixed wages, decentralization of the activities of the Ministry of Housing and autonomy of local

corporations, redesign of standard dwelling types in order to make them more adequate to economic and social needs, with deep concern for increasing productivity and rationalization of building activities, the incorporation of all territorial organization in the process of decision making and most important the creation of a body of planning and decision making were all involved interest should be democratically represented.

The military government, following neo-liberal economical strategy, reverts with an enormous repression the state owning control towards the main economic power groups (national and international), which ends in creating a social structure never seen before and characterized by a large difference in capital, income and opportunities between social stratas. The activities of the Ministry of Housing are seconded to the private sector and organized by the Municipalities according to a decentralization based on purchase potentiality of the given community. This scheme also regards health and education provision, a fact that contributes to widen the gap between dominant groups and the large majority. The unemployment rate grew from 3,4% in 1972 (lowest in the history of the country) to 32% in 1985. In 1985 the unemployment in the building sector increased to 42%. Nevertheless in 1980 President Pinochet announced the present "social market policy" should give the opportunity to all chilean families to have an adequate house as 900.000 dwellings should be built in the decennium only by the private sector.

According to studies done in 1982 (A. Saieh, Dockendorf Gonzalez and Rodríguez), the housing shortage has increased during the military regime from 550.000 units (1973) to 845.000 (1982). With a population of about 13.000.000 inhabitants (last official census early 1970), there were 1.653.602 housing units in 1976 (only 500.000 considered in good estate) and 2.280.833 families, which difference makes an absolute shortage of 627.231 units. In the decenia 1977-1986 the need for new housing would grow with 479.978 units because of demographical growth and 210.885 for reposition of old stock (1%) which gives a number of 600.863 units.

This number shows that there should have been built 69.000 housing units per year only for demographical growth and reposition.

Nevertheless the situation has been as follows:

Absolute shortage 1976	627.231
Demographical growth + reposition 1977-1982	414.000
- subtraction of housing units built in the period	196.402
<u>Total deficit 1982</u>	<u>844.829</u>
housing units	

These numbers show that in the next 10 years, only

for absolute shortage shall be built	84.500
for demographical growth	89.000
<u>average housing stock per year</u>	<u>153.000-</u>

According to Haramoto, Gonzalez and Rodriguez 1983, the Housing Production from 1959 to 1982 has been as follows, according to the different governments.

PERIOD	NEW HOUSING (Iniciated)	TOTAL AREA	PUBLIC	PRIVATE	AVERAGE
			m2 per house		
59-64 Alessandri	TOTAL (including private and public) 182.791 per year <u>30.465</u>	<u>2.053.054 m2</u>	52.21	88.54	67.39
65-70 Frei	TOTAL 239.156 per year <u>39.859</u>	<u>2.453.590</u>	50.80	74.88	61.56
71-73 Allende	TOTAL 156.397 per year <u>52.132 ×</u>	<u>2.895.189 ×</u>	48.21	77.50	55.53
74-82 Pinochet	TOTAL 268.915 per year <u>29.879</u>	<u>2.945.101</u>	56.70	71.29	68.41

× this amount increases to about 70.000 houses per year when considering that 1973 was economical paralyzed with a boycott that ended in a military coup, thus most of the housing is built in 2 years.

#### Sites and services

This chart doesn't include the 80.000 sites and services solutions built in the period 1965-70 which are accompanied by a programme of Technical Assistance and Banks of Building materials (PAPs), and the 250.000 sites and services solutions built in the period 1971-73. This last was accompanied with a minimal initial nuclei (prefab or temporary) of 18 m2 plus complete community services in all popular settlements (campamentos). Programme of sites and services in the neo-liberal government period are inexistent because of "national security" reasons.

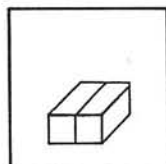
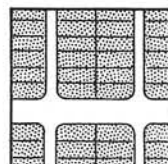
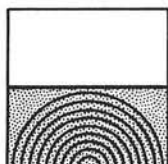
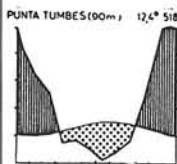
1972  
8,5 ha

# CHILE

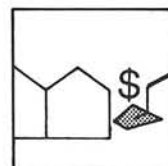
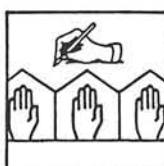
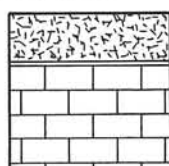
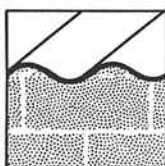
## · Nuevo Amenercer · La Florida

### — U R B A N   D E S I G N —

PUNTA TUMBES (90m) 12,4° 51'

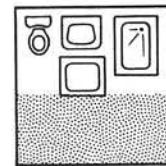
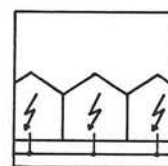
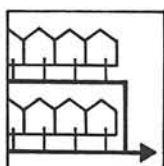
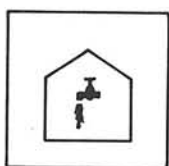


### — C O N S T R U C T I O N —



### — O R G A N I Z A T I O N —

### — L E V E L   O F   T H E   P R O V I S I O N —



### — U S E   O F   L A N D   A N D   S E R V I C E S —

#### — LAND USE \* —

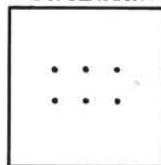


Housing area  
 ■ 43,3%  
 res. area 43,3%  
 com. area 13,4%

Communal area  
 ■ 39,2%  
 green 39,2%  
 communal 13,4%

Circulation  
 □ 17,5%  
 pedestr. 17,5%  
 vehic. 17,5%

#### — POPULATION —

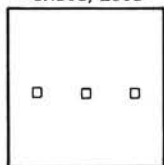


Population  
 6240 inh.

Occupation  
 5,0 inh/unit

Density  
 128,13 inh/ha  
 ( • 20 inh/ha)

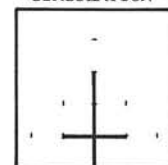
#### — UNITS/LOTS —



Housing units  
 1248 units  
 25,6 un/ha

( □ 10 un/ha)  
 Lots  
 1248 lots  
 25,6 lot/ha

#### — CIRCULATION \* —

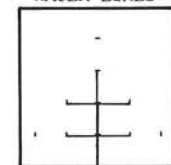


Circulation networks  
 3072 ml  
 249,7 ml/ha

Vehicular net  
 3072 ml  
 249,7 ml/ha  
 ( → 50 ml/ha)

Pedestrian net  
 ml  
 ml/ha  
 ( → 50 ml/ha)

#### — WATER LINES \* —



Drinking water networks  
 2966 ml  
 2,3 ml/unit

348,9 ml/ha  
 ( → 50 ml/ha)

NUEVO AMENCER  
LA FLORIDA / SANTIAGO

By Gerard Stalenhoef de Ayguavives and  
Galdino Duarte Pais

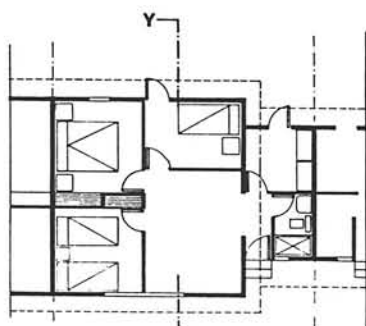
The settlement Nuevo Amencer is located in La Florida, in the South-East of the municipality of Santiago. It is realized during the government of Allende.

The organization of the participation of the inhabitants in Nuevo Amencer is based on the experiences in the 'Campamento Nueva Habana', where they worked with a team of representatives of the organization of the inhabitants, the sub-department for 'campamentos' of the CORVI ('Corporacion de la Vivienda') and the Institute of Housing, Urbanization and Planning of the University of Chile.

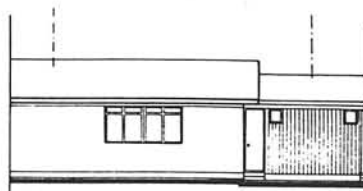
These institutions promoted Nuevo Amencer and used it as a pilot project for their research on urban lay-out, housing typologies and planning of construction processes.

In the western part of the terrain, 392 sanitary units are erected. They contain a little kitchen and a toilet-bath and are to be amplified to duplex-dwellings of 36,54 m<sup>2</sup> per dwelling on a proposed ground-plan.

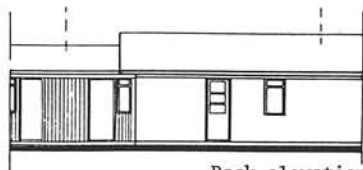
Completed dwellings with a surface of 44,62 m<sup>2</sup> make the largest part of the settlement. These 856 houses are partly arranged in a row and partly as duplex houses.



Groundplan of a dwelling



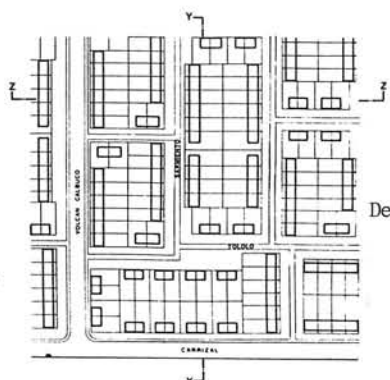
Front elevation



Back elevation



Cross-section Y-Y



Detail of the urbanization



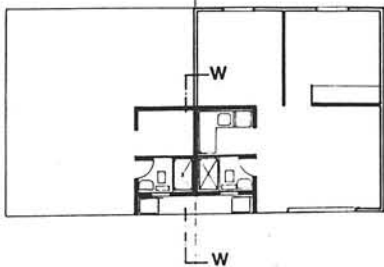
Cross-section Z-Z



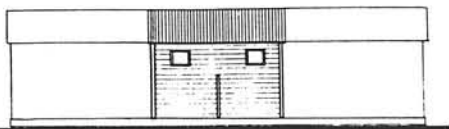
Cross-section Y-Y



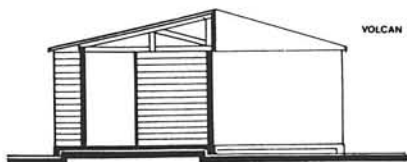




Groundplan of the sanitary unit with proposal for the future dwelling



Front elevation

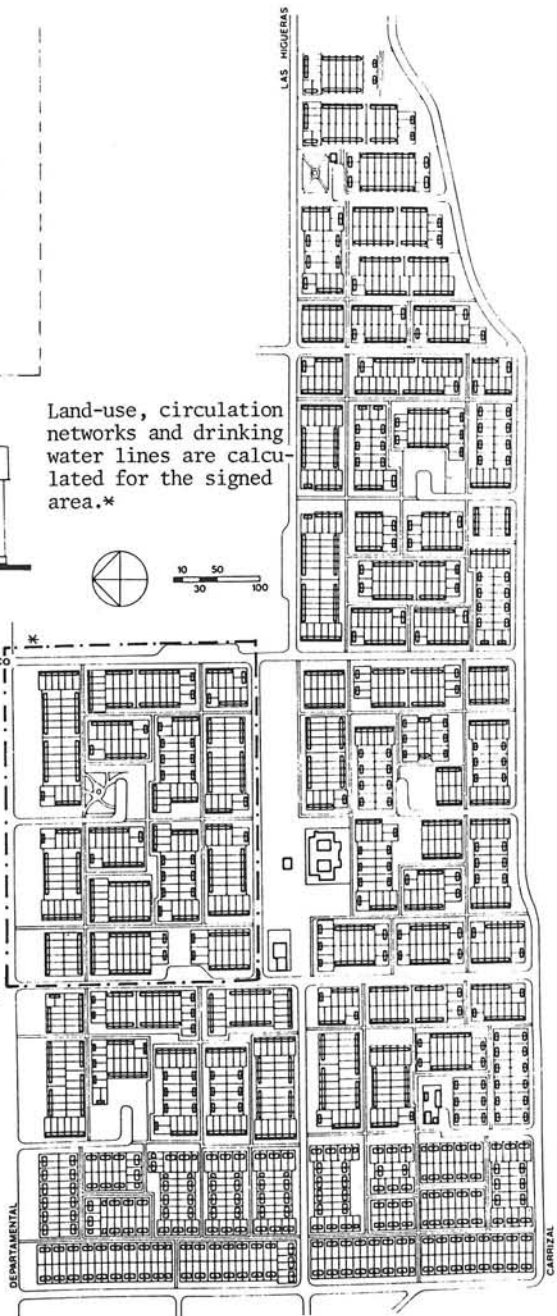
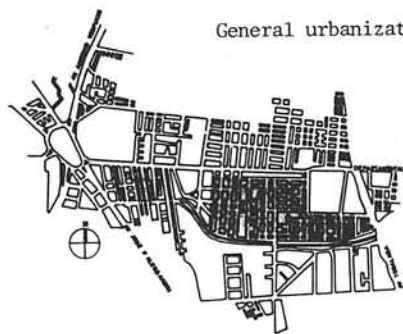


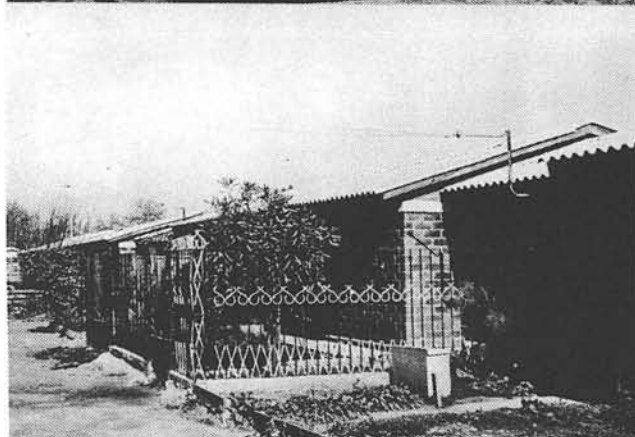
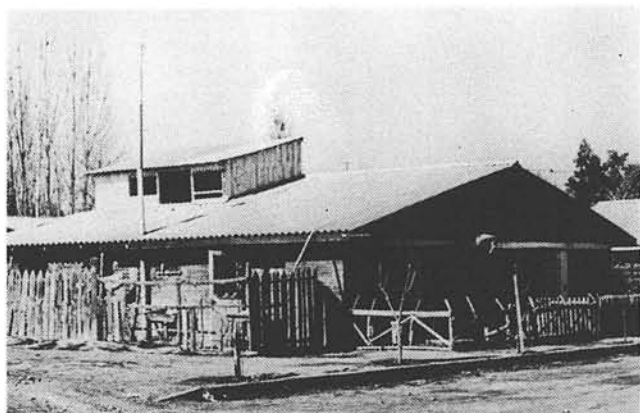
Cross-section W-W

Land-use, circulation networks and drinking water lines are calculated for the signed area.\*



General urbanization





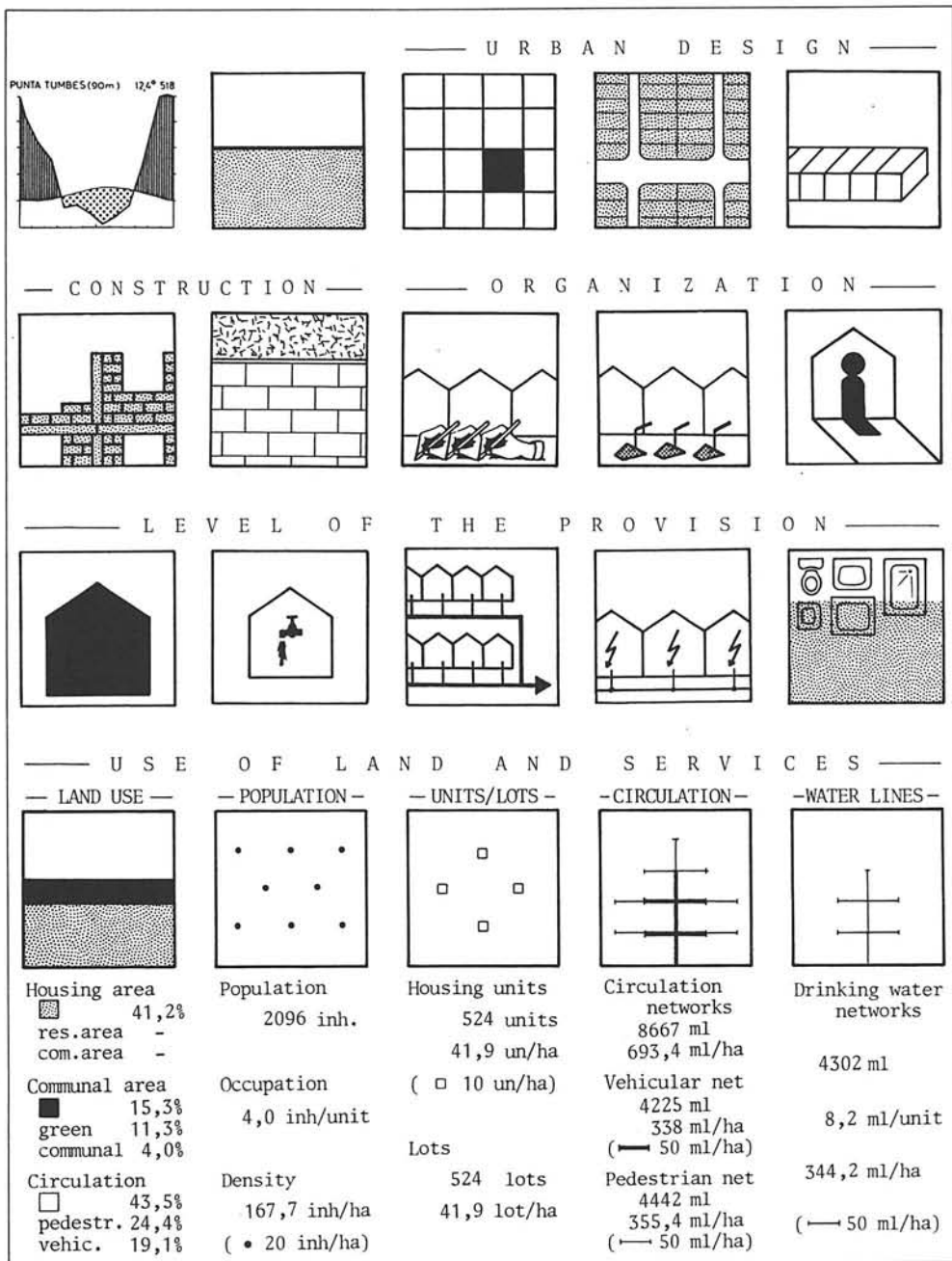
source, photographs and drawings:

Arquitectura y Calidad de  
Vida no. 41, sept. 1985  
(Catalogue of the V BIENAL  
DE ARQUITECTURA), official  
periodical of the Chilean  
Association of Architects.

1985  
12,5 ha

# CHILE

## · Gabriela Mistral · Chimbarongo



GABRIELA MISTRAL  
IN CHIMBARONGO

By Gerard Stalenhoef de Ayguavives and  
Douwe van den Berg

Gabriela Mistral is a 'campamento' (popular quarter) in the municipality of Santiago.

In 1983, SERVIU VI Región has set up a competition for an upgrading project in the area. One of the main purposes was to integrate the inhabitants in a consolidated urban reality and to give the quarter an own identity.

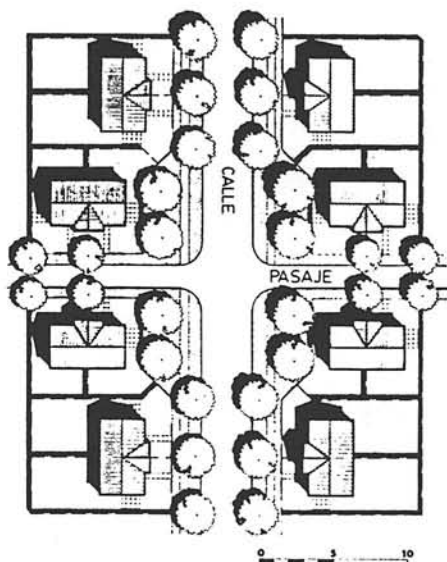
The architects Hevia and Varela started with the planning in 1984, and in 1985 the first 76 dwellings of the 524 were built.

Inhabitants of the slum areas in the quarter moved to the new dwellings, so that terrain became vacant and open for further plannings. However, it is uncertain whether plans ever will be made for these areas.

The new Gabriela Mistral borders in the North on a consolidated neighbour-quarter. In the Northwest a green zone and terrain for equipment is found. On the North-South axis a green zone is to be found, and the East-West axis consists of a sporting-area, a commercial center and a cultural area.

The duplex-houses form rectangular blocks ('manzanas') with 20 or 24 units. The corners of the blocks are designed in such a manner, that they form little plains ('plazoletas') at the crossings. The special facades, painted in traditional colours, give the settlement its own identity.

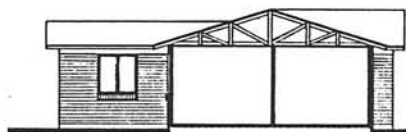
The houses have a surface of 32 m<sup>2</sup> and contain 3 sleeping rooms, a kitchen, a living- and dining room and a toilet-bath. They are supplied with electricity and water. On the sites, there is enough space for washing and wicker-work, the traditional handicraft in Chimbarongo. The occupants are the owners of their dwellings, they had to pay an initial payment, which amounted more than the half of the total costs.



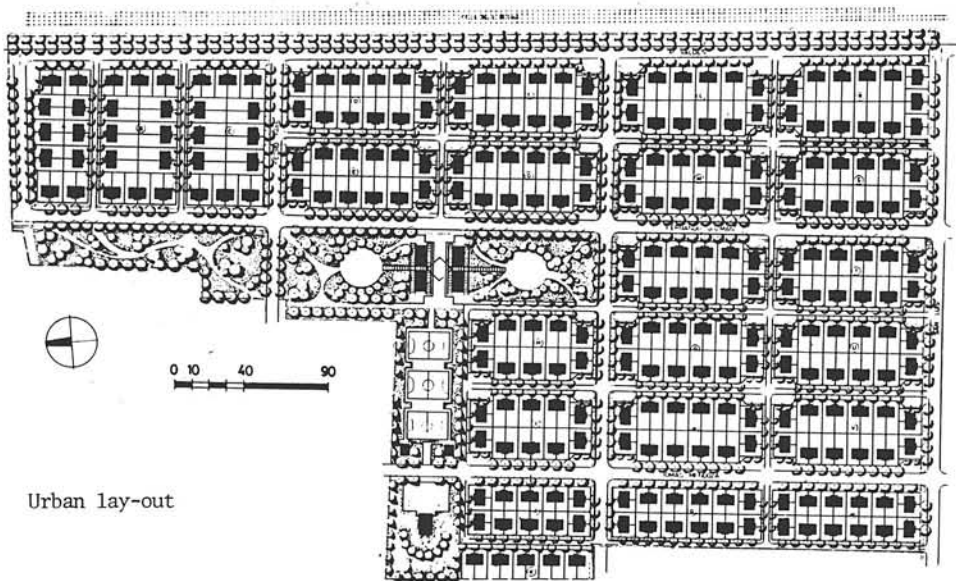
'Plazoleta'



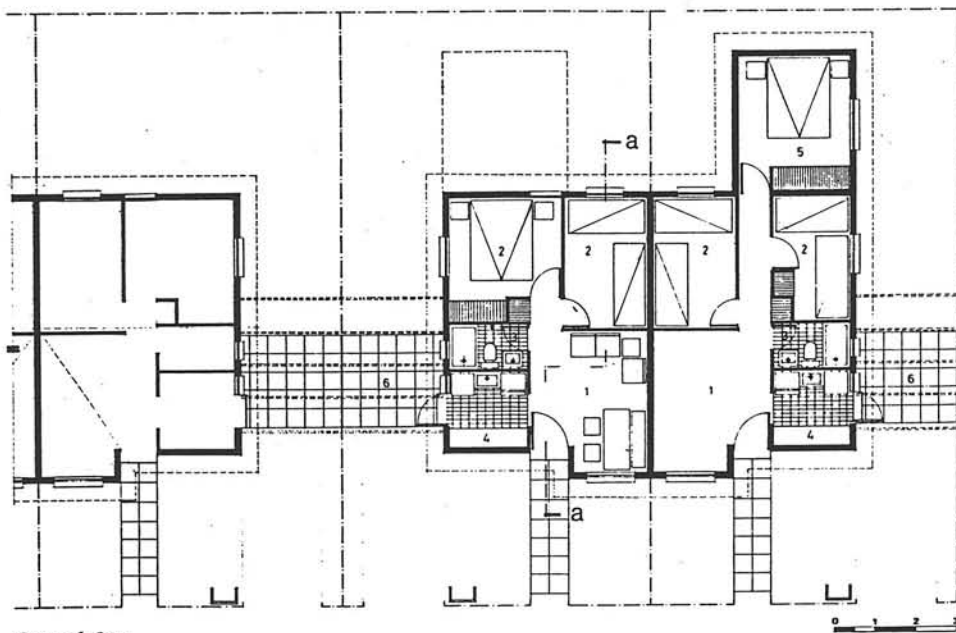
Front elevation



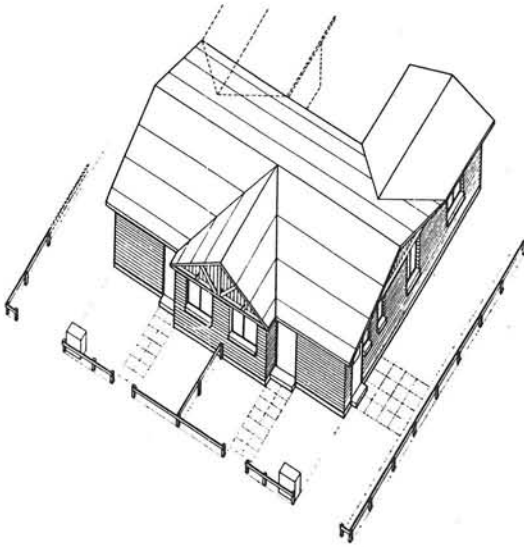
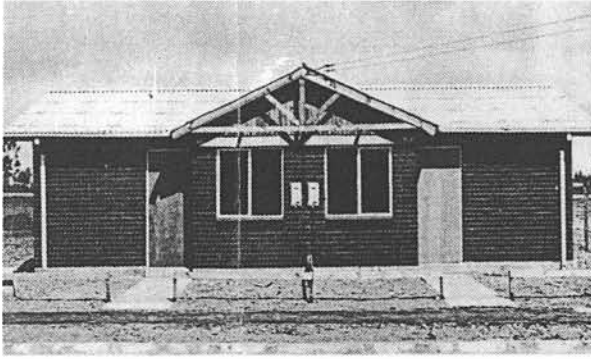
Cross-section a-a



Urban lay-out



Groundplan



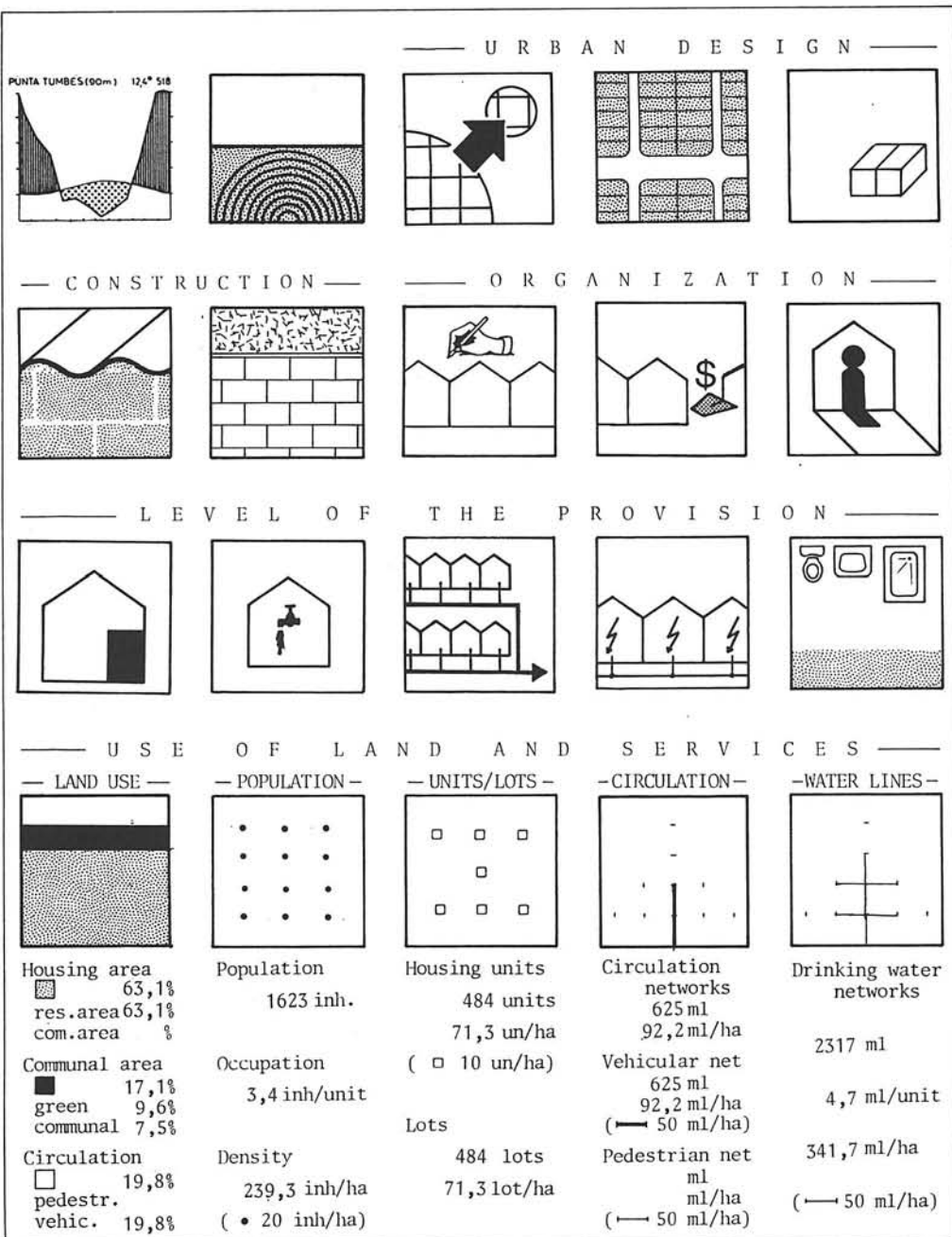
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periodical of the Chilean  
Association of Architects.

1980  
6,78 ha

# CHILE

## · Los Nogales · Puento Alto



LOS NOGALES  
IN PUERTO ALTO

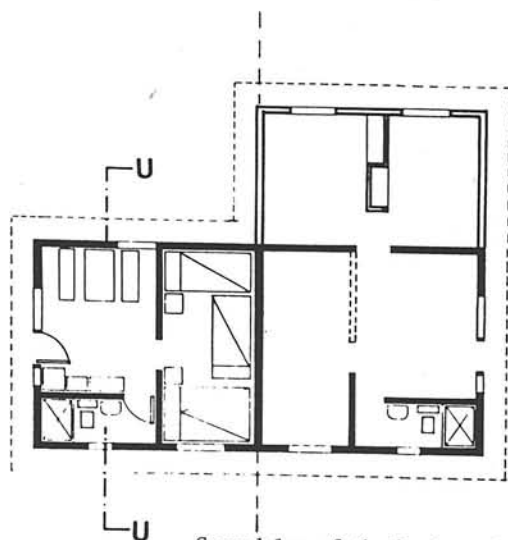
By Gualdino Duarte Pais

Los Nogales is erected in Puerto Alto, in the South of Santiago during the government of Pinochet.

The settlement is one of the first realized with the 'Vivienda Basica'-concept and as a part of the 'Vivienda Social'-Programme.

A Vivienda Basica has a minimal surface of 24 m<sup>2</sup> on a lot of minimal 100 m<sup>2</sup>. The programme 'Vivienda Social' is directed to inhabitants of 'campamentos' lacking technical infrastructure and urban equipment.

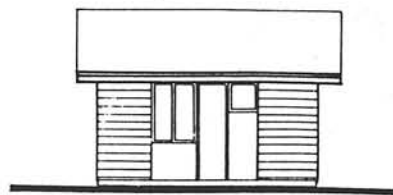
Delivered were basic-units with a surface of 24,22 m<sup>2</sup>, partly with basic furniture and partly already amplified.



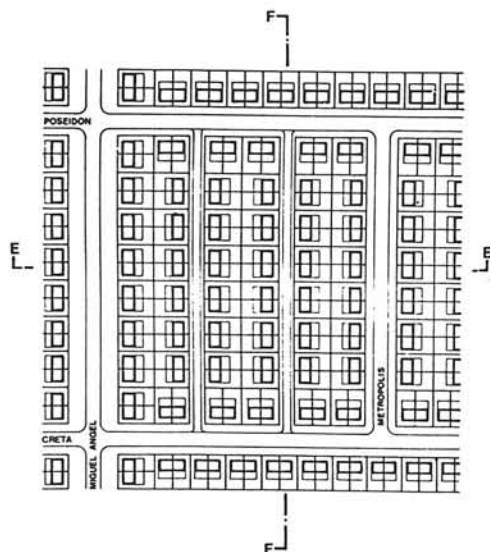
Groundplan of the basic-unit with furniture and amplified



Front elevation



Side-elevation



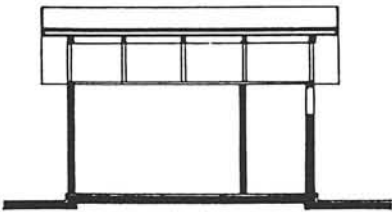
Cross-section E-E

Cross-section F-F



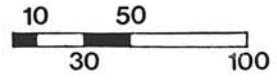
Urbanization detail





Cross-section U-U

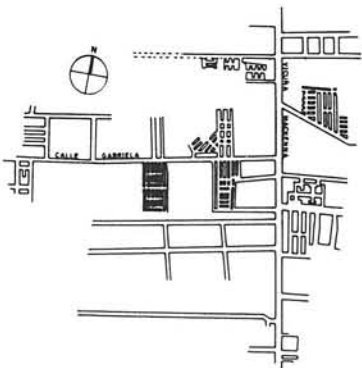
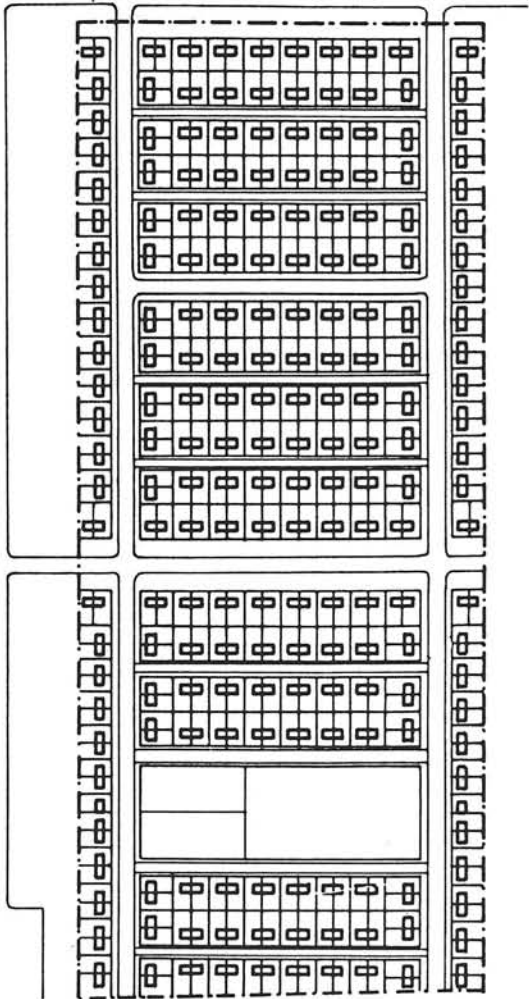
General urbanization



CRETA

GABRIELA

M. ANGEL



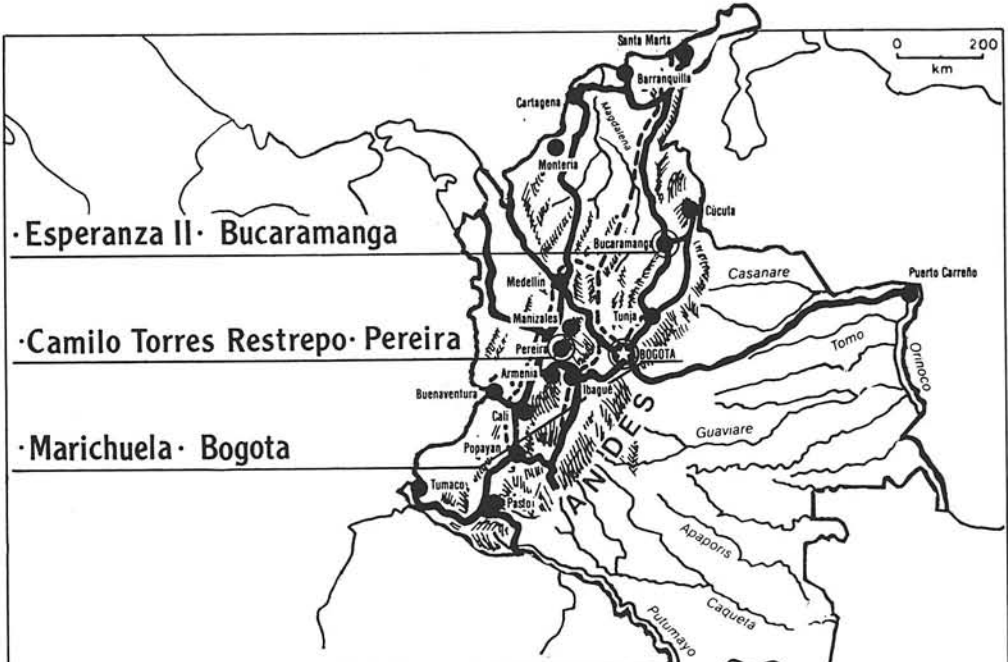


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# COLOMBIA



## ECONOMIC AND SOCIAL INDICATORS

<u>Population</u>		
population	28 mil inh.	(1983)
density	25 inh/km <sup>2</sup>	(1983)
annual growth	1,5 %	(1982)

<u>Economy</u>		
GNP per capita	1460 \$	(1982)
debt per capita	411 \$	(1982)
export	3000 mil \$	(1983)
import	4963 mil \$	(1983)
export goods:	coffee (70%), cotton, oil	

<u>Social indicators</u>		
adult literacy	81 %	(1980)
life expectancy	63 a	(1981)
infant mortality rate	55 ‰	(1981)
largest populations:	mestizos (68%) whites (20%)	

<u>Urban population</u>		
urban population	71 %	(1983)
largest cities:	Bogota (5 mil inh) Medellin (2,5) Cali (1,5)	

clean drinking water available for more than  $\frac{1}{2}$  and  
sanitary available for more than  $\frac{1}{2}$  of urban population

THE PROVISION OF  
POPULAR HOUSING IN  
COLOMBIA

By Maria Blender

BACKGROUND

Covering more than a million square kilometres on the northwest corner of South America, Colombia has a population of 28 million. Its rapid natural growth rate during the 1950s and 1960s is slowing and projections for 2000 suggest a population of some 37 million. It is a country with rough terrain and a wide range of regional climates.

The Andean region has long been the nation's main political, economic and population centre. Today it contains more than three-quarters of Colombia's population. The Caribbean lowlands are the only other area with major population centres, they contain nearly a fifth of the national population. The other three regions - the Pacific lowlands, the Llanos to the east and the Amazonas rainforests - contain less than 5 percent of the national population.

The Andean region remains the nation's industrial and agricultural centre being well suited to coffee production which is the backbone of the economy since the independence. This region includes Colombia's three largest cities: Bogota, the national capital with a population of 5 million, Medellin with about 2 and a half million inhabitants and Cali with about one and a half million inhabitants. Together with Barranquilla in the Caribbean lowlands, inhabiting some one million, these urban areas have monopolized much of the industrial development. More than three-quarters of the nation's industry is located there.

Colombia's urban population has grown rapidly in the last three decades, especially during the 1950s and early 1960s. By 1983 71% of the population lived in urban settlements compared to 39% in 1951. (In Colombia they use to define all settlements with a nucleus of 1500 or more in-

habitants as 'urban'.)

In contrast to the considerable concentration of modern industrial and tertiary sector growth in the four major cities (especially in Bogota), there is a fairly balanced distribution of urban centres in Colombia close to rank size pattern. The urbanization level (associated with the highest increase in productivity and larger social division of labour) correlates highly with the magnitude of migratory streams. In the intercensus period 1951-73, Bogota's population quadrupled, while Medellin's, Barranquilla's and Cali's roughly tripled and cities with 100.000 to half a million inhabitants doubled.

The traditional agriculture sector was unable to meet the demands of a rapidly growing urban sector and was replaced by more modern, capital-intensive agriculture in the main valleys where modern technology could be used. The traditional rural dichotomy between 'latifundia' and 'minifundia' was replaced by an inbetween commercial and traditional agriculture. This led to growing unemployment for the agricultural labour force and rapid migration to urban areas. The peasants dispossessed by the modern farms were one major cause of 'La Violencia' - the virtual war in the Colombian countryside in the late 1940s and the most of the 1950s. And 'La Violencia' for its part was a major factor in migration.

A large proportion of the rural population still lives on small subsistence holdings while the modern farms play a major role in Colombia's economy.

LAND, SHELTER AND INFRASTRUCTURE

According to official statistics, the quantitative urban housing deficit grew from 87.000 units in 1951 to 836.200 units in 1980. An unofficial estimate, considering the recent natural disasters, yields a deficit of more than one million housings nowadays. (See figure 1.)

This deficit is heavily concentrated among the lower-income groups in the five major metropolitan areas which had been the most rapidly growing areas. Close to 70% of Bogota's housing is characterized as substandard and the total deficit in the capital in 1984 was an

estimated 350.000 units with a yearly growth rate of some 15.000 units. Housing construction by the formal sector hardly ever meets the annual growth rate. (See figure 2.)

In 1973 a quarter of the urban population was estimated to have no access to public water supplies, and a similar proportion lacked electricity while more than a half were not connected to sewage systems. In rural areas nearly three-quarters of the population lacked piped water and more than three-quarters lacked electricity.

The way in which the poor obtain land differs from city to city. Partly it is to invade land, but for example in Bogota and Pereira this is an uncommon way. In Bogota over half of the population lives in 'barrios piratas'. Spontaneous settlements are called 'pirate', when the purchase itself of the land, the house or both follows legal procedures, but lacks planning permission from the urban authorities because of its inadequate services, physical layout, ownership characteristics, or its location beyond the urban perimeter.

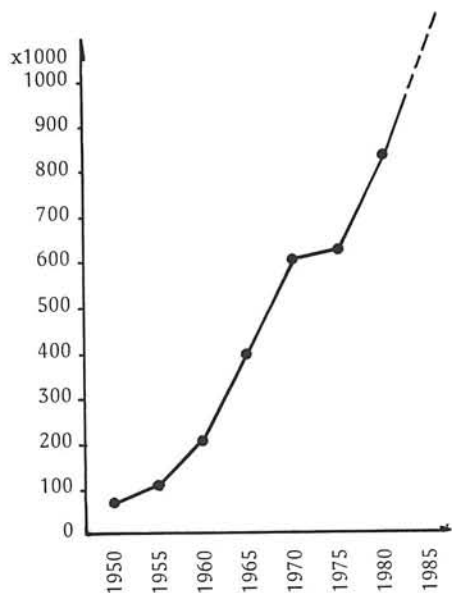


Figure 1  
Housing shortage in Colombia

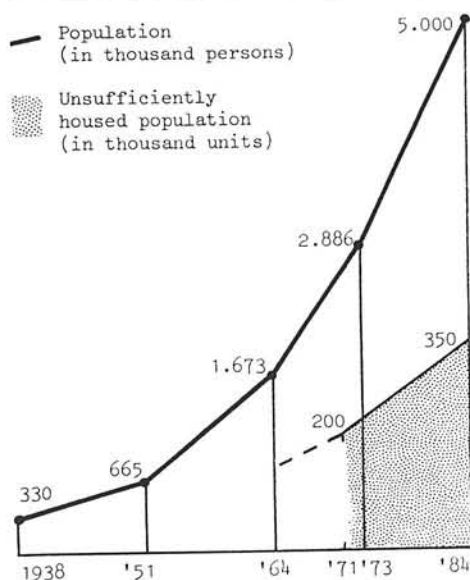
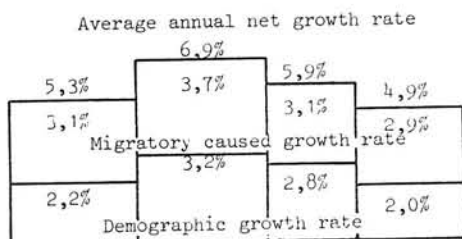


Figure 2.  
Development of the population of Bogota 1)

Nearly half of the households in Bogota are unable to afford the cheapest dwellings available on the open market. Urban plots are too expensive for low-income groups since legislation on urban subdivision requires that all land be supplied with infrastructure before being sold. Speculators illegally subdivide their land and sell it to the low-income sector.

These pirate settlements are characterized by overcrowding, insufficient services and dilapidation before the houses are completed. They do not fulfil the minimum requirements in comfort, hygienics and urban norms.

Similar conditions are to be found in the inner city of Bogota. The centre burnt down in 1948 at the beginning of 'La Violencia', and in the following decades the city grew rapidly in two ways. First in the form of unauthorized urbanizations which are a result of the accelerated migration of expelled 'campesinos', and second in the form of rising skyscrapers in the centre, which are a symptom of the increasing concentration of landed and finance property. Between the new buildings many 'inquilinos', dilapidated buildings, were converted into smaller units for sublease. So people here also live crowded with all its consequences.

#### STATE INTERVENTIONS

The efforts of the authorities to regulate this misdevelopment were limited to making plans, passing regulatory laws, layout of parks and establishing promoter institutions such as the 'Banco Central Hipotecario Colombiano'. This Central Mortgage Bank acquires its capital in the same way as the private financial sector. The 1972 Saving and Housing Corporations, 'Corporaciones Privadas de Ahorro y Vivienda', as institution corrects and concentrates money-capital loaned by private borrowers. The state thus programs the monopoly consolidation process of finance capital, the fusion with landed property and the monopolisation of housing production. Only the high income groups can pay interest rates up to 27% (1975) for housing produced by or for this system.

A little more appropriate to the need are the activities of the 'Instituto de Credito Territorial' (I.T.C.), established as early as around 1940 as one of the first Latin American housing organizations. It works as a promoter institution financed directly through the national budget. The funds extracted from the society in general are converted into promotional capital financing the activities of construction companies catering generally to the middle-income housing sector, except two periods: first during the Alliance of Progress the I.C.T. built large housing estates for low income groups. The Alliance fostered a more progressive housing policy by I.C.T. which introduced

certain self-help initiatives through which residents could extend their core houses.<sup>2)</sup>

After this period, until 1982, there were the I.C.T.'s minimum programmes that were supposedly directed at low income sectors, but interest rates of about 18% were an absolute barrier for two third of the population to acquire housing, financed in the official way. Secondly during the presidency of Betancourt the I.C.T. was building a multitude of cheap housing projects all over the land (we'll return to this).

Another state institution, the Community Action Department DAAC was created in 1958 as a part of the National Front agreement. This neighbourhood-development-programme established 'juntas de accion communal' which represent barrios to receive subsidies for the building of schools, streets, drinking water networks or for other services like health centres. The 'juntas' have to place their labourers at disposal of the projects and sometimes to pay partly for them.

Today it is the only formal accepted channel to direct subsidies to the needy, but the department has a rather small budget and is more interested in publicizing projects than in housing problems.

The reason for this direct connection between the population concerned and the central government which controls the 'accion communal' directly, is due to the fact that local political leaders and lobbies can be avoided and initiatives can be controlled on national level. Besides its function in improving community welfare the DAAC has the task to channel and circumscribe public pressure of the working class.

Inside these limits the expanding agency (in Bogota two-thirds of the barrios have 'juntas') has shown successes and seems to become an active participant in decisions about the allocation of the sources.

#### NON STATE HOUSING PROVISION

State measurements to provide the low-income groups with shelter, infrastructure

and services do not at all keep abreast with the increasing deficit. For the low-income sectors selfhelp is the only possibility to improve their situation. So selfhelp got raised to the official strategy against poverty, for it is the cheapest solution for the state.

Individual selfhelp, being rather uneffective, can not solve such largescale problems. Spontaneous initiatives of mutual groups in the colombian slums are insignificant. There exist little multiple service cooperatives, which provide individually owned dwellings for their members. Housing cooperatives with common property seem to be expanding. 3) A few corporations of the state and the existing cooperatives are acting as initiators, assistants and instructors for new cooperatives.

Initiatives of church institutions to set up building systems and housing projects available for very low incomes, and private institutions with social interests are not to be forgotten. 4)

#### BUILDING INDUSTRY

The formal sector of building activities is concentrated in a few large firms, which more and more promote real estate, and also many small firms, which build with a low productivity and for prices that can not be paid by large sectors of the population.

Most of the construction activities lie in the informal sector, in urban areas like the pirate settlements and invasion areas. The building materials industry relies on the informal sector's demand. The costs of cement, glass, steel and bricks however have risen much more rapidly than the salaries of the most workers with a low income.

Colombia, which some call "more spanish than the spanish" has a reliable building trade with brick as a building material of high tradition, but this is rarely used for social housing.

The national development plan of 1971 'Las Cuatro Estrategias' emphasized among others

the promotion of building activities in urban areas to generate employment, and with this economic and social development. Instead it caused a massive speculative wave in land and house prices with no positive result for the poor. Realisation of this plan was stopped in 1974. The subsequent development plans aimed at the level of population policy at diminishing migration. 'Para cerrar la brecha' in 1974 was a sort "green revolution"-plan, and the 'Plan de Integracion Nacional' in 1980 intended to decentralize economic activities and develop transport and communication.

During the presidency of Turbay Ayala (1978-1982) there existed no state housing provision for the poor. Public housing only played an important part in election campaigns. The housing projects built for this were only of a short term success. The government even resorted to holding a housing lottery once a year. In the period of president Betancourt (1982-1986) a popular housing policy has been developed. It was planned among others to build 100.000 cheap, industrialized core-houses without advance payment for the low-income sector during four years. Until april 1985 this challenge was almost achieved. 5)

In Colombia, the housing policies always have had a second aim besides the provision of housing. That is to tranquilize social conflicts and pacify the country.

#### Notes

- 1) We see, that migration contributes more to the increase in population than demographic growth does, even though both rates are decreasing. Regarding this, Bogota is representative for most of the other cities (e.g. Bucaramanga in 1983: 514.134 inhabitants, net growth rate 3,61%, demographic growth 1,74%, growth caused by migration 1,87%).

- 2) Here has to be mentioned, that the land-reform introduced under pressure of the Alliance of Progress in 1961 has failed.
- 3) As a successful example see the project in Pereira.
- 4) See project in Bogota.
- 5) See project in Bucaramanga.

#### Sources

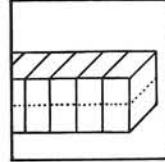
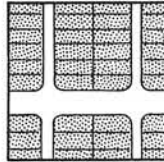
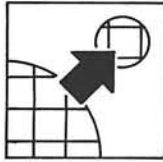
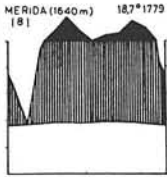
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1984  
5 ha

# COLOMBIA

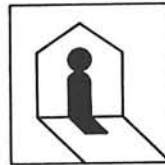
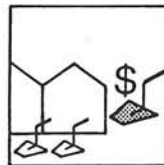
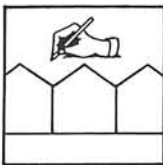
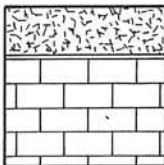
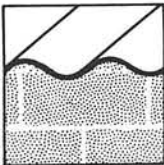
## · Esperanza II · Bucaramanga



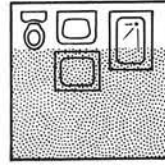
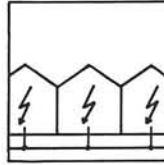
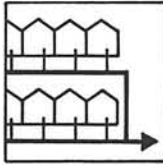
— U R B A N   D E S I G N —

— C O N S T R U C T I O N —

— O R G A N I Z A T I O N —



— L E V E L   O F   T H E   P R O V I S I O N —



— U S E   O F   L A N D   A N D   S E R V I C E S —

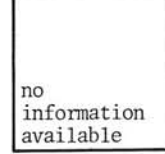
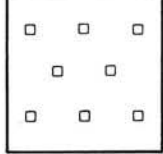
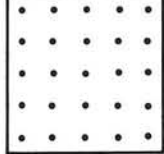
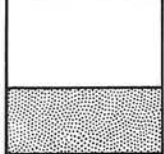
— L A N D U S E —

— P O P U L A T I O N —

— U N I T S / L O T S —

— C I R C U L A T I O N —

— W A T E R L I N E S —



Housing area 45%  
res.area %  
com.area %

Population 2450 inh.  
Occupation 6,5 inh/unit

Housing units 377 units  
75 un/ha  
( □ 10 un/ha)

Circulation networks  
ml  
ml/ha  
Vehicular net ml  
ml/ha (→ 50 ml/ha)  
Pedestrian net ml  
ml/ha (→ 50 ml/ha)

Drinking water networks  
ml  
ml/unit  
ml/ha  
(→ 50 ml/ha)

Communal and Circulation  
pedestr. 55%  
vehic. %

Density 490 inh/ha  
( • 20 inh/ha)

Lots 377 lots  
75 lot/ha

" ESPERANZA II "  
BUCARAMANGA

By Maria Blender

Bucaramanga, the capital of the department Santander, had 514.183 inhabitants in 1983, which is two times the population of 1967; this growth is above all the result of migration waves caused by the 'violencia'.

13.600 families (75.000 persons) live in slums at the slopes north, west and south of the city, in areas which aren't comprised by urban development. On the whole the housing deficit is estimated on 44.000 units in 1985.

In 1982 the 'Instituto de Credito Territorial Regional Santander' began with the planning of several housing projects with 7.000 units for Bucaramanga, and in total 10.339 units for the department. As part of the national housing programme "sin cuota inicial" the houses are sold to

lowest income groups without initial payment.

The city of Bucaramanga suffers great problems of erosion, due to its particular soil-formation; most squatter areas lay on a slope.

The new CDMB (Corporation to save Bucaramanga) asked for technical assistance of the Dutch Government. This assistance resulted in work of DHV (Dwars Hendrik and Vrij) for Sanitation and Environmental Engineering and DGIS (Doktoraat Generaal Internationale Samenwerking) for Sociologist help in the Upgrading of Communities. A programme of upgrading was set up together with the ICT.

For the total project the ICT bought 50 ha of land, nearby the old squatter settlements. The 'Esperanza' plan has been to admit the population of the barrios 'Transición', 'Granja Palonegro' and 'Navas', which are much endangered by the soil-erosion. The population of "Transición", about 1.300 families with 5,6 persons on average, earns its low income for a large part with informal work. The half of the incomes is inferior to the minimum salary; and the housing situation is catastrophic.



a housing density beyond 400 dwellings per hectare and the sewage running downhill result in enormous health problems and a high infantile mortality. The resettlement of the families, 900 from "Transición" and 200 from "Granja Palonegro" and the "Navas", was done by their own free choice.

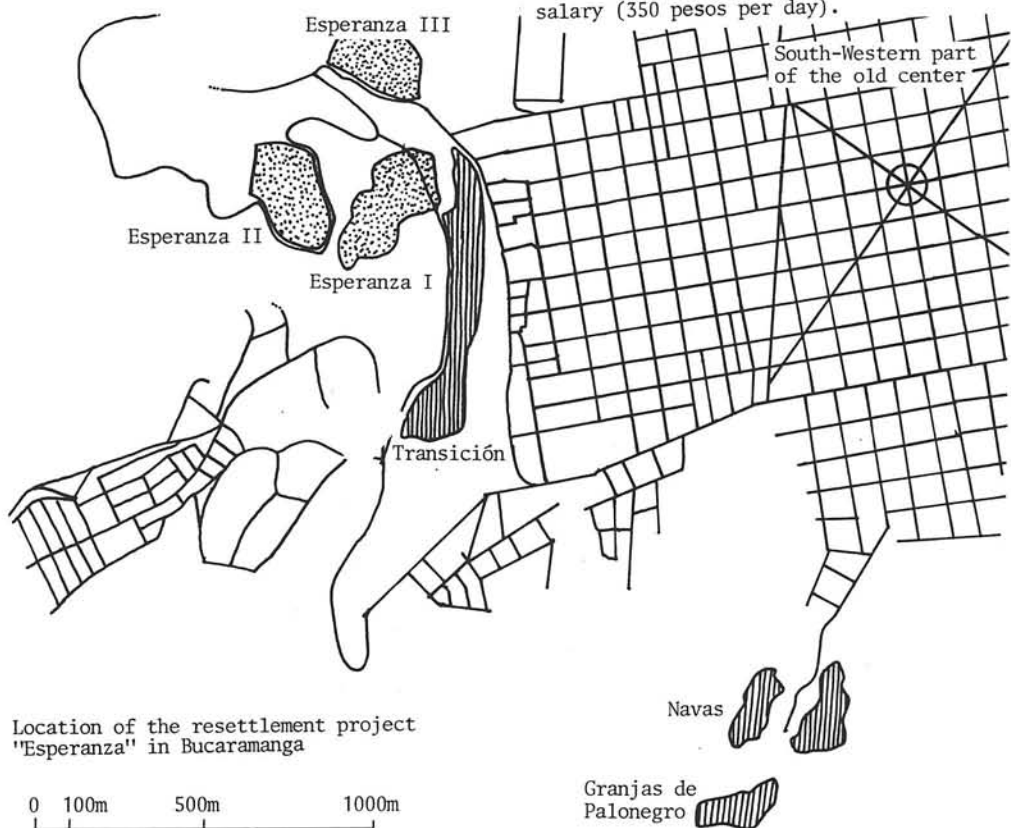
Esperanza resettled in total 1.137 families. In this book we refer to the second section (Esperanza II) that contains 377 lots on an area of 5 ha, and is built by self-help. Esperanza I contains 212 lots and has been realized one year earlier, in 1983. Esperanza III was projected for 778 families, but only 548 dwellings have been built by ICT in 1985, with a smaller amount of self-help and a higher finishing standard.

The resettlement was done with full participation of the sociologist and social workers, in order to achieve an integral development. A programme of support for small artisan enterprises and increase of income was also implemented.

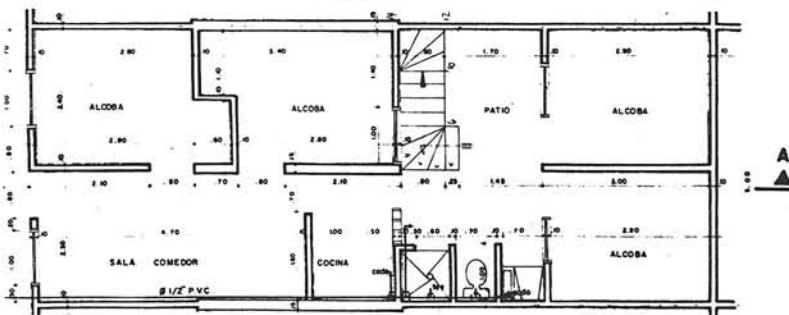
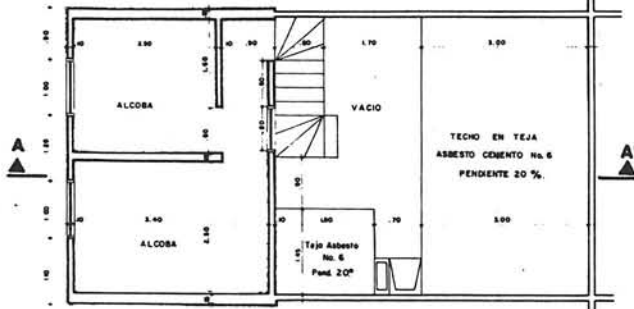
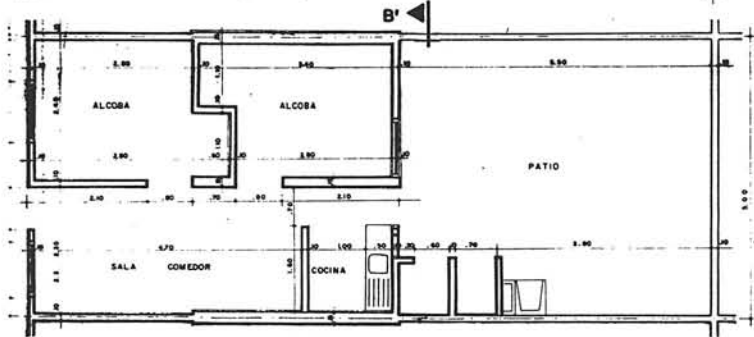
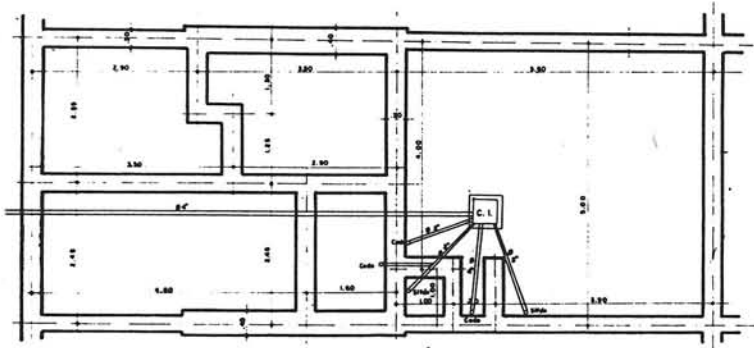
Due to a flood-emergency the first resettlement was performed and houses were being built, while people were already living on their new lots. This proved to be an unproductive factor and resulted in an increase of costs in comparison to other ICT self-help programmes in the region.

The unfamiliar row houses, type "minima", with progressive ground-plan on lots of 60 m<sup>2</sup> (5 x 12), are built in a traditional way. They are individually supplied with water and electricity.

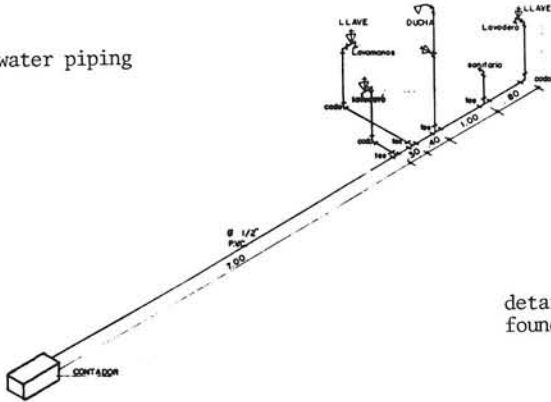
The monthly payment of 1.400 pesos is less than one fifth of the official minimum salary (350 pesos per day).



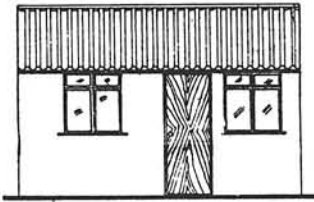
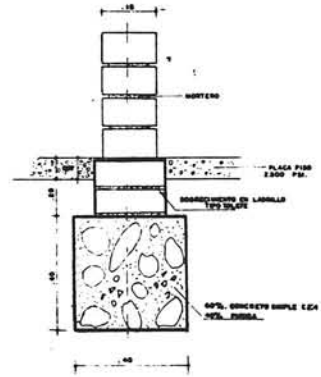
Location of the resettlement project "Esperanza" in Bucaramanga



water piping

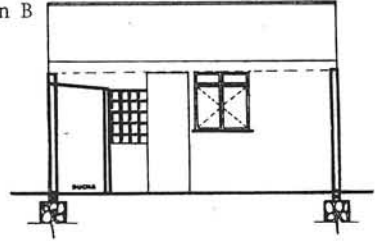


detail of the foundation

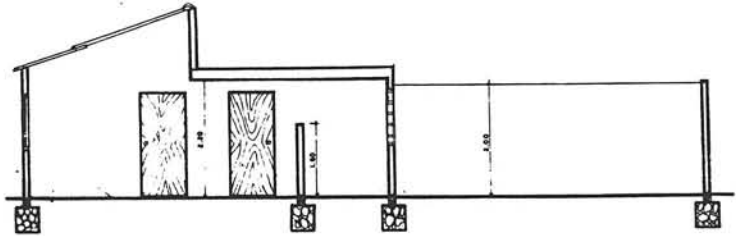


elevation

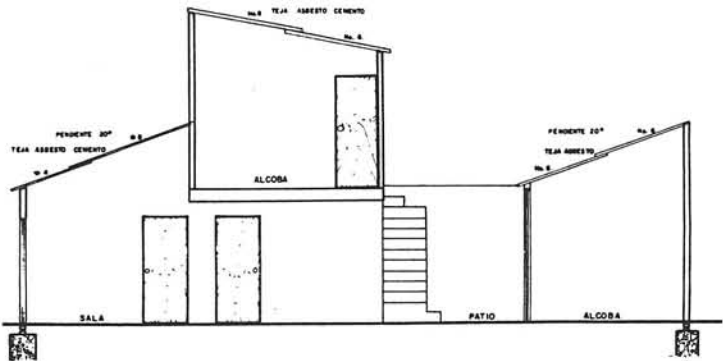
cross-section B

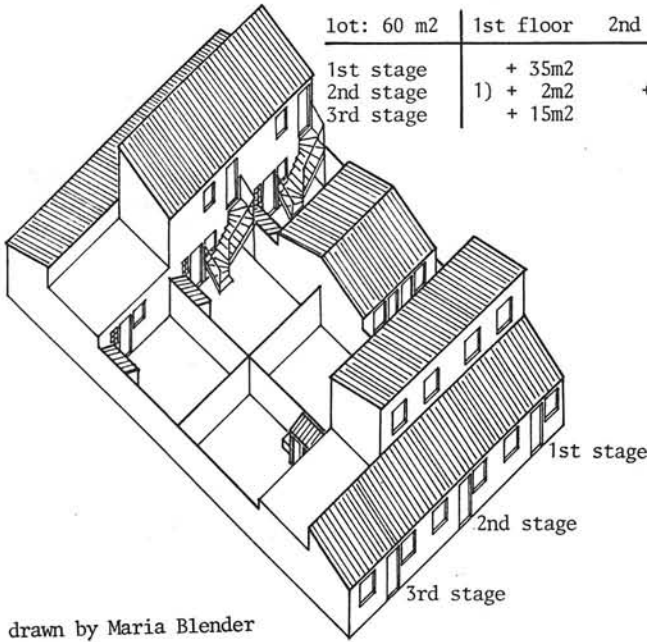


cross-section A without amplifications



cross-section A with amplifications





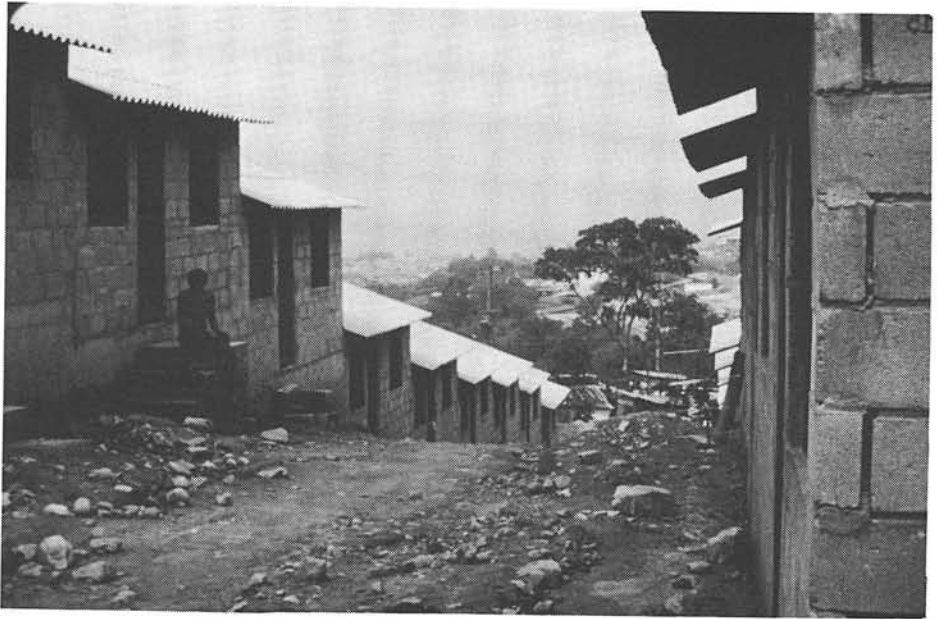
lot: 60 m <sup>2</sup>	1st floor	2nd floor	built area	open space
1st stage	+ 35m <sup>2</sup>	0	35m <sup>2</sup>	25m <sup>2</sup>
2nd stage	1) + 2m <sup>2</sup>	+ 18m <sup>2</sup>	55m <sup>2</sup>	23m <sup>2</sup>
3rd stage	+ 15m <sup>2</sup>	0	<u>70m<sup>2</sup></u>	8m <sup>2</sup>

1) stairs

Development of built area  
(built area : lot area = 1,15)

drawn by Maria Blender







sources and drawings:

Instituto de Credito Territorial - Regional Santander: 'Vivienda sin Cuota Inicial - una Promesa Cumplida - Programas de Vivienda agosto 82/ diciembre 84'

República de Colombia, Departamento Nacional de Planeación y Reino de los Países Bajos, Dirección General para la co-operación Internacional (DGIS): Informe de la mision de evaluación del convenio de co-operación Holandesa a la Meseta de Bucaramanga (CMB), Bogotá, march 1985

Planning documents of the I.C.T. Regional Santander.

photographs: dhr. Donny Mertens (DGIS)

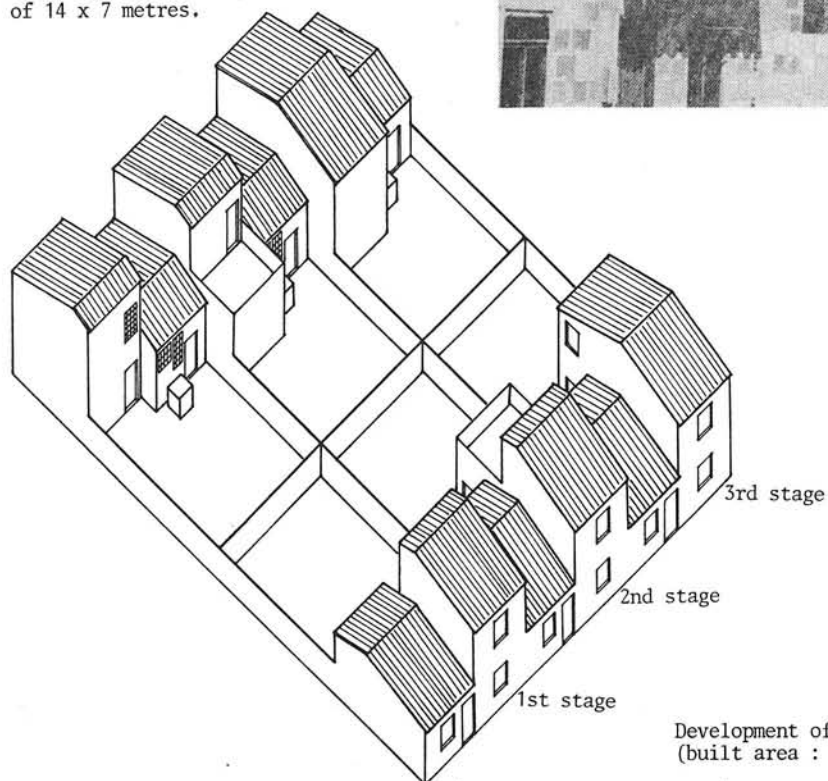


"PROVIVIENDA  
COMMUNITARIA"  
SAN GIL

In San Gil, located 60 km in the South of Bucaramanga, another "sin cuota inicial" self-help project of the I.C.T. Santander is realized.

The used housing type "basica" is more spacious than the "minima" houses, and in the 'patio' small scale cultivation of vegetables and feeding of domestic animals is possible.

In 1985, 114 dwellings were built on lots of 14 x 7 metres.



Development of built area  
(built area : lot area = 0,82)

lot: 98 m <sup>2</sup>	1st floor	2nd floor	built area	open space
1st stage	+ 39m <sup>2</sup>	+ 19m <sup>2</sup>	58m <sup>2</sup>	59m <sup>2</sup>
2nd stage	+ 11m <sup>2</sup>	0	69m <sup>2</sup>	70m <sup>2</sup>
3rd stage	0	+ 11m <sup>2</sup>	80m <sup>2</sup>	59m <sup>2</sup>

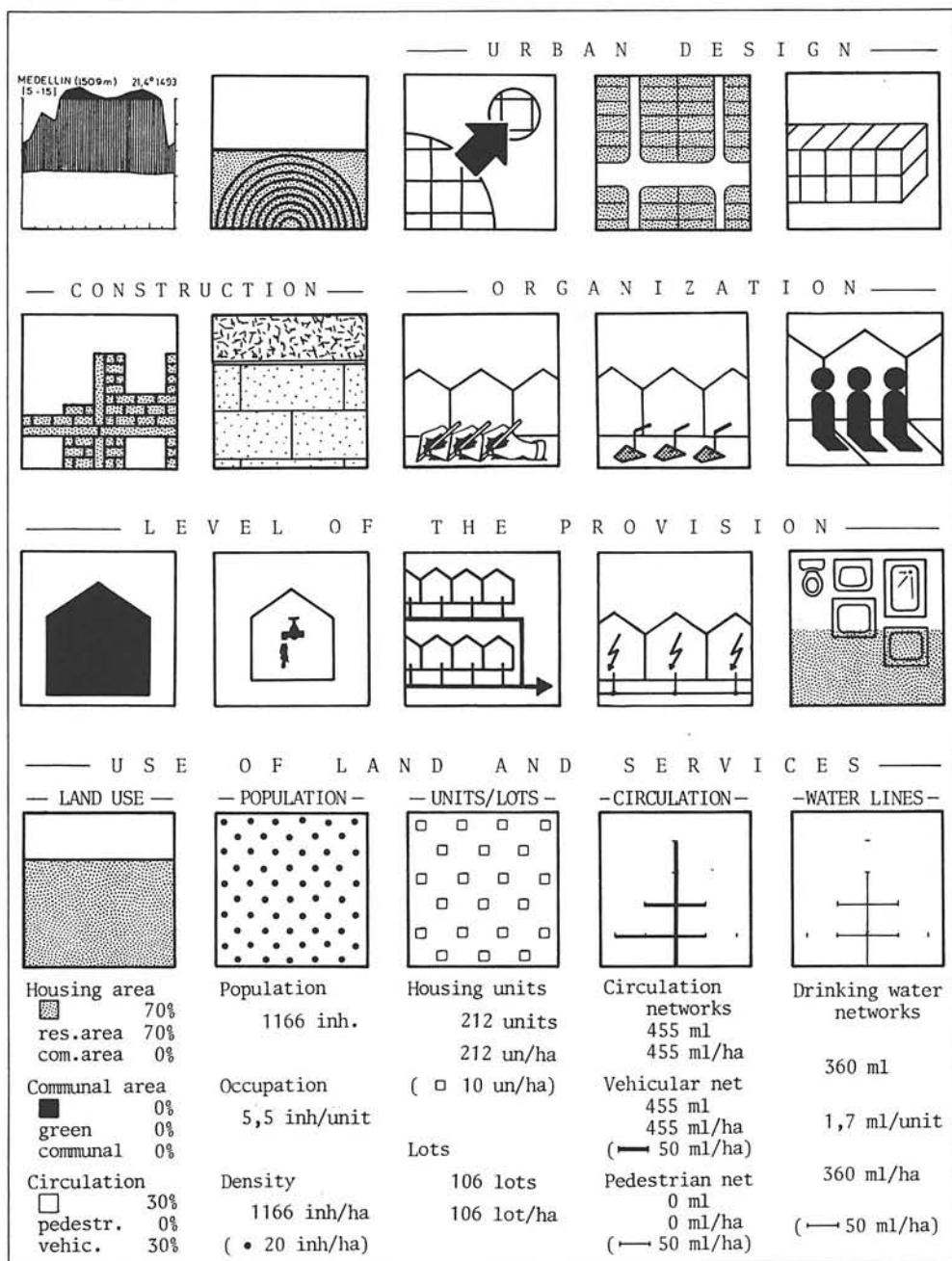
drawing by Maria Blender



1973  
1,0 ha

# COLOMBIA

## ·Camilo Torres Restrepo· Pereira



COOPERATIVE "CAMILLO  
TORRES RESTREPO" IN  
PEREIRA

By Maria Blender

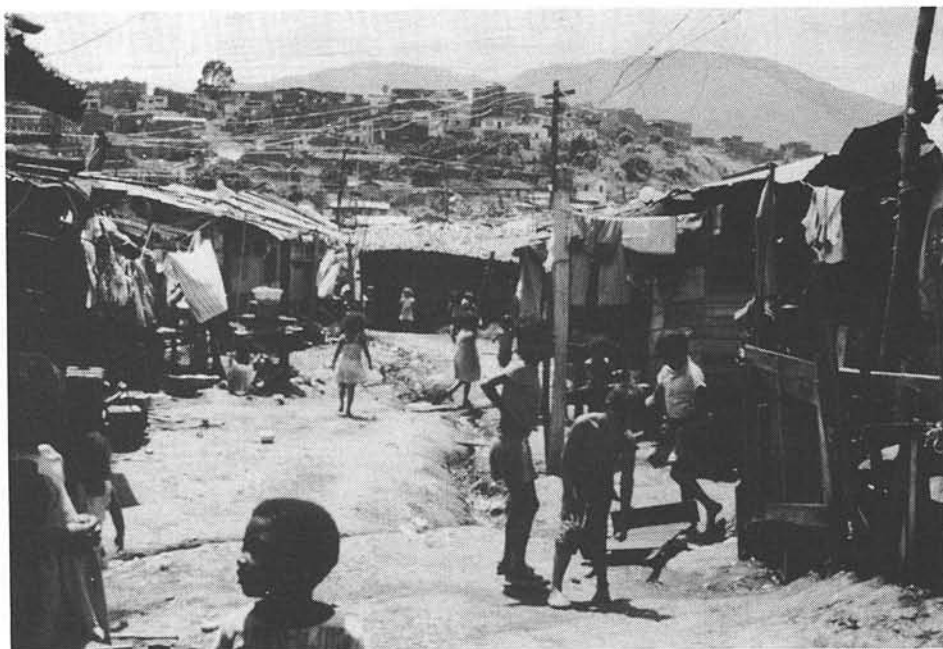
In 1978 97 shelterless families in the barrio 'Ciudad Jardin' in Pereira founded the co-operative 'Camilo Torres' notwithstanding all the unfavourable conditions: 30% of the 300.000 inhabitants of Pereira lack a shelter at the moment. 50% of the average monthly salary (5000 pesos) has to be paid for the lodging, often one room of a dwelling for one family. The I.C.T. charges for it's "minimal houses" an initial payment of 136.000 pesos. Prices for building material, which are of miserable quality and low technical standard, are increasing. (Datos from 1979).

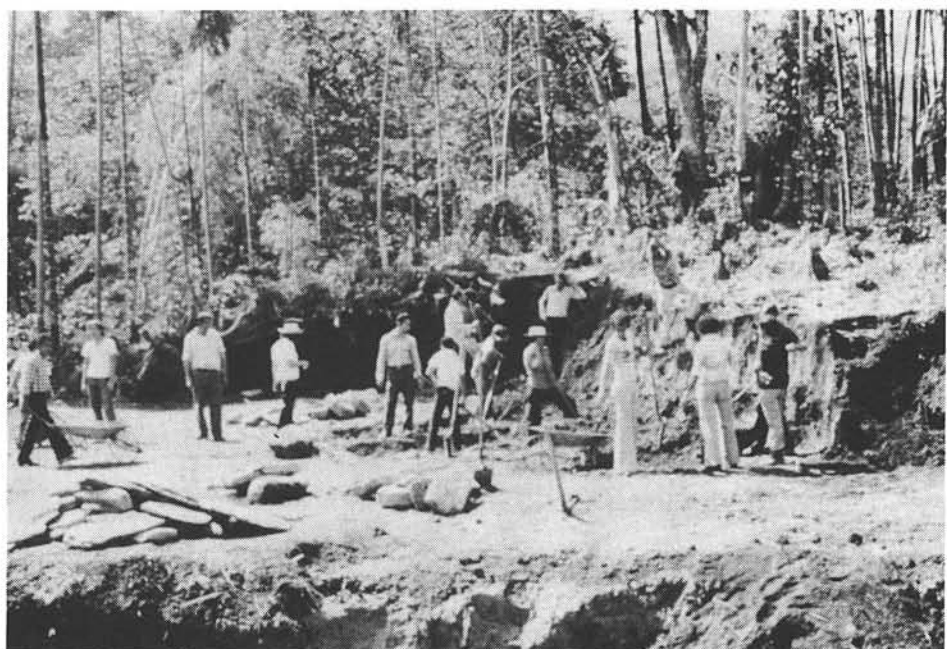
The foundation of a legal organization was the only possibility to express efficiently the requests to the authorities (legalization of the urbanization, health, care, supply of means of communication etc.).

After two years "Camilo Torres" had risen to a considerable extent: 2.800 associated families, and had bought estates of 1,0 ha, 1,6 ha and 25 ha for a total amount of 16,0 million pesos (first instalment 8,7 million pesos), further a workshop for the construction of windows and doors was established; besides that, 24 dwellings and the main-road of the first settlement were finished.

The most important characteristic of this self-help-system is that all dwellings have to be built collectively; all members have to work during the weekend and to pay an advance payment of 5.000 pesos in monthly amounts of 120 pesos. The statute regulates decision making (the highest institution is the plenary meeting), calculation of working time, distribution of dwellings etc..

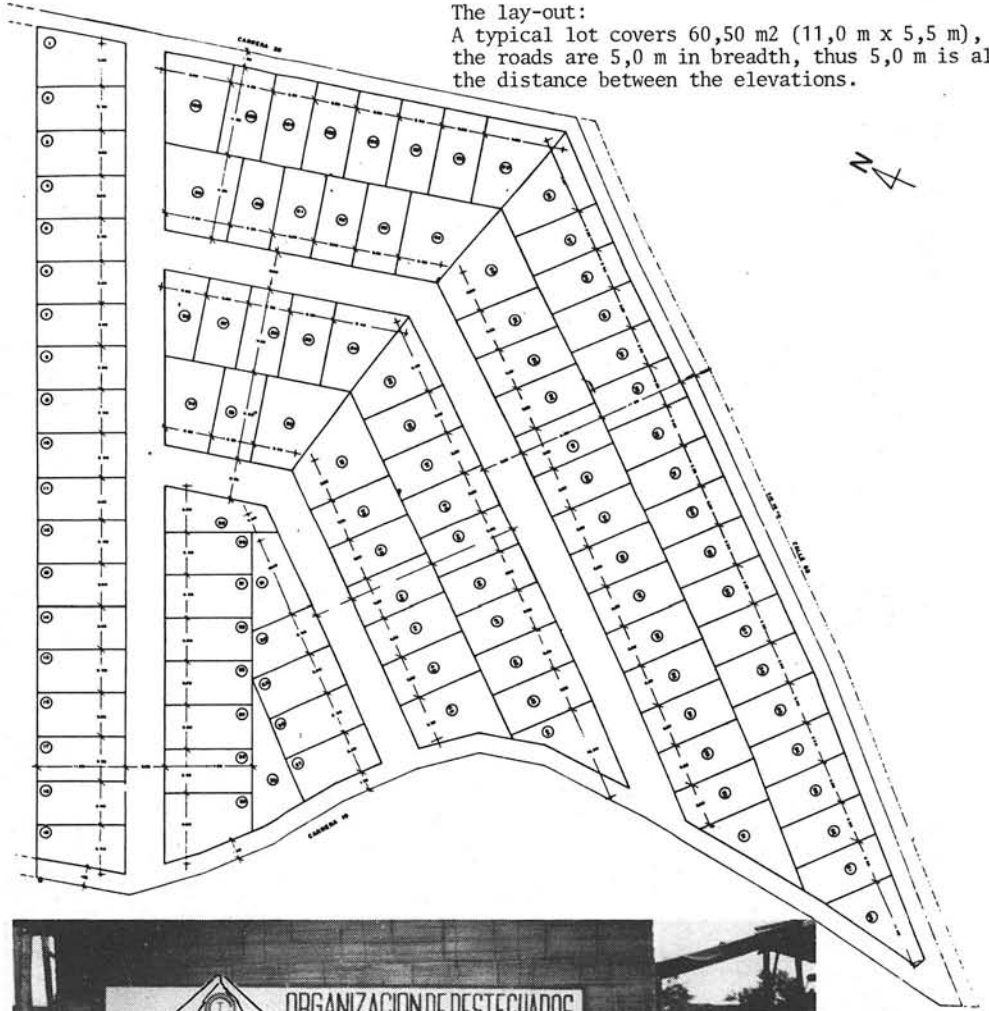
The first aim of the co-operative is the reduction of the building costs, by means of good design, rationalization of the construction, proper selection of materials and increase in productivity.



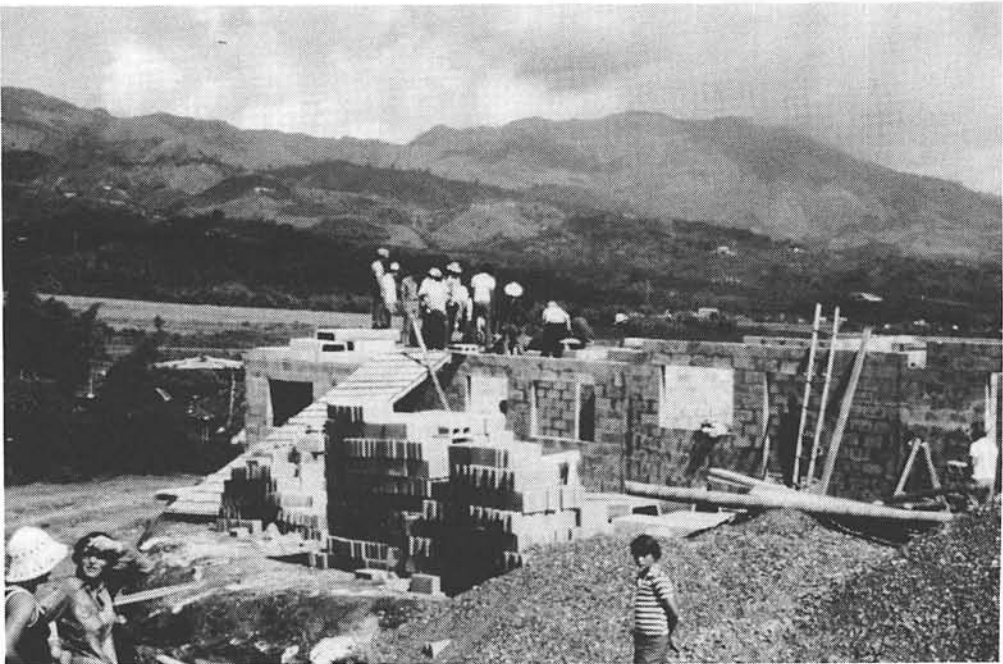


The lay-out:

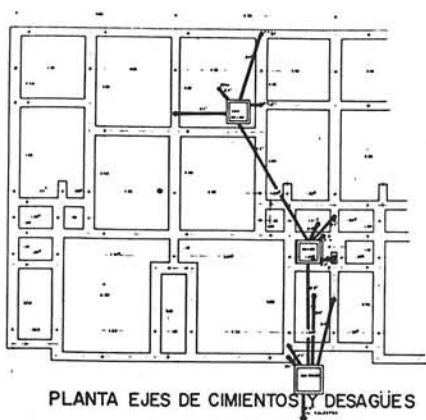
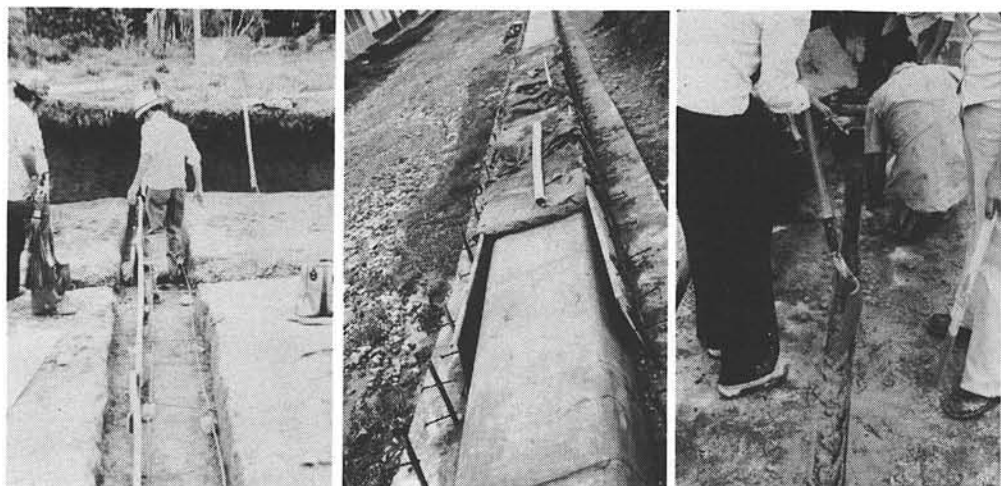
A typical lot covers 60,50 m<sup>2</sup> (11,0 m x 5,5 m),  
the roads are 5,0 m in breadth, thus 5,0 m is also  
the distance between the elevations.



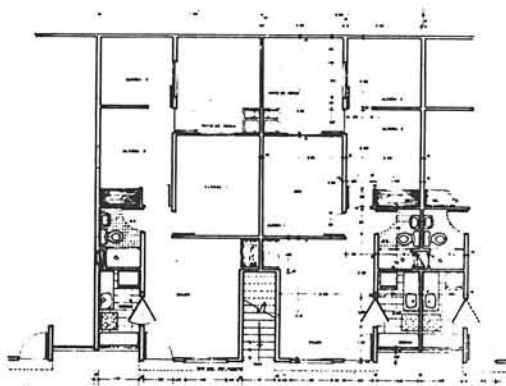
The housing design, a duplex type, is efficient as to density and use of construction, and satisfies the members. The dimensions prevent waste of materials. Cement blocks for the construction are used because of the bad quality of the locally available bricks; first they had to be bought in Cali, 400 km away. In time, more and more elements became pre-fabricated in the workshop: metal windows and doors, floor elements, tiles, basins, sewerage pipes and cement blocks. 3/4 of the production of the cementblock factory was destined for sale in financial support of the co-operative. The costs of one dwelling in the first settlement were 132.000 pesos. "Camilo Torres" has developed to a local social-political power, which besides its housing activities, organizes technical courses, adult education, exhibitions, political meetings etc.



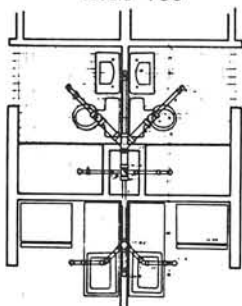




escala 1:50



escala 1:50



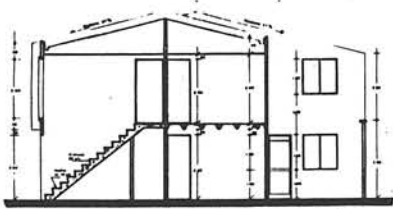
escala 1:20

CUADRO DE AREAS

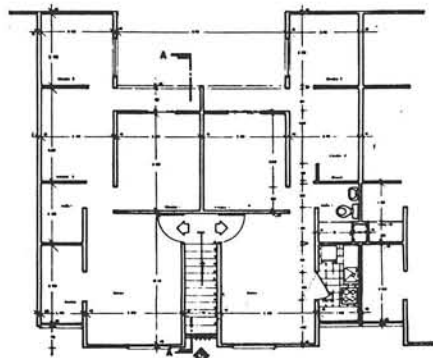
AREA LOTE	60,50 M <sup>2</sup>
AREA CONSTR. 1° PISO	50,36 M <sup>2</sup>
AREA CONSTR. 2° PISO	53,65 M <sup>2</sup>
AREA CONSTR. TOTAL	104,01 M <sup>2</sup>

Organización de desechos		18 Etapa
Proyecto	ALVARO POSADA 12A ANTONIO DELGADO 8	
Autores	PLANTAS Y DETALLE BAÑOS	





CORTE A-A



PLANTA 2º PISO



FACHADAS

ORGANIZACION DE DESTRECHADOS	
CAMILLO TORRES RESTREPO.	
PROYECTO	ALVARO POSADA IZA
CLIENTE	ANTONIO DELGADO S.
FECHA	1950
ESCALA	CORTE A-A PLANTA 2º PISO
	FACHADAS



In the workshop and on the site

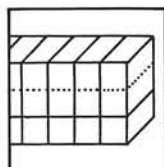
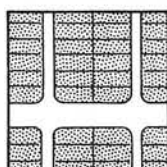
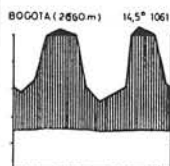
source, photographs and drawings:

Marisa Carmona (ed.)  
DE STEDELIJKE CRISIS IN  
DE DERDE WERELD 2  
Over bewonersorganisaties  
en de strijd voor  
woningen.  
Delft, 1981

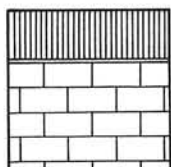
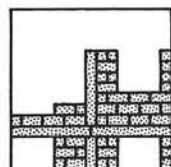
1984  
24 ha

# COLOMBIA · Marichuela · Bogota

## — U R B A N D E S I G N —

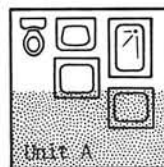
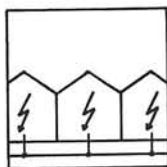
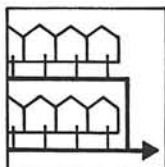


## — C O N S T R U C T I O N —



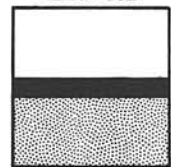
## — O R G A N I Z A T I O N —

## — L E V E L O F T H E P R O V I S I O N —



## — U S E O F L A N D A N D S E R V I C E S —

### — LAND USE —

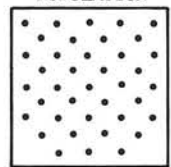


Housing area  
 ■ 45%  
 res.area 45%  
 com.area 0%

Communal area  
 ■ 11%  
 green 11%  
 communal 0%

Circulation  
 □ 44%  
 pedestr. 44%  
 vehic. 0%

### — POPULATION —

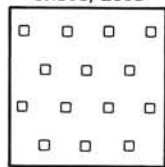


Population  
 18359 inh.

Occupation  
 5,5 inh/unit

Density  
 779 inh/ha  
 (• 20 inh/ha)

### — UNITS/LOTS —

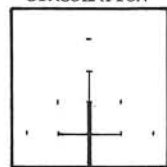


Housing units  
 3338 units  
 142 un/ha

(□ 10 un/ha)

Lots  
 1669 lots  
 71 lot/ha

### — CIRCULATION —

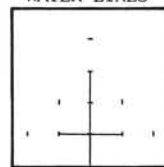


Circulation networks  
 6120 ml  
 260 ml/ha

Vehicular net  
 2320 ml  
 99 ml/ha  
 (— 50 ml/ha)

Pedestrian net  
 3800 ml  
 161 ml/ha  
 (— 50 ml/ha)

### — WATER LINES —



Drinking water networks  
 6000 ml

1,8 ml/unit

255 ml/ha  
 (— 50 ml/ha)

# "MARICHUELA"

## BOGOTA

By Maria Blender

The mass housing projects Marichuela (3338 units) and Aurora II (3208 units) in Bogota were planned and directed by "Proyectos y Construcciones G.E.G. Ltda" for "Ingeniobras Bogota Ltda" a building company independent of the planning company.

The task of the planners was the urban and housing design, architectural direction, a general working programme, weekly control of the realization of this programme and assistance in construction.

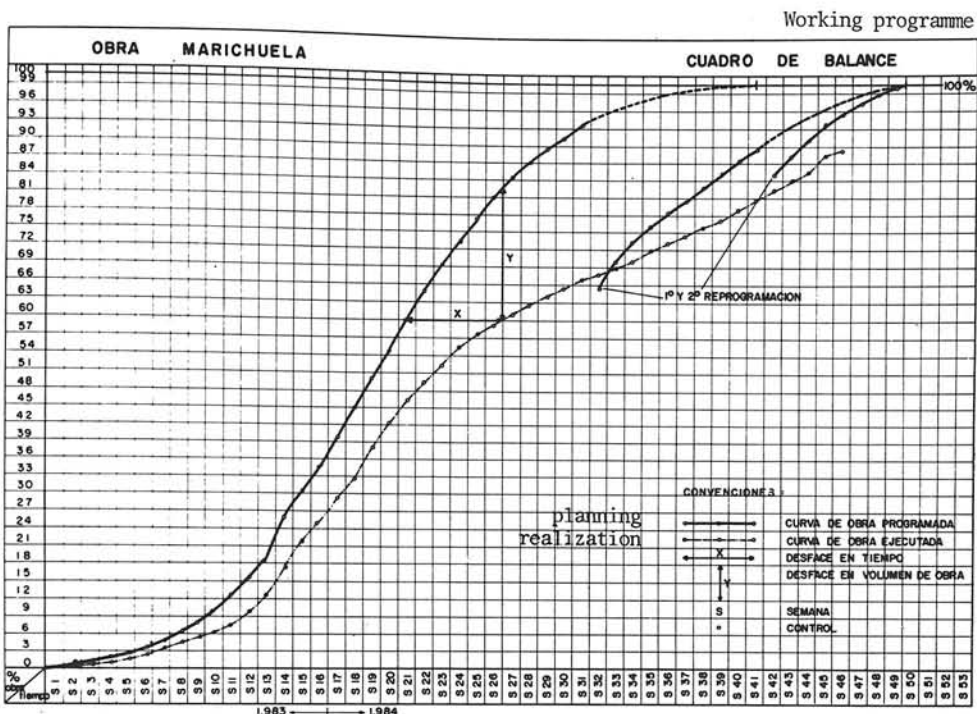
The housing design: two-family row houses developed on lots of 5 m x 12.60 m (minimum norm).

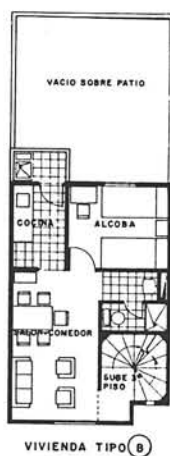
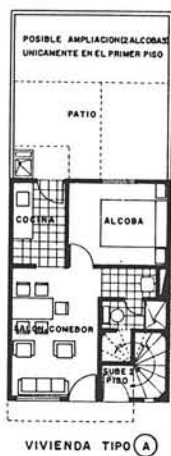
Unit A on the first floor can be extended horizontal in the 'patio', unit B on the second floor can be extended vertical to the third floor.

There are special solutions for shops and irregular lots. To reduce the problem of monotony a design is chosen that presents a varied facade (with balconies, roofs to walk on etc.) once the houses are expediently extended.

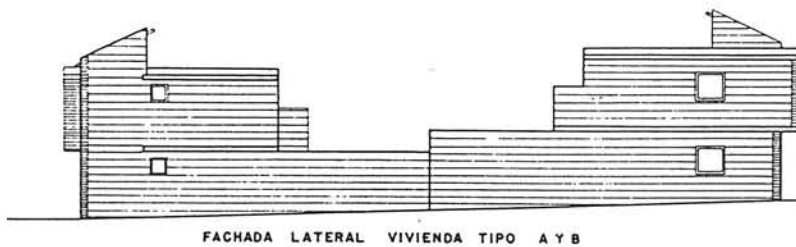
The urban design is also characterized by minimal solutions through economic limitations.

The general working programme was elaborated with the fore-men of the construction-crew which consisted of 25 professionals and 2.000 unskilled workers. Although the programme had to be adapted several times they succeeded in setting up the settlements with in total 3.273 duplex houses in little over a year (september 1983 - end of 1984).





Basic housing units (A) and (B)

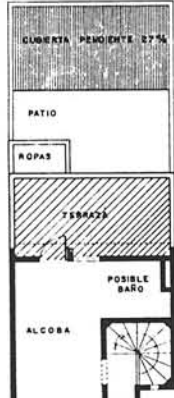


Development of built area  
(built area : lot area = 2,0)

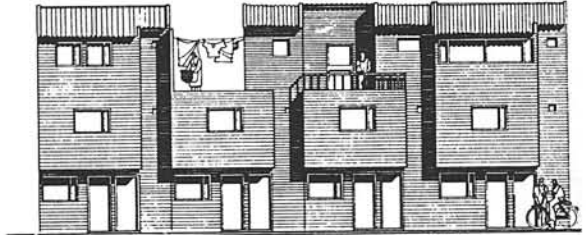
lot: 63 m <sup>2</sup>	unit A			unit B			built area	open space	built area
	1st fl	built area	open space	1st fl	2nd fl	3rd fl			
basic A + B	+ 32m <sup>2</sup>	32m <sup>2</sup>	27m <sup>2</sup>	+ 3m <sup>2</sup>	+ 36m <sup>2</sup>	0	39m <sup>2</sup>	2m <sup>2</sup>	71m <sup>2</sup>
1st ampl.	+ 13m <sup>2</sup>	45m <sup>2</sup>	14m <sup>2</sup>	0	0	+ 23m <sup>2</sup>	62m <sup>2</sup>	15m <sup>2</sup>	107m <sup>2</sup>
2nd ampl.	+ 6m <sup>2</sup>	51m <sup>2</sup>	8m <sup>2</sup>	0	0	+ 13m <sup>2</sup>	75m <sup>2</sup>	2m <sup>2</sup>	126m <sup>2</sup>



VIVIENDA TIPO (A-1)



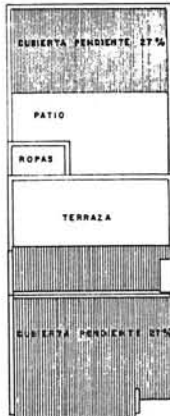
VIVIENDA TIPO (B-1)



FACHADA PRINCIPAL VIVIENDA TIPO A-1 Y B-1

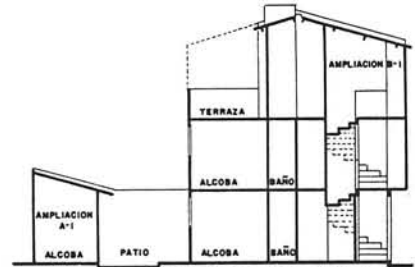


FACHADA POSTERIOR VIVIENDA TIPO A-1 Y B-1

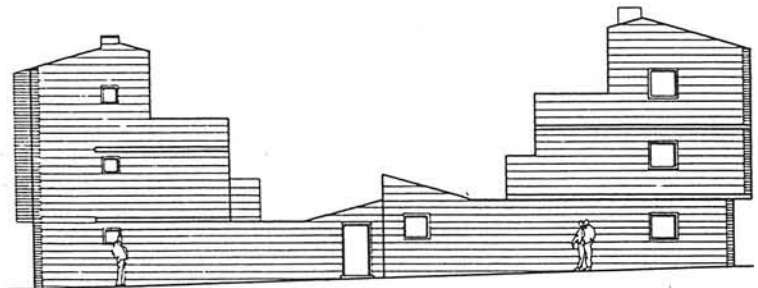


PLANTA FINAL DE CUBIERTAS

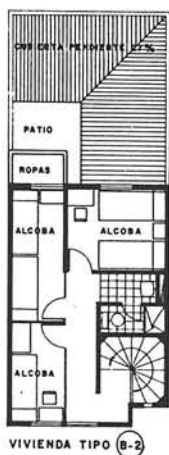
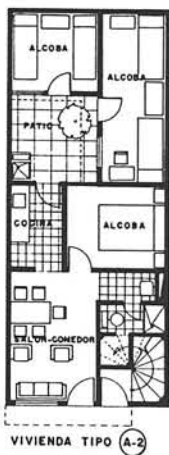
First  
amplification  
units (A) and (B)



CORTE VIVIENDA TIPO A-1 Y B-1



FACHADA LATERAL VIVIENDA TIPO A-1 Y B-1



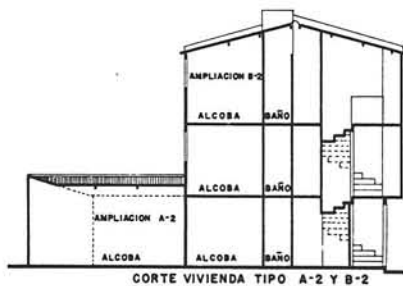
FACHADA PRINCIPAL VIVIENDA TIPO A-2 Y B-2



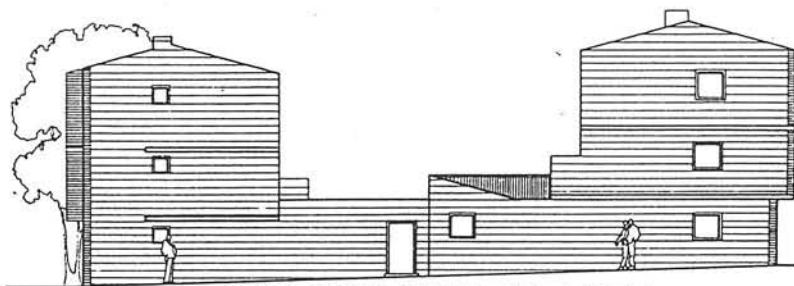
FACHADA POSTERIOR VIVIENDA TIPO A-2 Y B-2



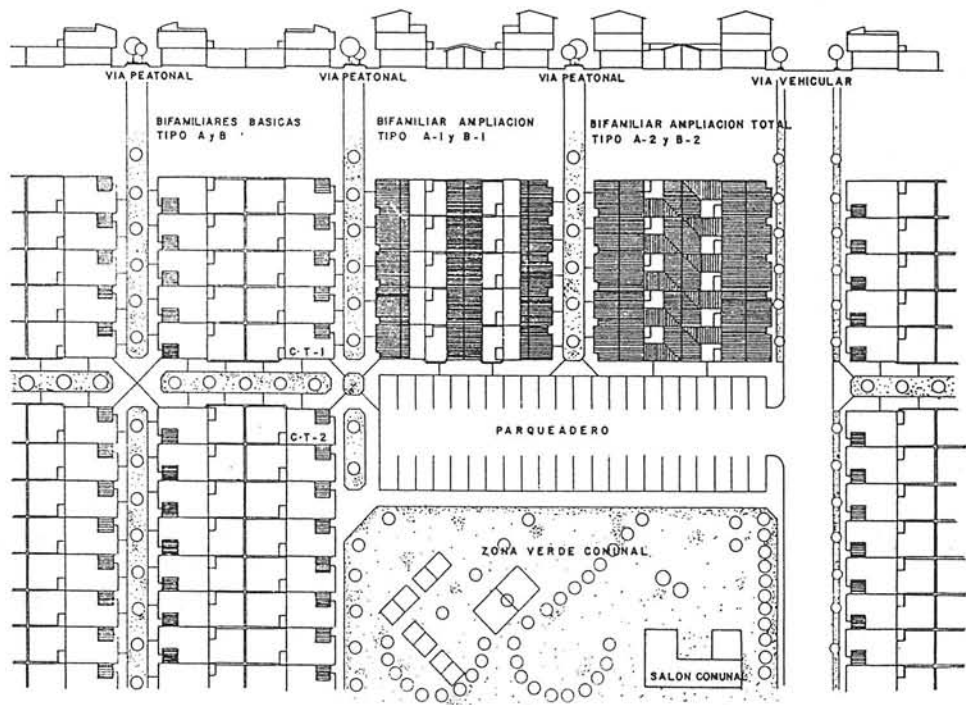
Second  
amplification  
units (A2) and (B2)



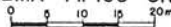
CORTE VIVIENDA TIPO A-2 Y B-2



FACHADA LATERAL VIVIENDA TIPO A-2 Y B-2

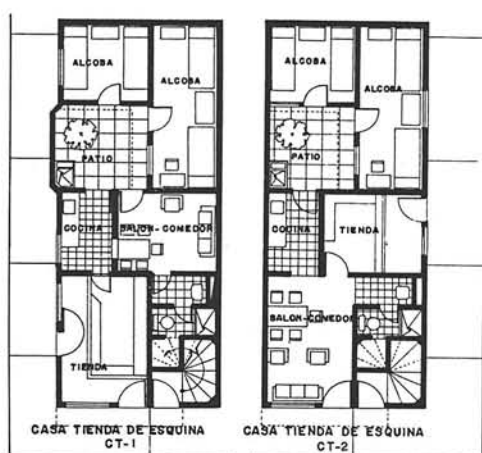


ESQUEMA TIPICO URBANO



Detail of the urban lay-out

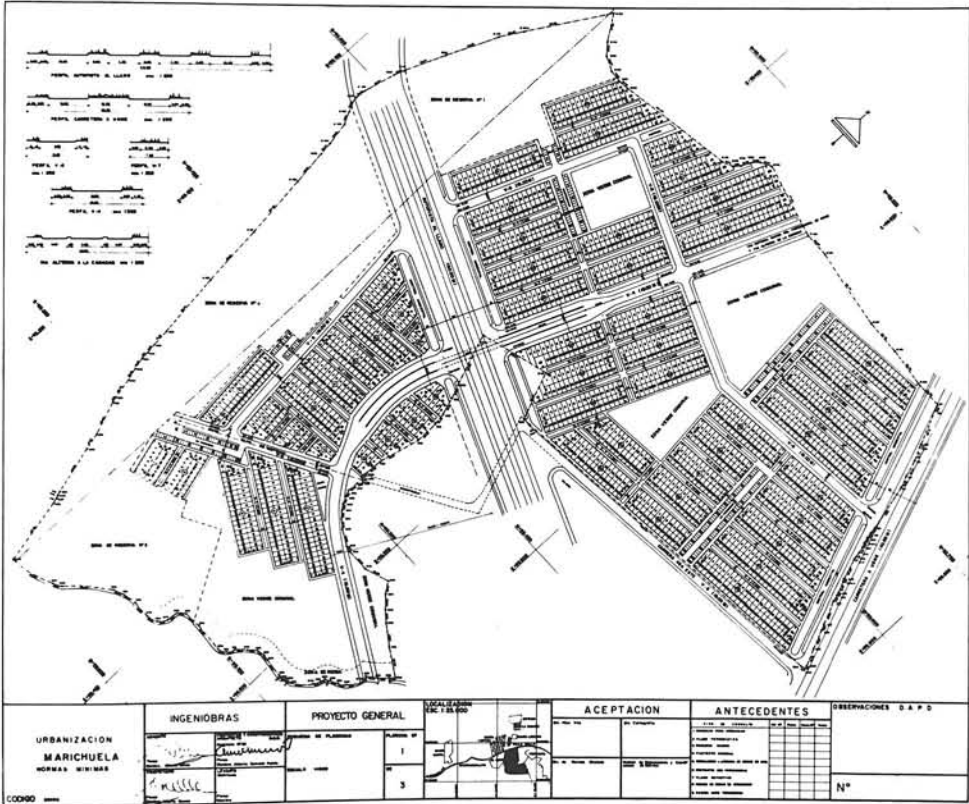
Irregular groundplans for shops



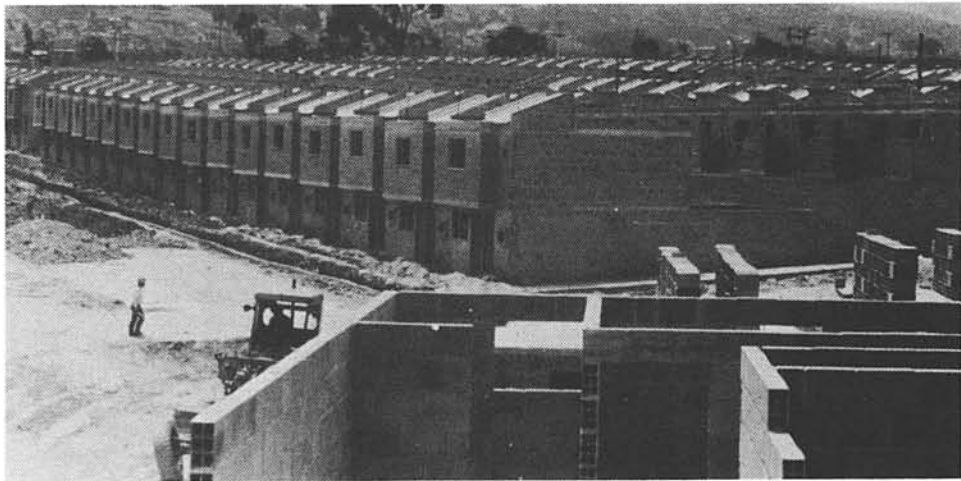
Concerning the building materials the architects consider "that, in the present state of development of the building industry in Colombia and its financial situation, the most convenient thing to do would be to continue using traditional materials and systems, to which would be applied those pertaining to research, planning and organization which are characteristic of any industry enjoying high output, but which are considered by us to be foreign to traditional construction". (Informes de la Construction)

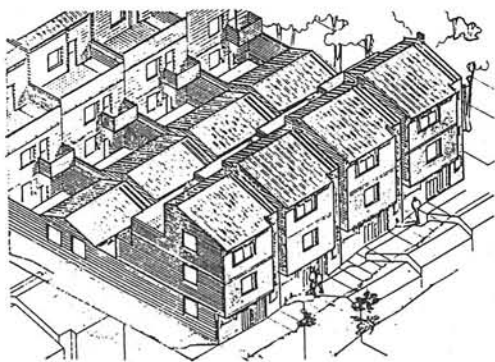
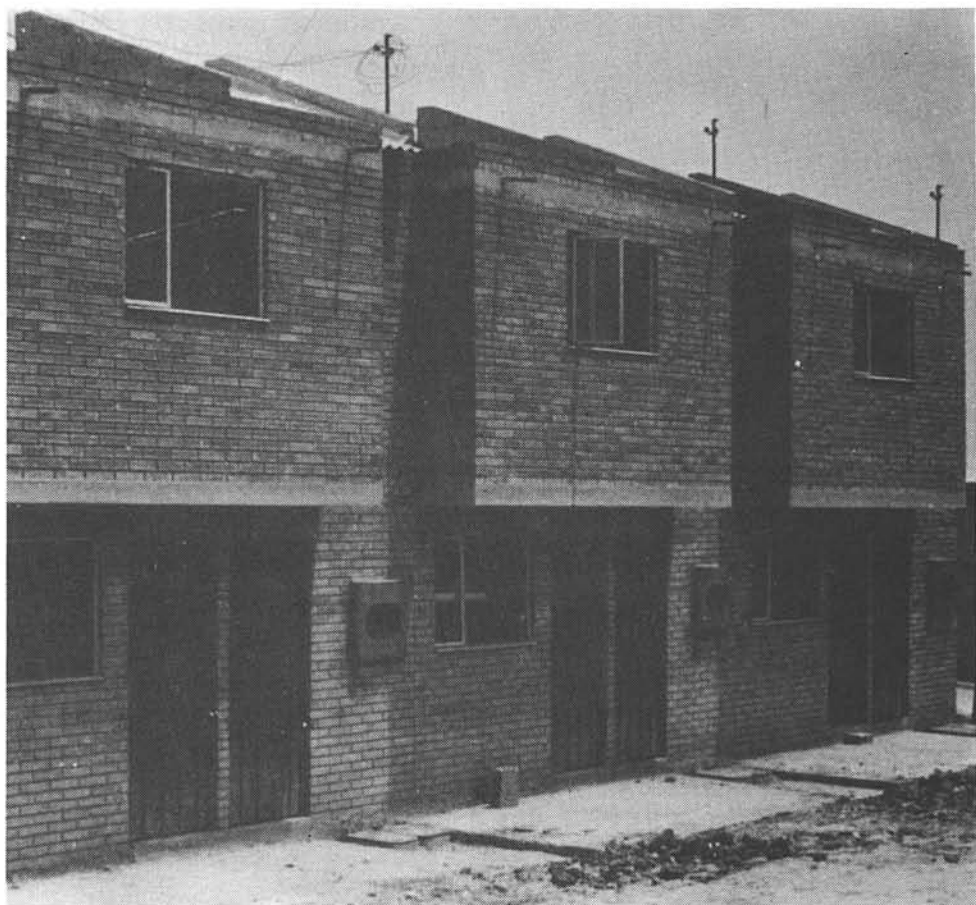
The following materials are chosen: ceramic hollow blocks for the walls, reinforced concrete for the floors, aluminium sheet for roof-covering and prefabricated concrete staircases.





<b>URBANIZACION MARICHUELA</b> HORRAS VIEJAS COCUDO	<b>INGENIOBRAS</b> [Signature] [Signature]	<b>PROYECTO GENERAL</b> [Signature] [Signature]	<b>LOCALIZACION</b> [Map] [Map]	<b>ACEPTACION</b> [Signature] [Signature]	<b>ANTECEDENTES</b> [Table with columns: No. de expediente, No. de lote, No. de casa, No. de parcela] [Table with columns: No. de expediente, No. de lote, No. de casa, No. de parcela]	<b>DEBERACIONES D.A.P.D.</b> [Table with columns: No. de expediente, No. de lote, No. de casa, No. de parcela]
						N°

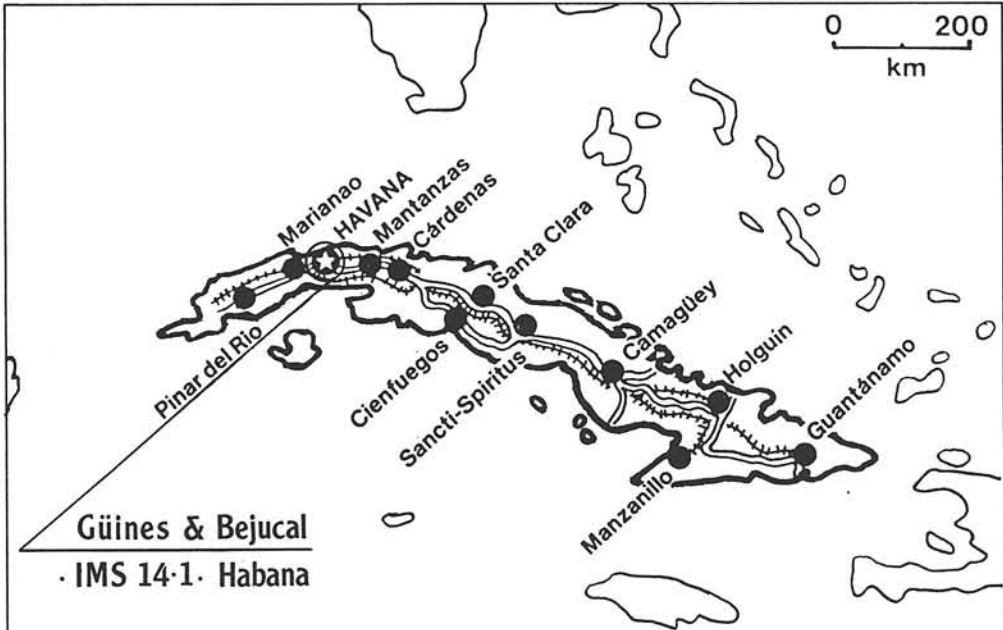




source, photographs and drawings:

Jorge Gafaro Briceño, Alberto Estrada Pulido, Juan B. Gómez Rodríguez  
"Desarrollo de Proyecto Progresivo de Vivienda de Interés Social con Sistemas Tradicionales e Industrializados"  
in INFORMES DE LA CONSTRUCCION Vol. 36, nr. 361, Madrid, junio, 1984.

# CUBA



## ECONOMIC AND SOCIAL INDICATORS

<u>Population</u>		
population	9,89 mil inh.	(1983)
density	86 inh/km <sup>2</sup>	(1983)
annual growth	1,5 %	(1982)

<u>Economy</u>		
GNP per capita	1410 \$	(1979)
debt per capita	1013 \$	(1979)
export	983 mil \$	(1983)
import	1638 mil \$	(1983)
export goods: sugar and honey	(84%)	

<u>Social indicators</u>		
adult literacy	95 %	(1980)
life expectancy	73 a	(1981)
infant mortality rate	19 ‰	(1981)
largest populations: whites of spanish origin	(70%)	

<u>Urban population</u>		
urban population	66 %	(1981)
largest cities:		
clean drinking water available for more than 3/2	and	
sanitary available for less than 1/2	of urban population	

## HOUSING POLICIES IN CUBA

By Marisa Carmona

### Introduction

Cuba presents an area of 110.000 km<sup>2</sup> and a population that recently reached 10 million people.

After the successful revolution of 1959 it faced a capital city where 20% of the 6 million inhabitants of the country lived and that concentrated 3/4 of the nation's industry (not connected to the production of sugar), most of the transport, health, higher education and tourism facilities. This imbalance, expression of neo-colonial dependency, encouraged heavy migration that resulted in spontaneous settlements in La Habana. The city itself reveals contradictions, which separate well serviced high income settlements from an old centre area that housed the workers with a tradition of urban living. The city centre was in a constant process of deterioration, result of subdivision and the exodus of the bourgeoisie. More than half of the population lived in uninhabitable conditions, basically depending on self-help. In Cuba there is no national tradition in the creative use of craft techniques and local materials which could be used in housing. This technical and cultural underdevelopment was connected with the subsistence economy resulting from the very nature of the land ownership system.

From the very beginning, the revolution had made a rupture with the previous society. Amongst others successful changes are: the agrarian reform, the national campaign for literacy, the nationalisation of foreign companies, creation of new working places in agriculture and industry and to complete elimination of unemployment in a short time. The historical inequalities in the country began to be reduced with the construction of a network of new-towns, to support the co-operatives and state-farms.

In the specific field of housing a first phase of heavy construction was carried out in the capital, so that unemployment was created in an important sector that had previously been in private hands. Together with "Habana del Este", a neighbourhood of 15.000 inhabitants, with 4 and 11 storey apartment blocks and large green areas, various individual-houses of one or two stories and apartment blocks of 4 stories were constructed to remove in part old deteriorated city areas.

Several measures were included in the Urban Reform Law of 1960 that converted the majority of tenants into home owners. Also the allocation of vacant houses (abandoned by the bourgeoisie) helped in breaking with the social spatial segregation inherited from the previous political system.

Nevertheless some of these measures contributed to the accelerated deterioration of multi-family buildings by new tenants who were used to a very low level of housing conditions.

In this first period there was a lack of an integrated housing policy to enable a massive state response to the accumulated housing need. Here starts the first attempt to solve urban scale problems, as well as the construction of rural settlements. In 1963 the elaboration of a scheme of the "Plan Director" or "Indicator Plan" of La Habana started.

The changes in the material base of agriculture and industry resulted in a considerable reduction of migration, but it also had a negative result: since the early 60's there was a reduction of construction, renovation and maintenance of housing in La Habana. The consequent acceleration in deterioration of the existing housing stock aggravated the situation of housing shortage inherited from the past.

From the first years after the triumph of the revolution, there was the idea to industrialize construction in order to be able to meet the housing need, and also to solve the problem of the scarcity of some sources and of skilled labour. In housing, these ideas resulted in large scale - standard prefabricated - or other highly technical building elements both

built by State companies. Solutions were seen in isolated high rise blocks.

As a result of this idea the material base was lost, as well as qualified skilled labour for conventional construction. On the other hand, the priority given to industrial and services buildings strongly limited the availability of resources to take advantage of the large scale development which could, in theory, be obtained with advanced techniques in housing construction.

The lack of maintenance techniques shortened the life span of a large area of buildings in central area of La Habana.

#### Popular actions

The large housing shortage, encouraged families living in old big houses to take advantage of their central location, by constructing extensions, sub-divisions, and modifications using their own methods. In this way density was increased, traffic congestions aggravated, the structural stability was threatened and the lack of services worsened.

Amongst others old commercial states were converted into dwellings, by building intermediate floors, taking advantage of high ceilings of old houses, and constructing of huts on flat roofs.

Nowadays this self-help has been organized by the "Popular Power" groups in the municipalities in order to eliminate the negative of such actions. The groups set technical requirements for rehabilitation to all those who are interested to obtain well situated houses through their own labour. The groups take into account the needs of the applicants who may receive help from their work centres and obtain financial facilities.

Another form of organized self-help are the micro-brigades, which is a movement that arose in 1970. It is directed to mobilising workers in production centres, administration and services, to organise the construction of their own buildings despite not having any construction skills.

Micro-brigades are also organized to construct community buildings in new housing areas. Although initially work was done on the basis of standard models with semi-skilled methods, later on more developed technology has also been used.

The brigade receives materials, technical help and equipment from the state. The work normally done by them in their work centers is then compensated by their colleagues who do extra work, as set down by the work assemblies. Housing constructed in this way is owned by the workers collective of the centre and not necessarily by those that directly worked in the construction. In 1975 there were 1.150 micro-brigades, which obliged a better planning in technical assistance and to the use of critical building materials so as not to disturb the direct state housing enterprise, built by construction workers.

The policy of decentralization and regional development has had some consequences to the capital city.

In 1981 the city had a population of 1.929.432 inhabitants and a housing stock of 526.000 units, of which half were in a bad to moderate condition, despite the construction of 55.000 new houses between 1959 and 1980. The growth rate of La Habana shows the successful policy of regional development, a unique case in Latin America, which in the period 1970-81 decreased to 0.68%.

The Plan Director, now in its second stage, covers a shorter period of time (1990-2000). In this plan the more detailed urban solutions are elaborated, which include regulations for locating new investments in the city. The small scale allocation of inversions are taken over by the "Executive Committee of the Provincial Assembly" with a strong popular participation at different levels. Maintenance, cleaning, painting of buildings, care for private and public space are organized through Neighbourhood Committees and people receive equipment and technical help from "Poder Popular".

These actions with the people always widen the limited possibilities of official plans for maintenance and construction.

Between 1981 and 1983 self-built houses contributed 3.7 times more than the official state-brigades. There were 49.785 state units as against 182.439 individually produced ones, although of this second only 40% could be classified as in good condition. In 1983 this relation grew up to 7 times as many houses built by individuals as by the state. This self-help has now been organized with technical assistance of the Union of Architects and it appears that it may gain an important position in rural towns and in small and medium sized cities. In middle sized cities it should be directed towards extensions, constructing on flat roofs or doing in-fill in suburban areas of detached houses. Only 5% of the 224.000 houses that must be constructed in Havana between 1980 and 2000 could be built in this way.

This prognosis may be seen as conservative, bearing in mind the whole range of possibilities that has been opened with the NEW GENERAL HOUSING LAW, number 48, and the fact that of 16.000 housing units constructed in the capital between 1981-1983, 37% have been by self-help and only 8% were classified as unstable.

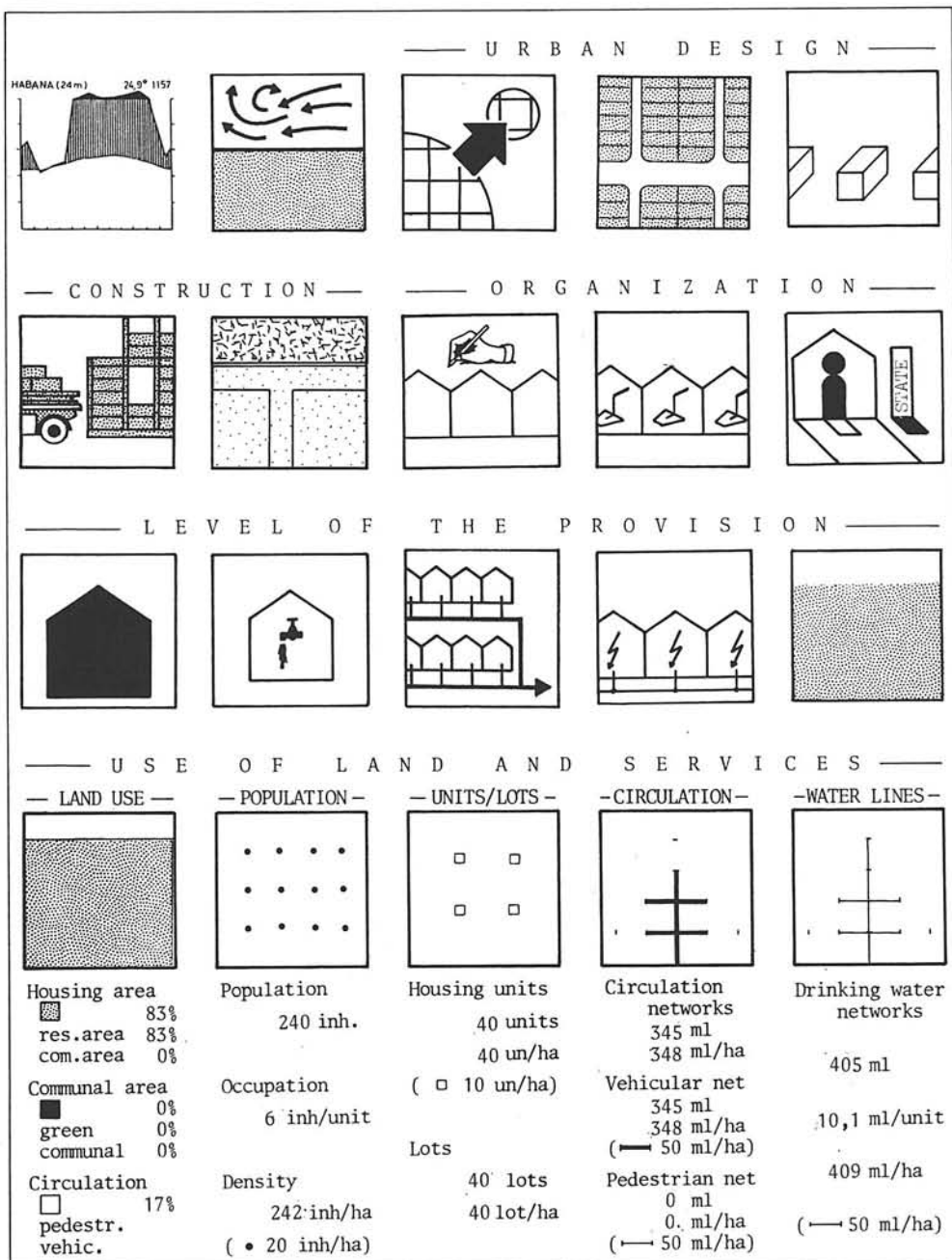
This law, december 1984, transfers the ownership of houses to the tenants, using the actual rent as payment. It also favours the self-help in rehabilitation and permits both individual and co-operatives loans for construction.

Urban renewal becomes a big challenge, of the 224.000 units to be constructed up to the year 2000, 45.000 are to be for urban renewal.

Large research has been done on Cuban architecture and it looks like similar densities of 3, 4 or 5 stories could be adopted. Many criticisms have been performed and solutions are searched for similar to the traditional city, with regard to life style, scale and character which have demonstrated their flexibility through time.

1982  
0,99 ha

# CUBA Bejucal





MODULATED SALE OF  
MATERIALS TO THE  
POPULATION -  
IN BEJUCAL AND GUINES

By Maria Blender and Gerard Stalenhoeft

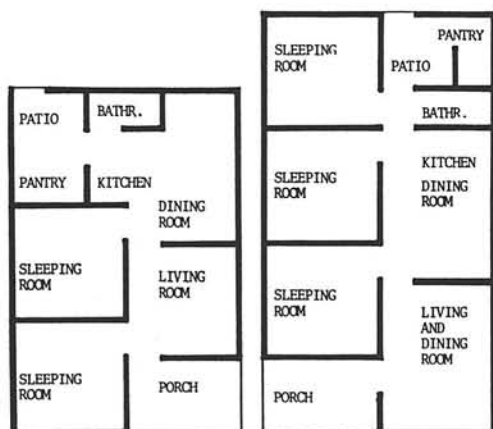
Under the title 'Modulated Sale of Materials to the Population' the CTVU ('Centro Technico de la Vivienda y el Urbanismo') started in 1982 to develop the pilot-projects in Bejucal (with 19.444 inhabitants) and Güines (with 41.552 inhabitants) in the province of Habana.

'Vivienda Economica'

These projects are based on a serie of 12 types of dwellings, called 'Vivienda Economica'. The dwellings vary according to technical-constructive and architectural-functional characteristics.

Architectural characteristics:

- One floor, with living room, kitchen, pantry, porch, bathroom, service-patio and closet.
- There is one type with 2 sleeping rooms and another type with 3 sleeping rooms.



'Vivienda Popular'  
groundplans with 2 and 3 sleeping-rooms

Constructive characteristics:

- Concrete foundation
- 3 variations for the construction of the walls: prefabricated concrete elements or concrete blocks or ceramic blocks
- The roofs are covered with corrugated asbest-cement
- Two variations in sanitary installations: an individual septic tank or connection to an existing sewerage system
- Connection to the public drinking water net, piping and four outlets inside the house
- Connection to the national electric power supply system and 24 contacts inside the house
- finishings of the walls appropriate to the construction material

Organization

The projects in Güines and Bejucal were executed in the following way:

The municipal 'Popular Power' (Poder Popular) chose the terrain. The Ministry of Construction co-ordinated the distribution of means and materials. The CTVU worked out a technical documentation and complementary technical information. The provincial 'Popular Power' developed the urbanization of the terrains in question.

The contract with the beneficiaries grants a credit, the technical documentation, the building-permit, the site, tool equipment and the presence of a technician and skilled workers on the terrain, further it contains an agreement about the date of delivering of the site and the construction materials. The urbanization of the terrains was executed through the enterprise of the 'Popular Power' with the help of the future dwellers at the expense of the municipality.

Decisive for the assignment of the beneficiaries is their need, but not their economic conditions.

They may use the sites, which are the property of the 'Poder Popular', in gratuitous usufruct.

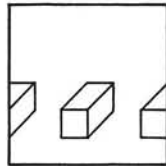
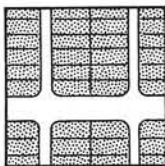
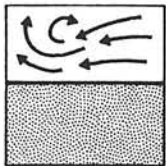
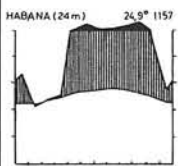
The total costs for the dwellers amount US\$ 4.480. Their average monthly income is US\$ 372, and they can get a credit of US\$ 3.800 for an annual rent of 5% and a currency of 6, 8 or 12 years.



1982  
1.26 ha

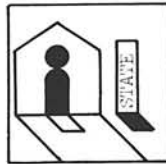
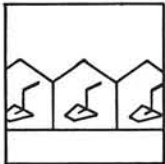
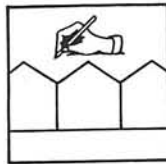
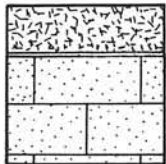
# CUBA Güines

— U R B A N D E S I G N —

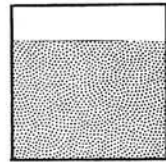
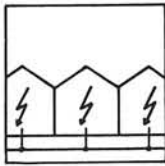
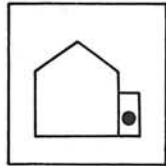


— C O N S T R U C T I O N —

— O R G A N I Z A T I O N —



— L E V E L O F T H E P R O V I S I O N —



— U S E O F L A N D A N D S E R V I C E S —

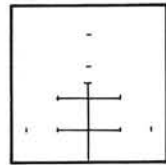
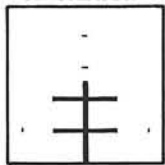
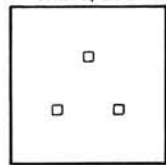
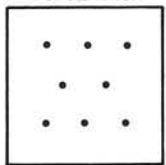
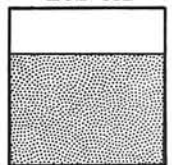
— LAND USE —

— POPULATION —

— UNITS/LOTS —

— CIRCULATION —

— WATER LINES —



Housing area  
 ■ 71%  
 res.area 71%  
 com.area 0%

Communal area  
 ■ 0%  
 green 0%  
 communal 0%

Circulation  
 □ 29%  
 pedestr.  
 vehic.

Population  
 192 inh.

Occupation  
 6 inh/unit

Density  
 152 inh/ha  
 ( • 20 inh/ha)

Housing units  
 32 units  
 25 un/ha  
 ( □ 10 un/ha)

Lots  
 32 lots  
 25 lot/ha

Circulation networks  
 412 ml  
 327 ml/ha

Vehicular net  
 412 ml  
 327 ml/ha  
 ( — 50 ml/ha)

Pedestrian net  
 0 ml  
 0 ml/ha  
 ( — 50 ml/ha)

Drinking water networks  
 410 ml  
 12,8 ml/unit  
 325 ml/ha  
 ( — 50 ml/ha)

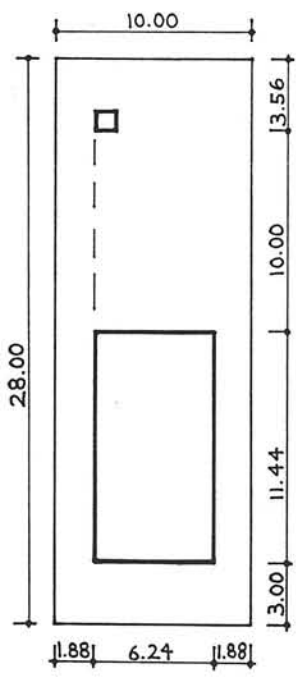
PRINCIPAL ACTORS AND SOCIAL ORGANIZATION OF THE PARTICIPATION			Type of provision								
			Ground	Technical Documentation	Infra- structure			Constr. of dwelling			Financing
					Materials	Labour	Technical Direction	Materials	Labour	Technical Direction	
Actor	Type of actor	General responsibility									
Technical Centre of Housing an Urbanism	Promoter	Promotion, organization and control of the execu- tion of the planning. Elaboration of the technical documentation.		●							
Ministry of Construction	Provider	Supply of the materials for the construction of the dwellings.						●			
'Popular Power'	Executor	Selection of the dwell- ers. Installation of the infrastructure. Control of the construc- tion of the dwellings. Delivering the ground in gratuitous usufruct.	●		●	●	●			●	
Popular Bank of Savings	Financier	Grant of the credits according to agreement.									●
User	Construc- tor	Construction of the dwelling by means of his own.							●		

#### The pilot projects

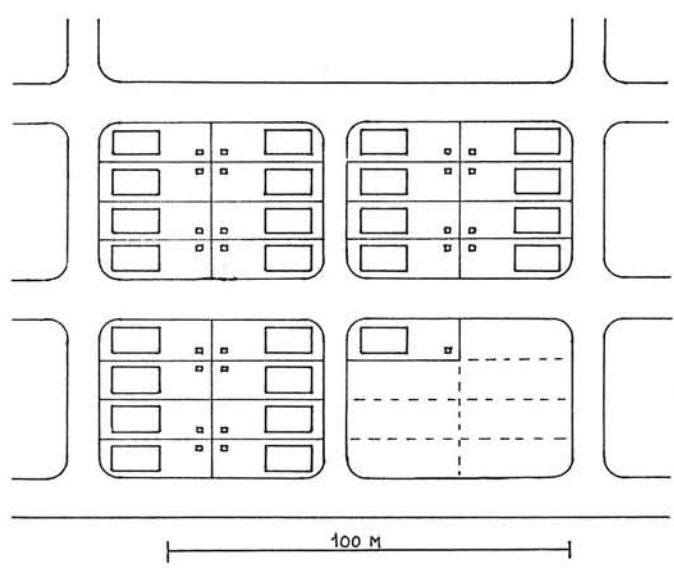
In Bejucal and Güines two terrains were chosen, in zones where already self-help houses were existing. On the 25 sites of each terrain, which contain 40 and 32 sites resp., the 'Vivienda Popular' programme is realized. The remaining sites are reserved for other self-help projects.

This is in order to allow a direct comparison between different methods.

The houses in Güines and Bejucal contain 3 sleeping rooms; in Güines concrete blocks are used for the construction and the dwellings are equipped with septic tanks while the houses in Bejucal are from pre-fabricated concrete elements and connected to the sewerage system.



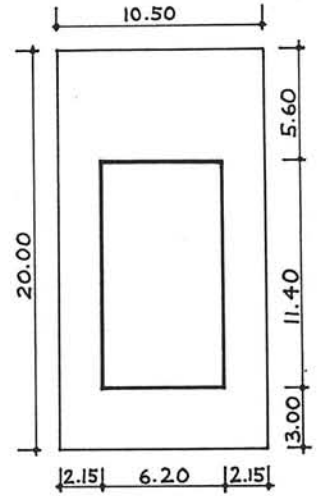
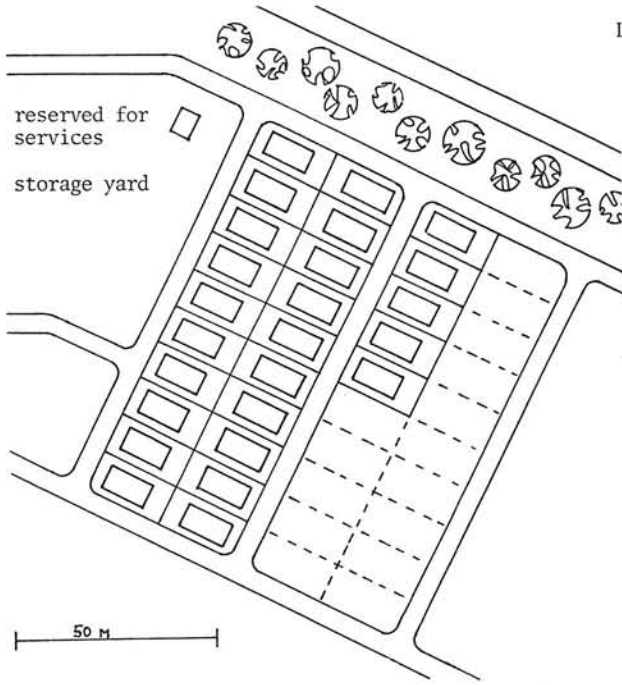
Lay-out and typical lot in Guines



Dwellings under construction



Lay-out and typical lot in Bejucal



Dwellings under construction



drawings, redrawn by Maria Blender

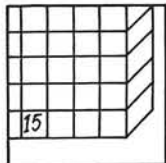
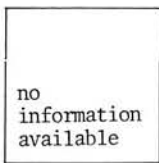
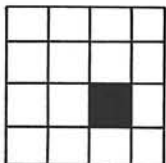
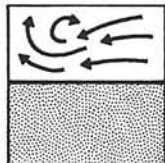
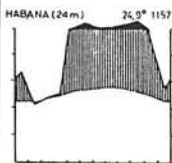
source and photographs: M.E. Notario, Venta Modulada de Materiales a la Población, in: INFORMES DE LA CONSTRUCCION Vol.36, nr.362, Madrid 1984.

1979

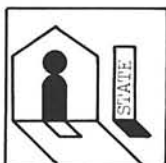
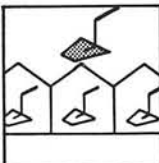
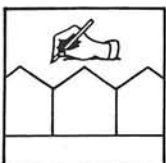
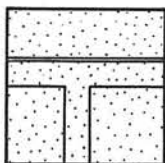
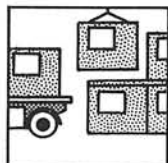
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CUBA  
· IMS 14.1 · Habana

— U R B A N   D E S I G N —

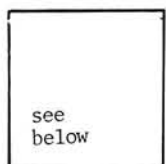
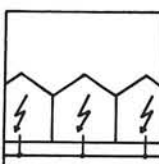
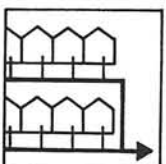


— C O N S T R U C T I O N —



— O R G A N I Z A T I O N —

— L E V E L   O F   T H E   P R O V I S I O N —



AREAS

- residential area: 11.730 m<sup>2</sup>
- circulation area: 1.750 m<sup>2</sup>
- communal services: 420 m<sup>2</sup>
- commercial area: 270 m<sup>2</sup>
- communal area on the ground floor: 280 m<sup>2</sup>

Dimensions:

- height - 41,8 m
- 51,9 m
- length - 84,3 m
- broad - 19,4 m

15 stories - 11 dwellings/storey

circulation/total area 13%

Perimeter/tot.area = 0,25

	number persons	surface
	per dw.	m <sup>2</sup>
dwellings of 2 rooms: 62	4	63,5
dwellings of 3 rooms: 56	5	73,5
dwellings of 4 rooms: 26	6	94,5

144

- total inhabitants: 680
- 4,7 person/dwelling on average

A L A M A R + I M S 1 4 . 1

H A B A N A

1 9 7 9

By Gerard Stalenhoeft de Ayguavives

In order to give more detailed information the Cuban housing ideology we will analyze firstly the process of the Alamar project. Alamar is a very good example for this ideology because of its largeness. It is however impossible to make an analysis of just one project; there are too many distinctions. Therefore we will analyze another project: IMS 14.1 (Instituto de Materiales de Servia), a multifamily experimental project. This project is not located in Alamar but it illustrates the same rationality of research that was used in Alamar.



After the revolution of 1959 Cuba found itself in a difficult position (see housing policies). The general housing situation was critical and there was no potential building sector. This meant that only a way of rationality, standardisation, prefabrication and mass production could answer the great need

At first the east part of Habana was developed: 'la Habana del Este' for 15.000 inhabitants, and some years later Alamar was developed, for approximately 120.000 inhabitants. State-organisations and micro-brigades (see housing policies) were set up to build the new settlements. Tall blocks are the result.



In Alamar new building tendencies were cristalized as the social-, economical- and political- did. Women took part in the building-process. Secondary schools with camps were built and there was a large participation of the population. These changes have lead to housing-research and investigation.

Housing was seen as a system with three basic elements: people, space and furniture. For the Alamar project we will start with the research of 'people' or a social investigation'. Socio-economic datas were compared with the demografic datas. The research included the users' habits, wishes, aesthetic aspects and the opinions about the functions of furniture. And also an investigation of the activities of the population.

One of the results was that women with a lower education-level spent more time for domestic activities.

Ergonomic studies of the furniture had to result in defenite criteria for dimensions and comfort for the users. The study started with the investigation of the traditional role of furniture. Among other things it was asserted that the accent in a dwelling has moved from the living-room to other rooms. In this way Cuban norms for furniture were defined.

The space research for Alamar had to result in projections for the necessary number of units, rooms and requested surfaces.



The study of areas, volumes, circulation, functional area of each construction system and typology resulted in criteria for zones of internal circulation, placement of the furniture etc.

The information required from the research was analyzed in a process of organisation and evolution.

All elements were valued and formed the criteria for design, responding to the new forms of living in transformation, and with a cuban perspective of technical development.

Some proto-types were developed for the community of Alamar. After some months the inhabitants were asked to give their evaluation about their dwelling, specifically about the furniture:

- 46% preferred the new type
- 9% this or another furniture
- 28% didn't like the new type.

Alamar was expected to be included in the greater east-west boundaries that the 'plan director' proposes.

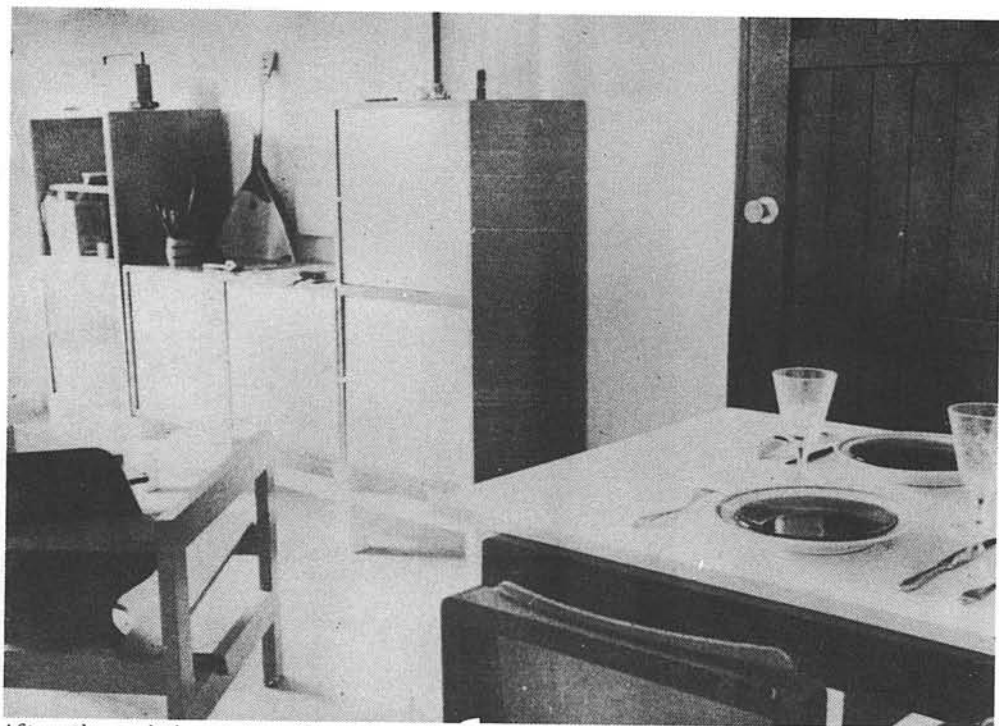
The urbanization had to take advantages of a zone with good ecological conditions, near to the extensive beaches, and preserving the agricultural land of Cordon. This implied a rapid mass transport system: a metro and a suburban train.

A study was carried out by the "Direccion Provincial" of architecture and planning of the "Poder Popular" in the city of Habana, in order to rationalize street-names and numbering of buildings.

It is interesting to analyze how an area of buildings of 5 or more stories has not managed to have any urban character, while traditional areas of 2 stories are much richer and more stimulating.

Probably the project of Alamar has been too complex. The same problem of complexity is to be found in Poland after World War II. Housing factories produced an enormous quantity of dwellings to answer the need in the country. Evaluations pointed out the same dissatisfactions as in Cuba; the same industrial areas ask for new designing on smaller scale.





After the technical-economic evaluation the project of the Plan Director began, constituting the second stage of the work and covering a shorter period of time (1980-2000). In this plan more detailed urban solutions are worked out. There are plans for small scale locations in preparation.

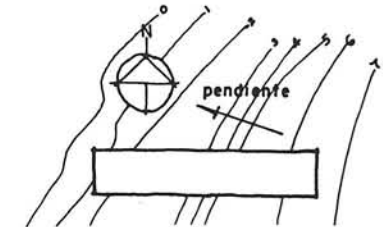
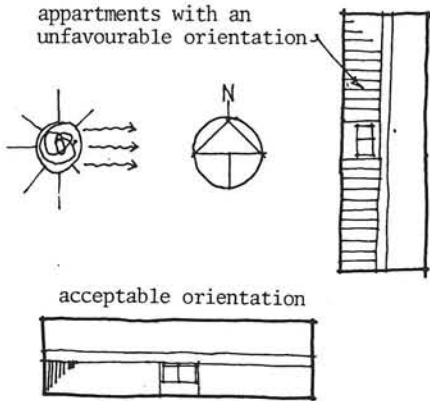
The population organized in committees participate in different levels. In this way faster and more productive ways can be found, information can be spread and discussions can be held on wide social base.

# 14.1

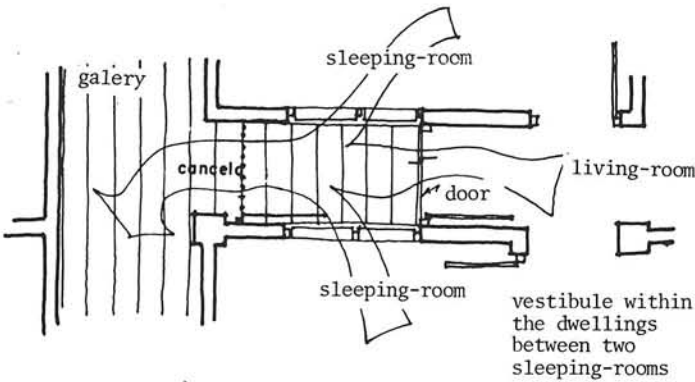
The multi-family project IMS 14.1 was to be an experiment, in which hundreds of similar dwellings were to be built. IMS (Instituto de Materiales de Servia) has developed the IMS construction system (see drawing), tested in Yugoslavia in 1968. The construction is earthquake resistant and permits a flexibility for the design of the blocks. The first IMS-building in Yugoslavia of 12 floors was built with the appartments in longitudinal orientation with a central gallery (corridor).

For the situation in Cuba research was done on orientation, urban characteristics etc. The IMS 14.1 building is located at the south-east side of 'Plaza de la Republica', and was constructed in 1979. The building has the favourable east-west orientation with an internal corridor that can be used for ventilation. The central element is an elevator and stairs over 15 floors.



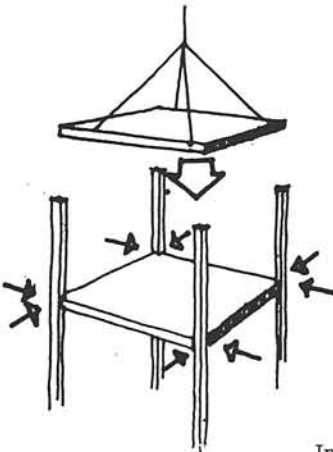


The positioning of the building in a favourable orientation is sometimes in contradiction with the topography



FORM	AREA	p/a
○	10	1,11
	100	0,36
	1 000	0,11
□	10	1,27
	100	0,40
	1 000	0,126
▭	10	1,34
	100	0,42
	1 000	0,134
▬	10	1,69
	100	0,54
	1 000	0,17

Values of p/a (perimeter/total area) for different sizes and forms.



In the IMS construction system the flagstones are supported by friction.

RESEARCH FOR THE MOST APPROPRIATE SOLUTION

The experiences of the researchers were used to developing more freer forms and more original solutions for the following aspects:

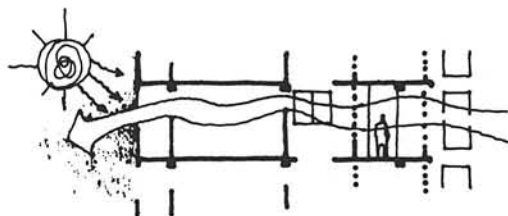
- modulation of the 4,4 x 4,4 m system;
- special design for the groundfloor;
- the use of panels from floor to ceiling with vertical lines for the decoration.

On the 12th floor there is a big roof-terrace to be used by all 680 habitants. On the groundfloor commercial and administrative functions are to be found.

**Project & Reality:**

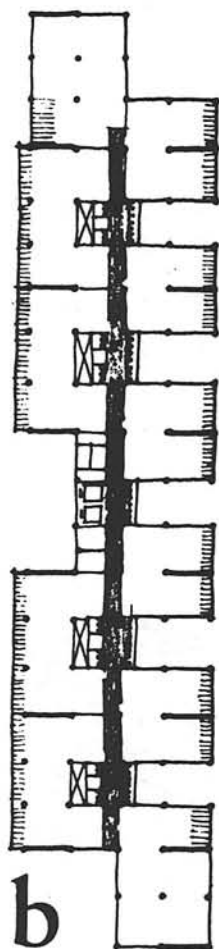
Evaluations after finishing the building pointed out the failures and possitive elements of the project. Some of the results are:

- For economical reasons the elevator stops only at each third floor;
- There have been many discussions about the windows of the type 'Tolde' from aluminium; these windows are numerously used, and turned out to be expensive and inadequate for traditional carpentry;
- In 62 dwellings the screens were not built;
- How will this building react in the Cuban climate.



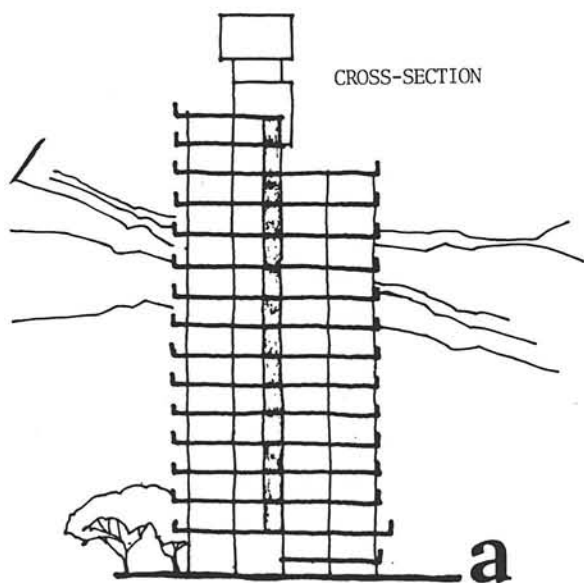
CROSS-SECTION

typical ground-plan for the 1 - 12th floor



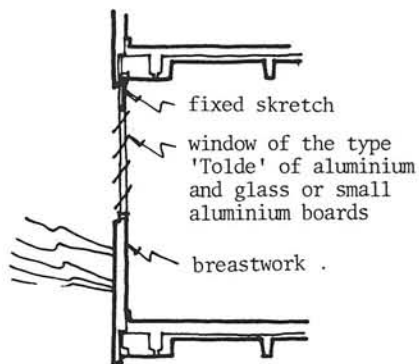
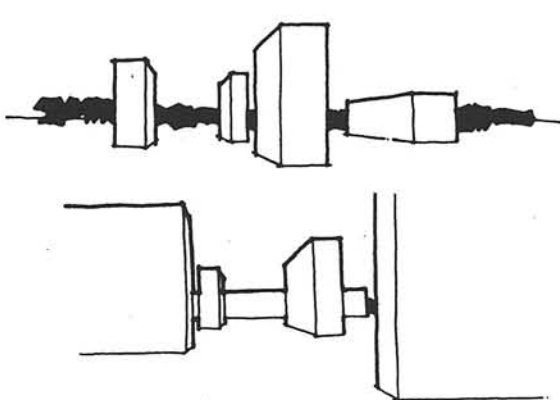
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Planta típica. niveles del 1 al 12.



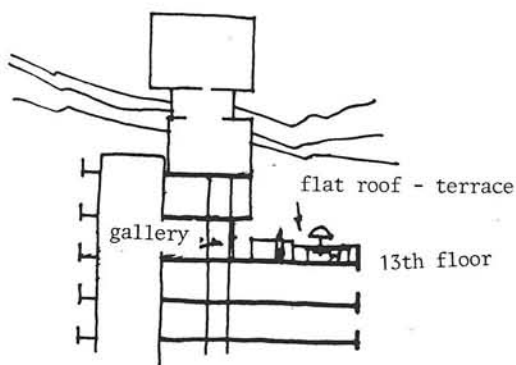
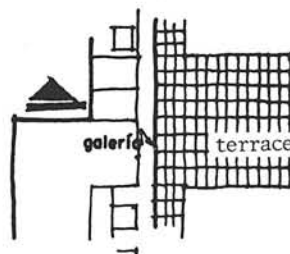
CROSS-SECTION

a

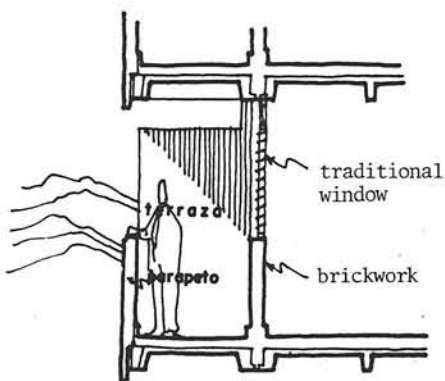


Solución habitual del IMS en Cuba

The space between paralel buildings 'escapes' visually into the horizon. When situating buildings in orthogonal directions, it is possible to design semi-closed spaces.



communal flat roof - terrace on the 13th floor



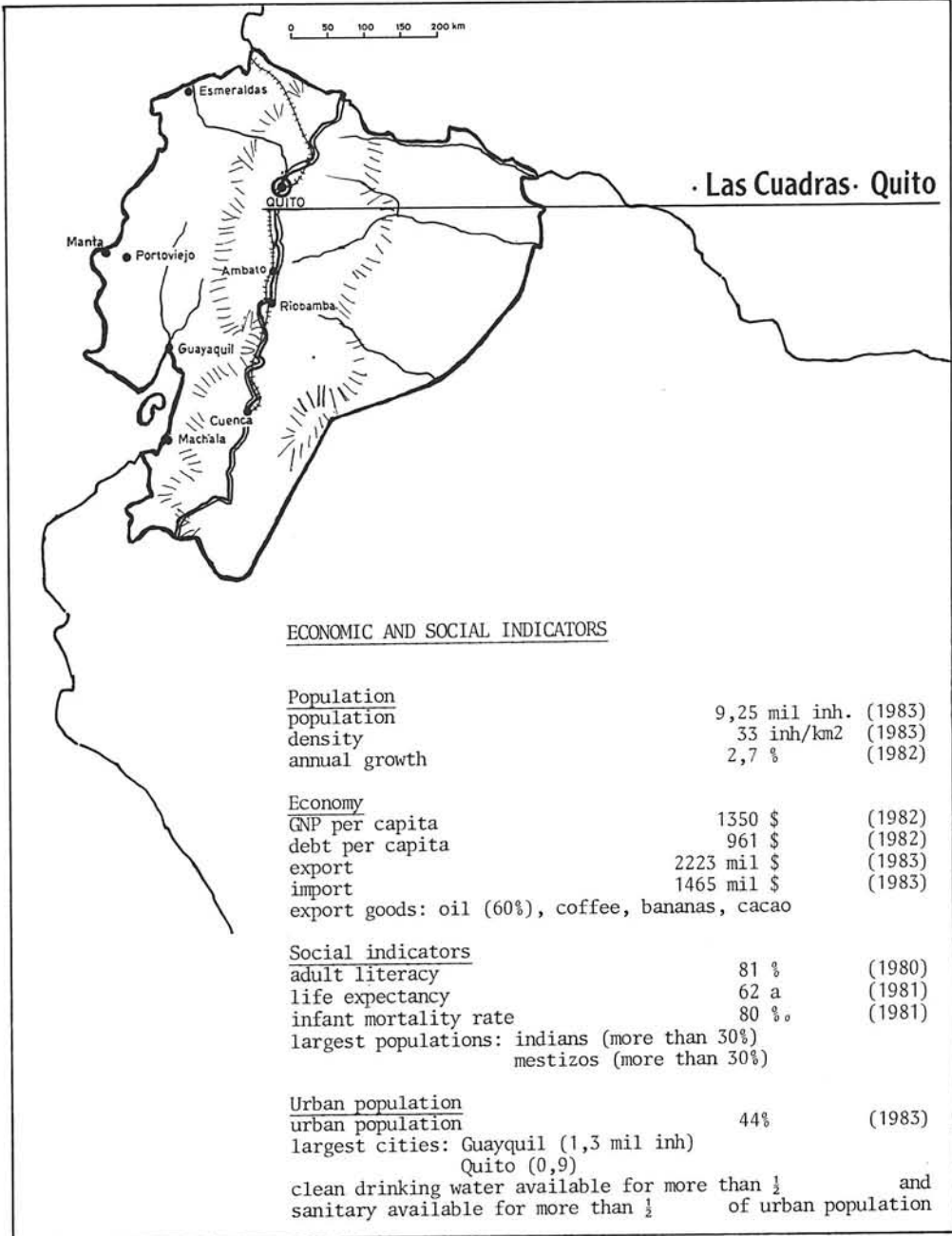
typical cross-section for the 1 - 12 th floor



sources, photographs and drawings:

- Modesto Campos, Multifamiliar Experimental  
in: AU, 1 - 2, la Habana 1983 p. 120-127;
- W. Benitez, Investigación y Diseño para la  
Comunidad, un nuevo mobiliario para Alamar  
in: Arquitectura Cuba 345 (XXIX) jan.,  
Habana 1976.

# ECUADOR



## URBANIZATION AND HOUSING IN ECUADOR

By Maria Blender

### THE LAND

The country of Ecuador (without considering the 'Archipiélago', the Galapagos Islands) consists of 263.000 square kilometers from the Pacific Lowlands, 'Costa', over the Andean Highland, 'Sierra', to the Eastern Lowlands, 'Oriente'.

In the colonial times nine-tenth of the population lived in the Sierra, concentrated in the traditional cities Quito, Cuenca, Ambato and Riobamba.

Quito as capital city had fundamentally a political role. Guayaquil as the main seaport had the major economic role concentrating the trade in land products.

Concerning economical development and solidification of population the Costa meanwhile has surpassed the Sierra. During the 1960s and 1970s the cities in the coast show a remarkable growth process. The concentration of the population in the cities in the Oriente is low compared with the Costa and the Sierra. (See table 1.)

The two urban centers Guayaquil and Quito have consolidated their dominant role. (See table 2.)

TABLE 1

Region	Population (in 1000 inhabit.)		Proportion of urban population (in percent)			Share of the territory (in %)
	1968	1983	1950	1962	1983	
Costa	2725	--	32,6	41,1	--	26
Sierra	2862	--	26,2	31,6	--	24,5
Oriente	105	--	12,0	13,5	--	49,5
total	5695	9250	28,5	36,0	45,0	100

Population, proportion of urban population and share of the territory by regions. (Source: Censos de 1950 y 1962 and official estimations.)

### AGRICULTURE

Ecuador is characterized as a monoproducer and monoexporter of products of the primary sector. This implies dependence on the fluctuations in the world market and in the production.

For 150 years the export of cacao determined Ecuador's insertion in the world economy and its capacities for growth and development. In the 1940s priority was given to coffee and banana cultivation, what culminated in a virtual banana boom.

After an Agrarian Reform in the 1960s some changes in the traditional patterns of agricultural production took place in the Sierra. 'Precarismo', a feudal system in which the peasant's unpaid labour was remunerated with the permission to use a piece of land for domestic food crops production, was abolished. Feudal relations were replaced by wage relations.

TABLE 2

City	1885	1938	1962	1975	1980
Guayaquil	40	160	511	1077	1200
Quito	80	150	355	593	850
Machala	-1)	-	30	100	-
Cuenca	30	48	61	86	-
Esmeraldas	-	-	33	85	-
Ambato	12	25	54	81	-
Quevedo	-	-	20	70	-
Portoviejo	-	-	32	69	-
Manta	-	-	34	66	-
Riobamba	18	20	42	57	-

Population in the main cities (in 1000 inhabitants). (Source: 1962 Census and official estimations.)

--: No information available

### INDUSTRIALIZATION

Ecuador shows a retarded process of industrialization compared with other Latin American countries. Industrial development was initiated in the 1950s and accentuated in 1975 by a state policy imposing import restric-

tions for consumption goods. This measurement brought with it the reconversion to the assembling industry but saw no decrease in imports.

#### OIL PRODUCTION

The early 1970s saw the setting-in of oil exploitation. For the oil-producing, thin populated Oriente Quito is the administrative center, concentrating the modern industrial, banking and trade sector. The plusvalue produced by the exploitation of oil is managed by the state (in the period 1972 to 1977 oil was good for 28 % of the total revenues of the Ecuatorian state); but an important part of it flows to the private sector which shows a high concentration.

The accelerated process of accumulation of capital is clearly visible in Quito which absorbs 50 % of all investments; then followed by Guayaquil with the 20 %, leaving the 30 % for the rest of the cities. Because of the new economic activities a deversification of land demand started; attractive housing programs for middle and high incomes were realized and speculation in land increased.

#### INCOME SITUATION

This economic development sharpens the old inequalities of distribution of rent and the marginality of large sectors of the Ecuatorian people, increasing their difficulties to enter in the market of employment, consumption goods and services. The precarious living conditions of the population in the 'barriadas', slum quarters, manifest this system.

According to the 'Encuesta de Hogares' in 1977, 7% of the economic active population, which was 50,4% of the population older than 12 years, was unemployed and 37% is considered subemployed, receiving a monthly wage lower than the official minimum (at that time about 2000 sucres). (See table 3.)

In 1985 it was estimated that the portion of un- and subemployed population has increased to some 50%.

TABLE 3

Monthly wage (in sucres)	number of earners	%-share
0 - 2000	86.325	35,94
2000 - 4999	91.425	38.06
5000 - 8999	32.700	13,61
9000 - 14999	11.250	4,68
15000 - ...	9.825	2,78
no wage	2.025	0,84
no declaration	6.675	2,78
total	240.225	

Wage level of the economic active population.

(Source: INEC, Encuesta de Hogares, 1977)

#### MIGRATION

The limiting of possibilities for subsistence in the countryside, in the first place in the Sierra which is the main cultivation region, caused a considerable migration flow to the cities, above all to Quito and Guayaquil. For a long time Guayaquil has a large urban problem with a large part of the population living in barriadas. In 1970 49% of the population lived in barriadas.

Quito, in contrast to Guayaquil, only recently attracted large numbers of migrants from the Sierra and like Guayaquil it was not able to absorb the immigration problem.

#### UNCONTROLLED SETTLEMENTS

In 1978 there existed 56 illegal 'barrios' in Quito, with a total population of 200.000 which is 28% of the total population; another 12% lived in 'tugurios', inner city squatters.

Most of the 'barriadas' have been developed by land speculators, which sold land on hilly areas or outside the city boundaries.

Two principal aspects characterize the changes in Quito: the extension of the surface of the city and the segregation of the population. In other cities spontaneous settlements also arose but not to such an extent. While in the whole country the urban growth rate amounts to 3%, the 'tugurios' and 'barriadas' reached at times a growth rate of 12%.

#### HOUSING SITUATION

Large parts of the cities' occupied areas developed without any urban planning and lack basic infrastructure and services. This unplanned occupation limitates the possibilities of urban upgrading. In the beginning of the 1960s, according to official data, more than the half of the housing stock were huts of throw-away materials, and one third were one-room-housings for more than three persons. Three-quarter of the population lacked public drinking water supply and four-fifth lacked sewage disposal networks. Three-quarter of the peasant houses consisted 20 m<sup>2</sup> or less. They had walls of stabilized soil and straw roofs. The population in the Oriente built their huts on wooden piles with walls and roofs of reed.

In 1976 the official housing deficit was 600.000 units for a population of 7 million. The annual increase was estimated at 40.000 units.

Today more than a quarter of the urban population still lack public drinking water networks and sewerage nets.

#### HOUSING CONSTRUCTION

Since the 1960s the building industry has expanded with an increase in employment in the building sector and an increase in the portion of economic active population in general. But for the following reasons this had little benefitting effect for the needy population.

The increase in the investments in infrastructure rarely saw an increase in the basic infrastructure for the population, but the construction of an oil-pipeline, railway lines, bridges, etc.

The increase in the annual construction of houses from 4000 units in the late 1960s towards the double in the 1970s, with the half in Quito, is not worth mentioning compared with the quantitative housing deficit.

The costs of building materials, in the first place those of imported materials, the costs of land and the interest rates are increasing. The building costs of a house in Quito have doubled between 1966 (when it was 76.594 sucres) until 1973 (150.622 sucres) and again until 1976, when the costs were 300.000 sucres.

#### SOCIAL HOUSING

According to the National Institute of Statistics the projected building activities in 1973 were financed in accordance to the following quota:

Ecuadorian Institute of Social	
Security IESS . . . . .	14,9%
Ecuadorian Housing Bank BEV . . . . .	2,0%
Cooperative Societies . . . . .	16,9%
own means . . . . .	48,3%
others . . . . .	17,9%
(total . . . . .)	100%

The IESS built 30.000 housing units between 1928 and 1971. (The average investment per unit was 83.000 sucres.)

The cooperatives request for a credit of 180.000 sucres a monthly income of at least 10.000 sucres.

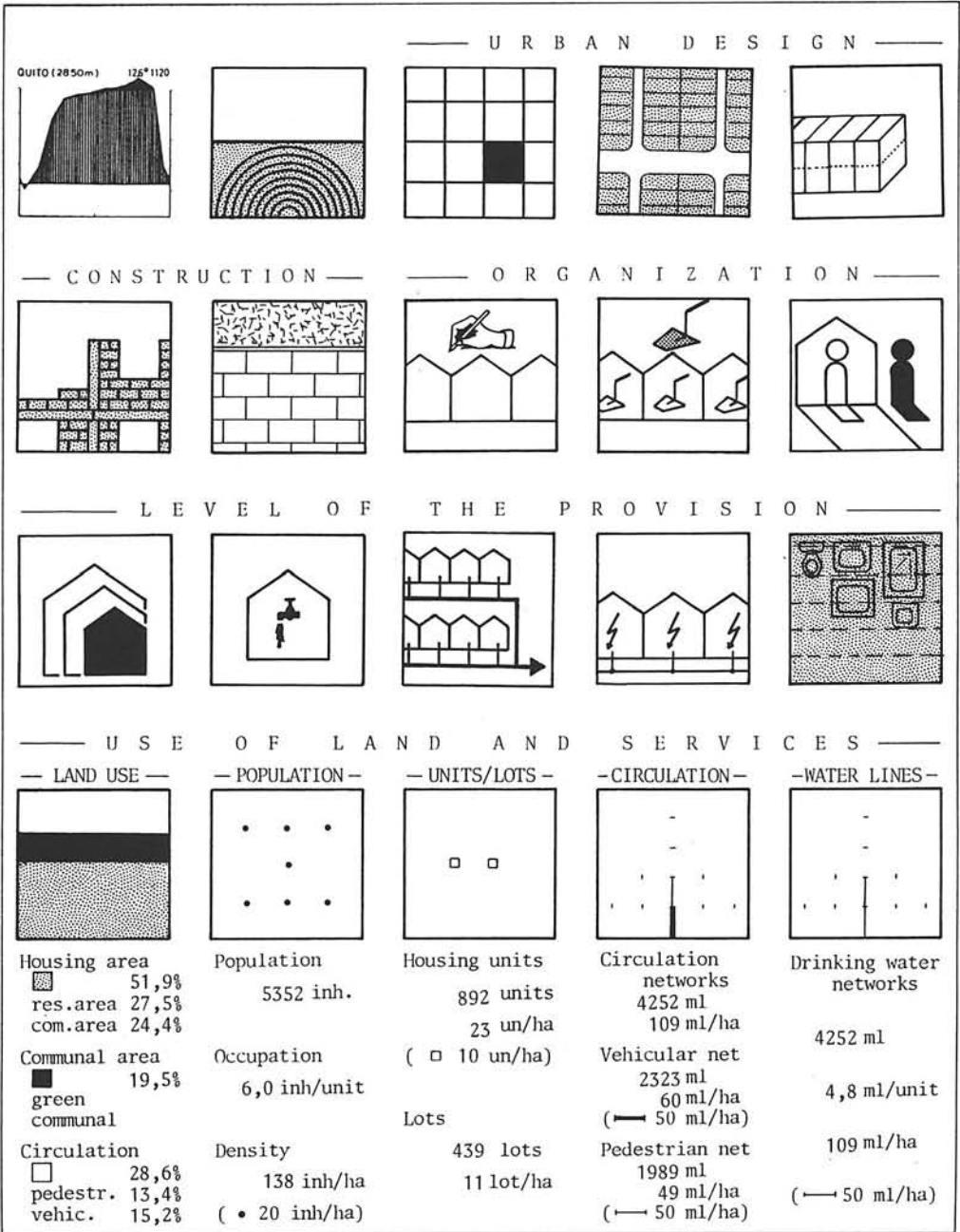
The Ecuadorian Institute of Social Formation INEFOS comes to the conclusion that "there is no 'housing with social interest'" in Ecuador.



(1981)  
38,9 ha

# ECUADOR

## · Las Cuadras · Quito



LAS CUADRAS  
CHILLOGALLO QUITO  
circa 1981

By Gerard Stalenhoeft de Ayguavives

The plan for Las Cuadras is integrated into the townplans for the periphery of Quito. The area is included in the Spanish grid of Chillogallo one of the suburbs of Quito. Because of plans for a new road (nueva via oriental) through their previous settlement, the inhabitants received a place in this area. The state will own the land and the dwellings; the inhabitants have the right to improve their dwelling. In the beginning some criteria had been put forward such as:

- organize the form and regulation of the settlement;
- put the public services into a proper balance;
- incorporate useful landzones;
- integrate the settlement in the general economical and physical system.

The government provided the infrastructure, the services and the materials. The inhabitants could take part in the building-team

The total area of Las Cuadras is 38,8 ha. The area which have to be paid back because of expropriation is 16,2 ha.

The settlement includes:

- 332 lots at the west-side of Avenida Bahia with 732 dwellings for 4.338 inhabitants;
- 107 lots at the east-side of Avenida Bahia with 158 dwellings for 1.014 inhabitants.

A special housing typology has been developed for Las Cuadras.

Every dwelling can be amplified. There are three typologies, each represents different alternatives (see drawing).

The basic is the 'manzana' of 54 x 54 m which contains 12 lots of 9 x 27 m (243m<sup>2</sup>). One module of 4,5m and of 3,6m has the best possibilities for combination and organization of the dwellings.

When designing the manzana the confirmation of the corners was considered seriously. The corners form very important elements; they form the identification of the blocks, and in the corners there will be room for small commercial purposes.

The basic unit responds to the conditions and has a playroom in case of changes or growth of a family. The entrances and the blocks are placed on the streetside. The other side of the lots form small courts (private or communal).

This rational plan needed a closely integrated infrastructure. In order to make a clear differentiation, the streets were divided into zones. There are three sizes: I - 15 m, double circulation

II - 12 m

III - 6 m, pedestrians

Variations I and II will receive an 1,5m zone for pedestrians, and all variations will be provided with an 1,5m green zone. The streets determine the use of the area. The big road in the middle of the plan (via Colctora) connects the quarter with the others. Inside the plan the streets connect the places of commerce (equipment) with the rest of the settlement. This center of commerce must also be a point of orientation.

The technology should be rational so that the users could build their own house. Therefore all types of dwellings were developed on a module.



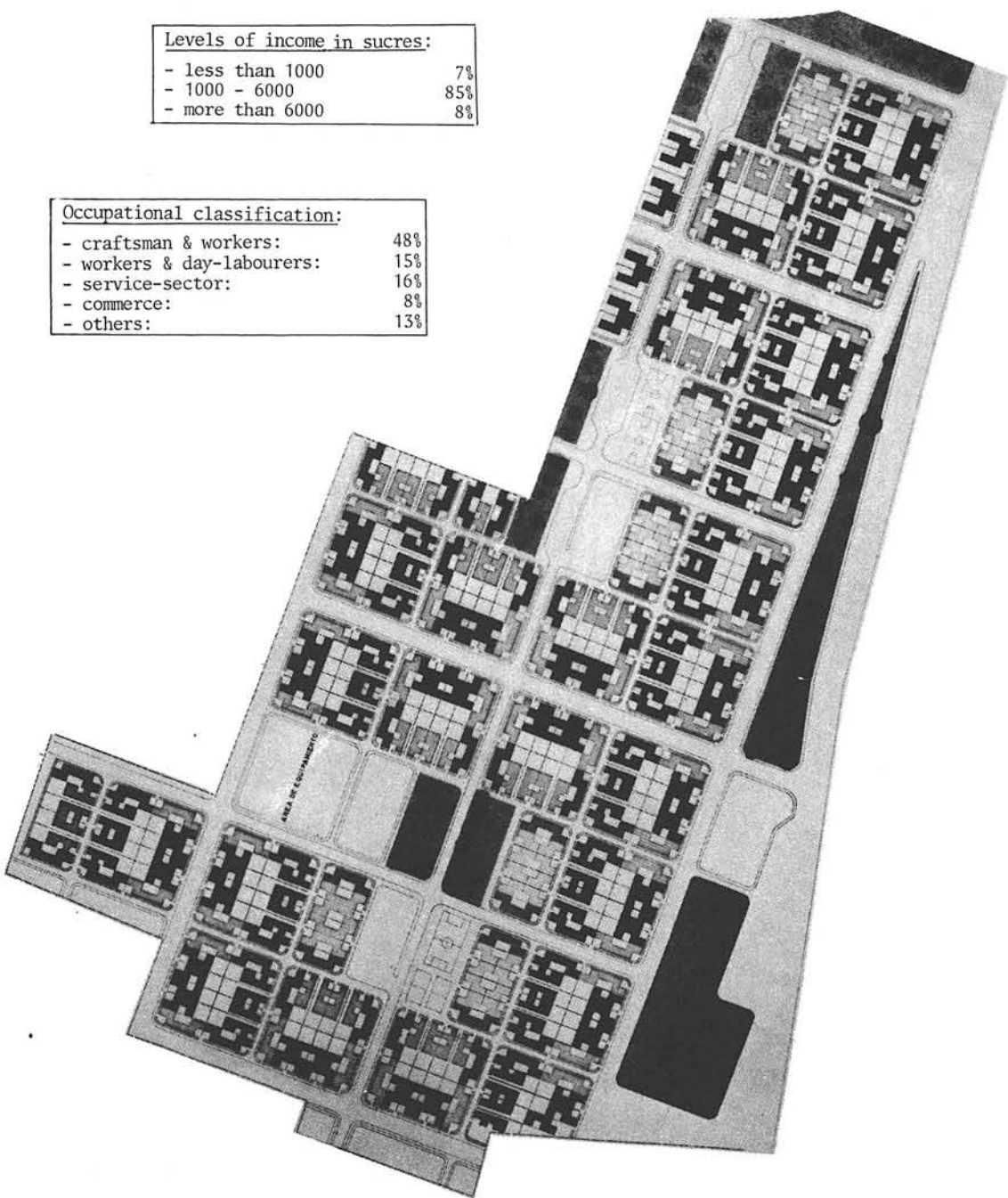
The users are the owners of the dwellings that are expropriated because of the construction of the 'nueva via Oriental'

Levels of income in sucres:

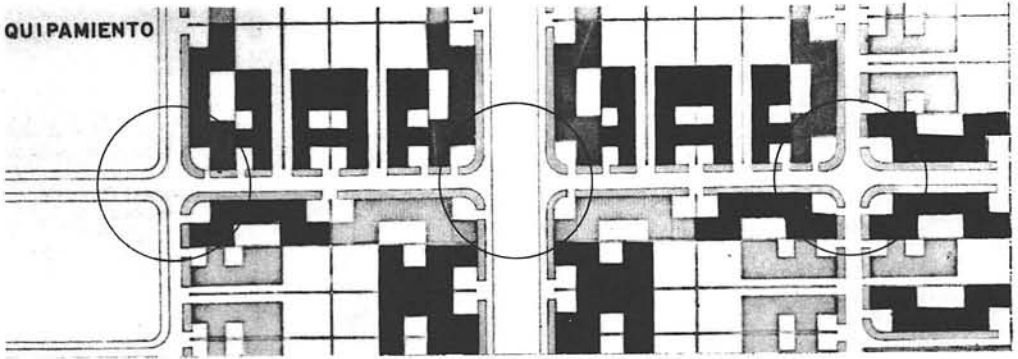
- less than 1000	7%
- 1000 - 6000	85%
- more than 6000	8%

Occupational classification:

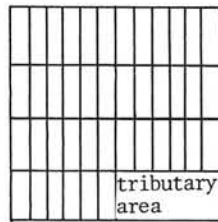
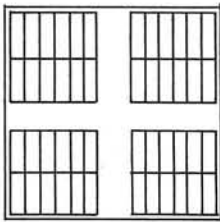
- craftsman & workers:	48%
- workers & day-labourers:	15%
- service-sector:	16%
- commerce:	8%
- others:	13%



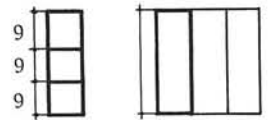
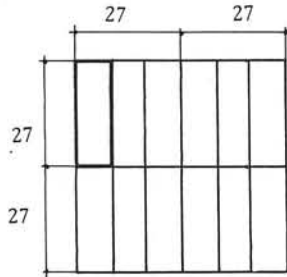
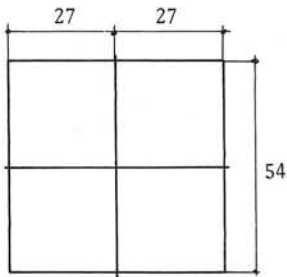
QUIPAMIENTO



PLANO DE UN SECTOR DONDE SE APRECIA EL TRATAMIENTO DE LAS ESQUINAS



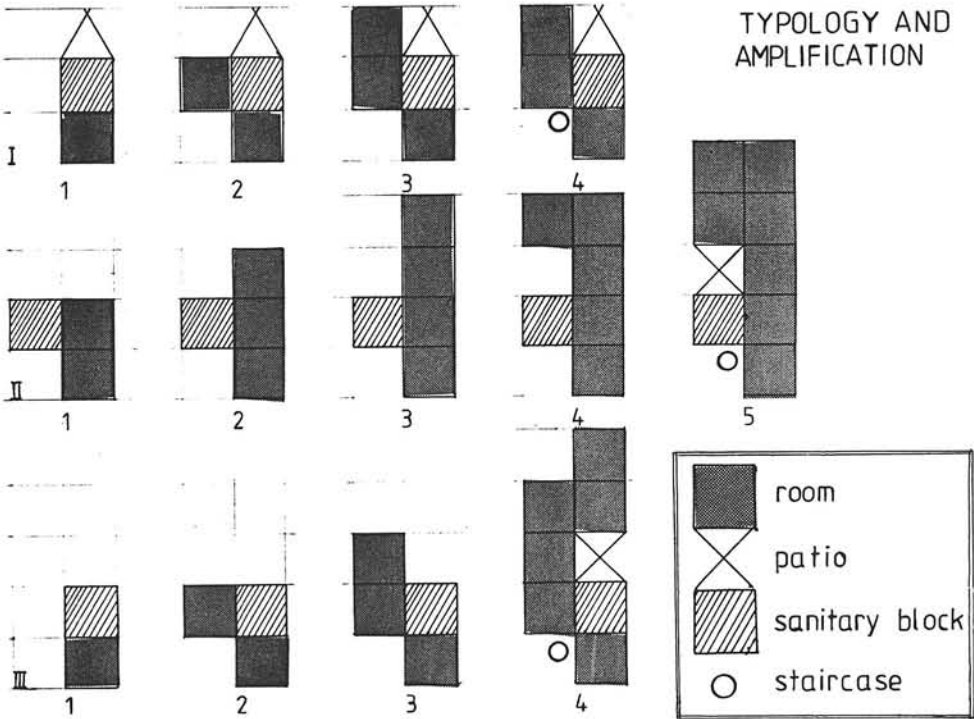
BLOCK AND LOTS  
RATIONALIZATION, SIZES AND MODELS



redrawn by G. Stalenhoef



# TYPOLOGY AND AMPLIFICATION

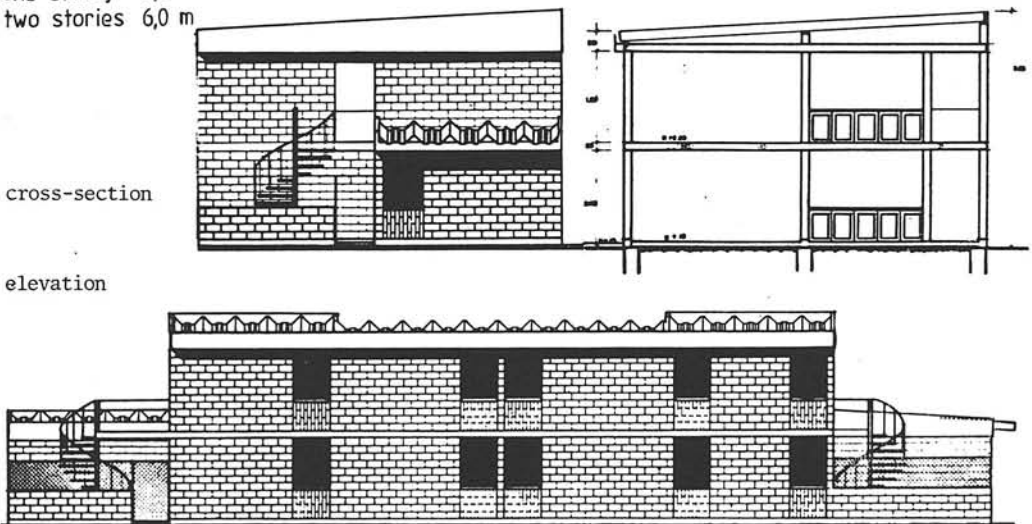


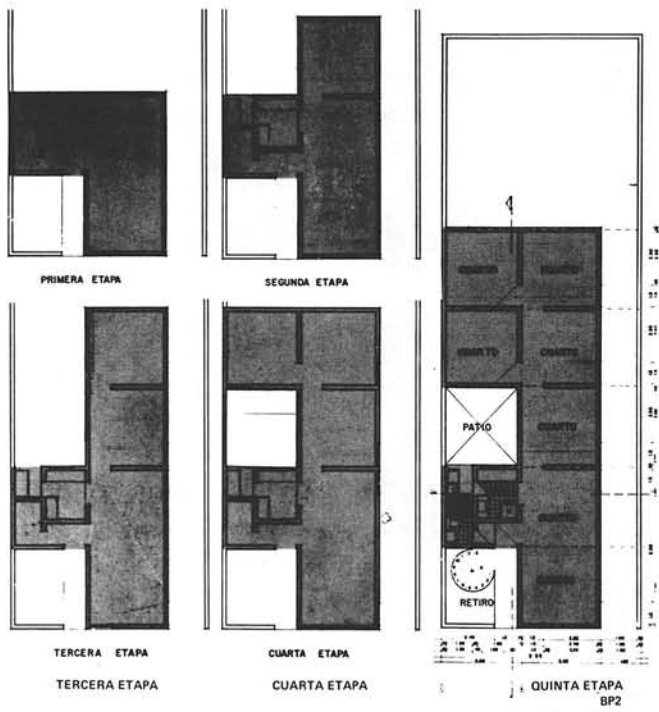
drawn by G. Stalenhoef

one storey 3,5 m  
two stories 6,0 m

cross-section

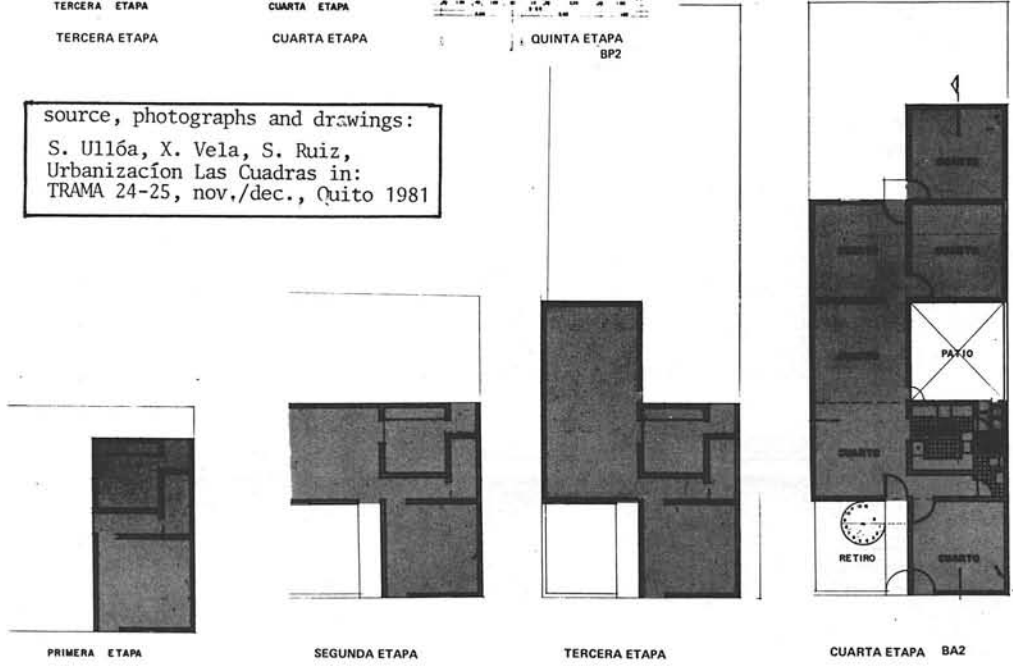
elevation





two examples of the possibilities of amplification

source, photographs and drawings:  
 S. Ullúa, X. Vela, S. Ruiz,  
 Urbanización Las Cuadras in:  
 TRAMA 24-25, nov./dec., Quito 1981



# EL SALVADOR



## ECONOMIC AND SOCIAL INDICATORS

<u>Population</u>		
population	5,15 mil inh.	(1982)
density	245 inh/km <sup>2</sup>	(1982)
annual growth	2,9 %	(1982)

<u>Economy</u>		
GNP per capita	700 \$	(1982)
debt per capita	233 \$	(1982)
export	733 mil \$	(1983)
import	883 mil \$	(1983)
export goods:	coffee (50%), cotton (10%)	

<u>Social indicators</u>		
adult literacy	62 %	(1980)
life expectancy	63 a	(1981)
infant mortality rate	75 ‰	(1981)
largest populations:	mestizos (70%)	

<u>Urban population</u>		
urban population	43 %	(1983)
largest cities:	San Salvador (0,6 mil inh)	
	Santa Ana (0,2)	
clean drinking water available for more than $\frac{1}{2}$	and	
sanitary available for less than $\frac{1}{2}$	of urban population	

## POPULAR HOUSING IN EL SALVADOR

By Alice Erkelens and Maria Blender

The enormous housing problem in El Salvador, the most densely populated American country, mirrors the contradictions of the political and economical system of the country and the contrast between the landed proprietors, the powerful upper class, and the large stratum of poor peasantry. The lowest 10% of the landowners hold less than 0,5% of the land while the top 10% hold more than three-quarters of the land. The ownership structure in the periphery, the accelerated commercialization of landed property and insecurity of employment in the countryside gave rise to the pauperization of small land owners, the expulsion of landless peasants, seasonal migration migration to other countries and in front of all rural migration. This has led to an urban population of 43% of the total population.

### BUILDING MATERIALS, INFRASTRUCTURE AND SERVICES

The low incomes of the majority of the population - the poorest 10% earn only 2% of the national income while the top 20% earn over two-thirds - involve unhealthy housing conditions e.g. a bad quality in building materials and insufficient supply within the infrastructure.

The use of 'non-permanent' building materials such as non-baked clay and vegetable materials comes to 35% in rural housing, to 25% in suburban regions and to 6% in urban areas.

During the 1970s the use of 'traditional' construction systems (masonry from bricks or cement blocks, reinforced concrete and roof-covering from tiles, corrugated iron or asbestos cement) increased from 12% to

26% while the use of 'bahareque' (walls of reed and clay) decreased from 45% to 33% and the use of 'adobe' (air-dried bricks) from 32% to 28%. These improvements hardly reached rural areas. Still two-thirds of the rural housing stock is of 'bahareque' or 'adobe' and one third is of straw, wood and throw-away materials.

Most of the urban households have electricity and piped water, more than half has flush toilets and nearly the half has sewerage connection. The majority of the rural households lacks the basic services.

Supplying the infrastructure is the responsibility of the state. But the national infrastructure agencies provide urban roads, storm drainage, water supply etc. consistent with the demands of the solvent groups. Progressively the state places community facilities at the disposal of middle income strata. High income neighbourhoods often supply themselves with private schools and health centers, while the popular settlements are characterized by a lack of urban infrastructure and services.

### THE FORMAL HOUSING SECTOR

Great contradictions are to be found in respect to the accessibility of housing for the different strata. The regular housing market is formed by three submarkets: the public, the subsidized private and the private sector. During the decennium 1960-1970 only 26.000 units were built by the formal sector, whereof more than 80% for the middle and high income groups (see table 1).

From 1971 to 1975 the housing production totaled 24.000 units. The half of it was built for the high income sector and only 10% of the production was for low incomes.

Since 1950 the El Salvadorian state created a number of housing institutions and infrastructure programmes to face the housing problem.

The Institute of Urban Housing IVU, created in 1950 and partly financed through loans from the Interamerican Development Bank, built in its first 28 years of existence over 23.000 conventional units which only could be paid by middle-income groups.



Income groups served by housing construction, El Salvador, TABLE 1.  
1962-1970 (Source: Diagnostico de la Situacion Habitacional  
de la Republica de El Salvador en 1970)

Household classification	Monthly household income (US\$)	Percentage distribution of dwellings constructed			
		Public +)	Publicly financed ++)	Private	Total
Very low	0- 40	0	0	0	0
Low	40-100	30	0	10	18
Middle	100-240	50	5	30	36
Uppermiddle	240-400	10	25	20	17
High	above 400	10	70	40	29

Notes:

+) Constructed by Instituto de Vivienda Urbano

++) Financed by Financiera Nacional de la Vivienda

The National Housing Finance Agency FNV, established in 1965 under the patronage of the Alliance for Progress as a means for channelling private savings into housing construction through its specialized savings and loan system. After 13 years the FNV had financed 26.500 fully-serviced dwellings at costs even beyond the possibilities of middle-income households. The Social Housing Fund FSV, formed in 1973 as an extension of El Salvador's Social Security system, financed during its first four years 5000 units. The costs were so high that only the wealthiest third of the households covered by the Social Security system could afford them, having incomes between middle-low and upper-middle.

No one of these housing programmes was accessible to the poorest 48% of the households. The only housing programme that reached the lower income sectors is that one of the Salvadorean Foundation of Development and Minimum Housing FUNDASAL. FUNDASAL is a private non-profit organization, supported by the World Bank and various foreign agencies after successfully having started in squatter settlements in 1969. Until 1980 FUNDASAL had produced 14.000 units benefitting households of the 3rd, 4th and 5th income decile, and in particular cases reaching down to the 17th or up to the 65th income percentile. This was reached by applying 'sites and services' programmes, self-help, efficient land purchase, planning and design. 1)

THE INFORMAL HOUSING SECTOR

The Salvadorian housing policy is oriented to provide the upper income groups with finished housing although the low and very low income groups make two-thirds of the housing demand. In 1972 was estimated that 55% of the housing stock had to be replaced or improved.

Middle and low income groups amount to about two-thirds of the population in the big cities. They have hardly any access to the regular housing market and meet their demand outside the official framework regarding ownership of land, quality of services, standards and building norms.

In 1975 nearly two-thirds of the housing stock in the five biggest cities was built in an informal way. The population growth rates in the informal settlements reach up to 20% p.a. With a few approved exceptions the popular urbanizations of the San Salvadorians share their illegal situation with the most luxurious of the upper-class residential suburbs.

The popular quarters can be classified as follows:

'Mesones' are rented rooms in deteriorated tenement buildings, as it were inner-city slums.

'Colonias ilegales' are erected by land speculators in the periphery of the cities. Illegally subdivided land without services and infrastructure is revalorized by the

users who improve their lots and settlements not only increasing the rents of the settlement but also of the nearby land. Often an enormous social control exercised by the lessors and insecure tenures prevent any form of spontaneous organization. 'Tugurios' are unauthorized urbanizations resulting from non-organized invasions in marginal land inappropriate for urban expansion. In 1977 was estimated that 23,4% of the San Salvadorian population lived in 'mesones', 20,5% in 'colonias ilegales' and 4,8% in 'tugurios'.

#### RENTS

The ownership structure in El Salvador is as follows: 40% of the dwellings are individual property, 17% are in illegal tenancy, inasmuch the occupants have a 'promise of sale' by illegal land-developers, the rest are leases or other types.

The rents for two-thirds of the tenants amounts to less than 10 US\$ per month, about one third pay between 10 and 40 US\$ and very few pay more than 40 US\$ per month. Just as the high incomes are concentrated in the department of San Salvador, the San Salvadorians pay the highest rents: 84% of the households pay more than 10 US\$ per month.

#### Sources

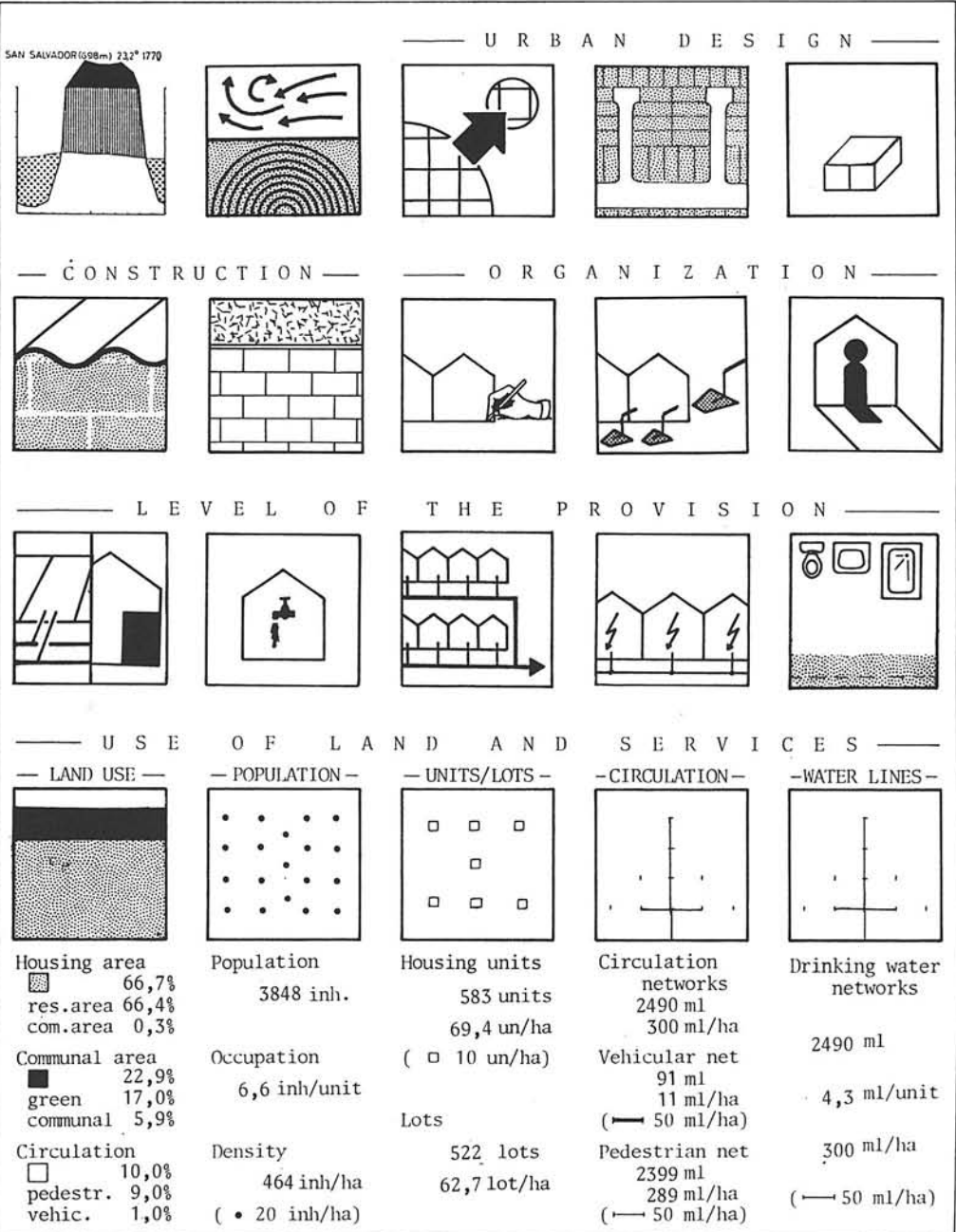
- A. H. Deneke and M. Silva:  
"Mutual Help and Progressive Development Housing: For What Purpose? Notes on the Salvadorean Experience" in Peter M. Ward (ed.): Self-Help Housing. A Critique; 1982.
- M. Bamberger and A. H. Deneke:  
"Can Shelter Programmes Meet Low-income Needs? The Experience of El Salvador" in G. K. Payne (ed.): Low-Income Housing In The Developnig World; 1984.

#### Note

- 1) As examples for FUNDASAL's activities see the presented projects. Further we want to mention here, that our quantitative analysis of each project ('Use of land and services') is based on FUNDASAL's investigations on their own projects.

1975  
8,3 ha

# EL SALVADOR · Sensunapan · Sonsonate



SENSUNAPAN  
IN SONSONATE

Basic units:

By Alice Erkelens

FSDVM (Fundacion Salvorena de Desarrollo y Vivienda Minima) is a private non-profit organization that finances its programs with national and international subsidies (see housing policies). In 1975 the plans for Sensunapan, a settlement in the South of the city Sonsonate. Sonsonate, with 33.302 inhabitants, is at 65 km from San Salvador, and 15 km from Ajacutla, the main port of the country.

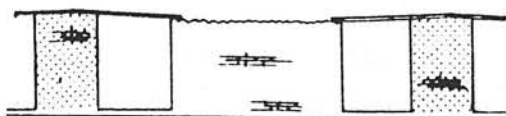
Sensunapan, at 700 m from the Calle Principal, the main transit through Sonsonate, is enclosed between the river 'Sonsonate' and the 6a. Avenida Sur. The settlement houses 583 families, which are for a great part former inhabitants of the 'mesones' of the city. (About 85% of the population of Sonsonate live in 'mesones'. 11% of this population has participated in the project.) The total area of Sensunapan is 86.100 m<sup>2</sup> whereof 2,5% is protected.

In order to obtain a maximal share of the area for residential use and a minimal share for circulation, a cul-de-sac design is chosen. One or two fronts of houses are oriented to the passages and the communal patios, which function besides as access also as a little semi-public green zone.

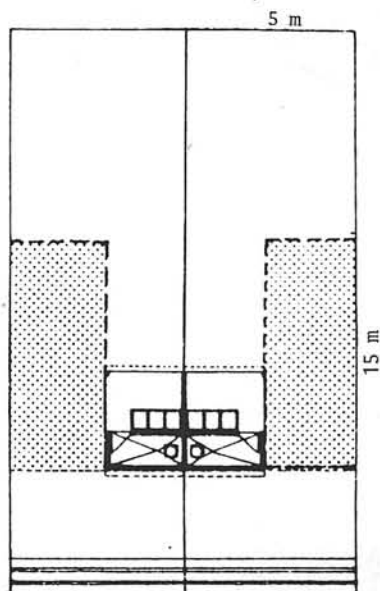
The greatest part of the differently sized lots are supplied with basic units. The 'Salvadorean Foundation' has erected sanitary units of 6,75 m<sup>2</sup>, which contain a toilet, a shower and a washing basin. The living space of 16 m<sup>2</sup> is to be constructed by the occupators in mutual help.

A part of the sites, which are only provided with infrastructure, is larger than the average and located at the road approach, and is so suitable for commercial purposes.

There are also to be found three so-called 'Condominos'. Here the dwelling units (with two rooms of each 14 m<sup>2</sup>) are supplied with communal showers and washing accommodations and individual toilets.



Front elevation



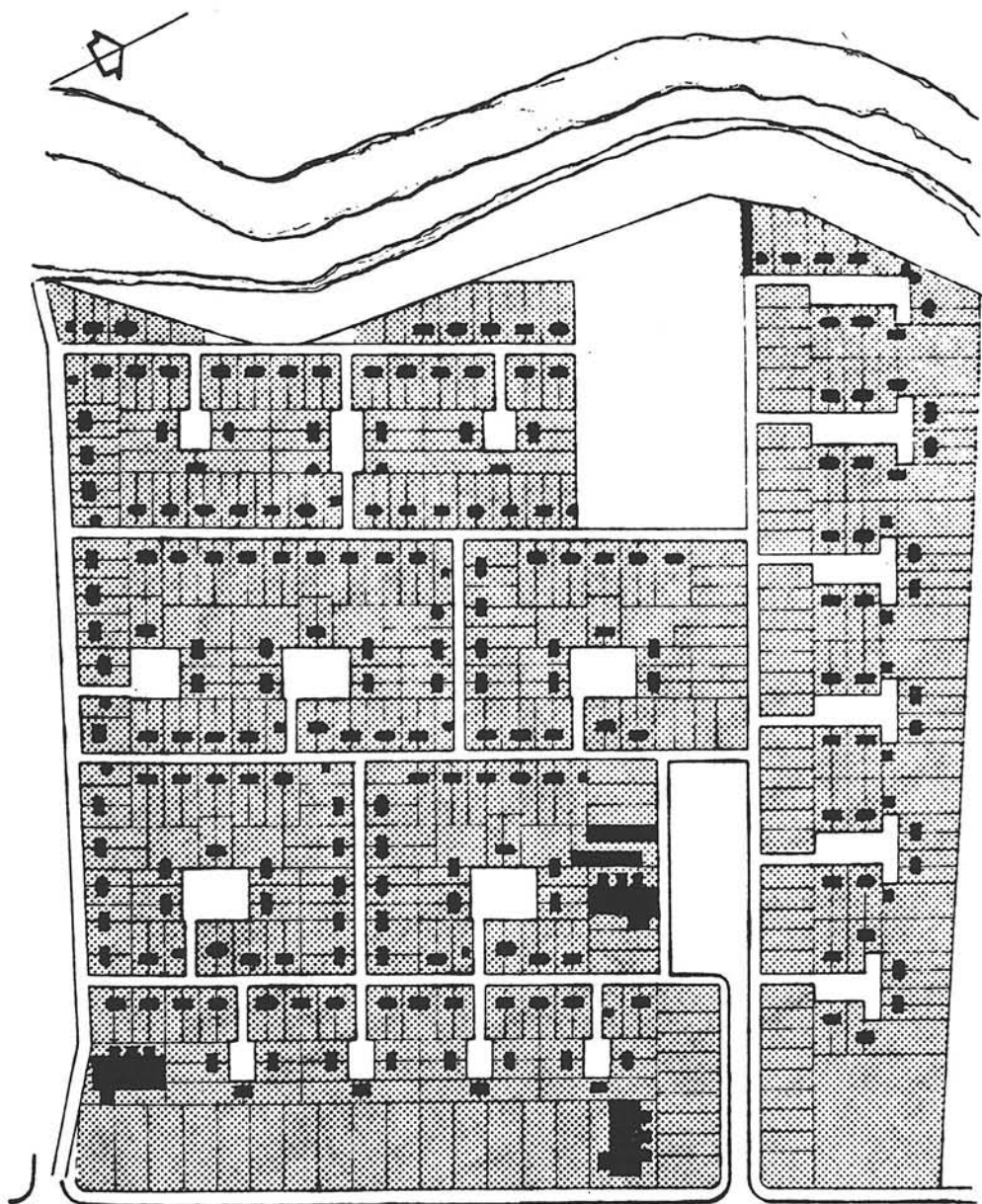
Groundplan



Back elevation

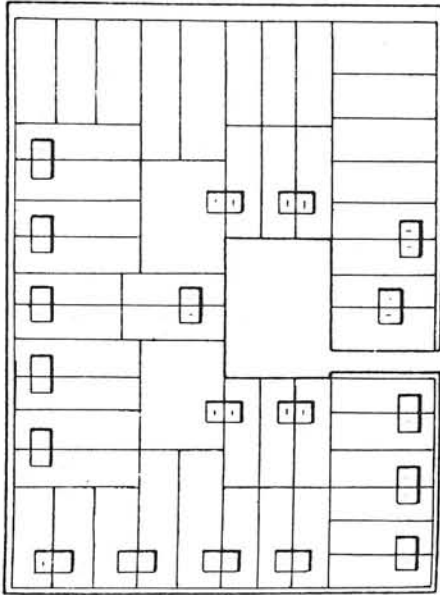
source and drawings:

Evaluación de Proyectos Habitacionales en El Salvador, FSDVM-OEA, Junio de 1976, San Salvador, El Salvador C. A.

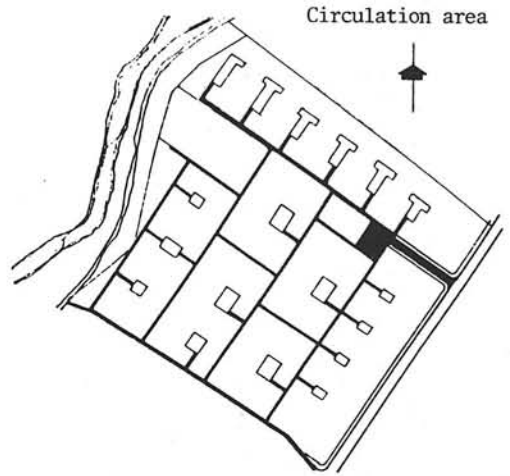
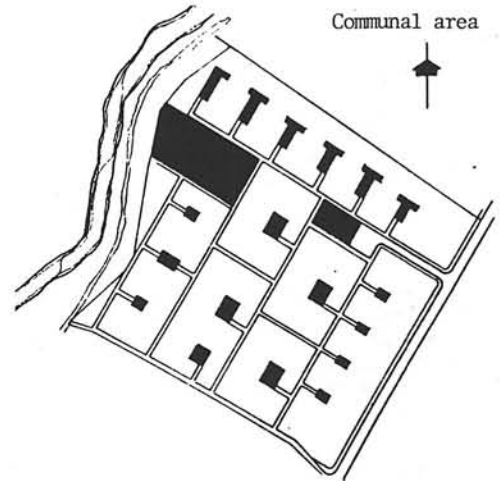


0 10 50 100 m

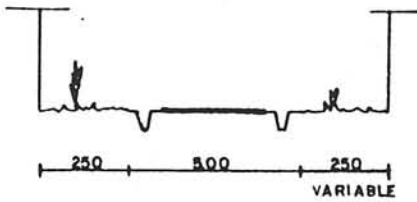
Urban lay-out



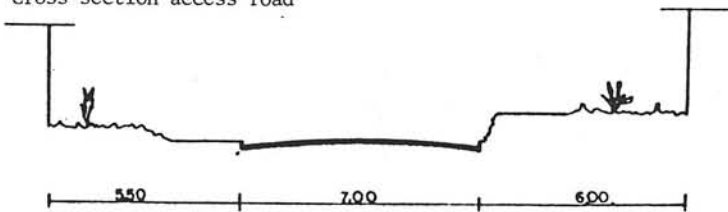
Detail of the lay-out



Cross-section foot-paths



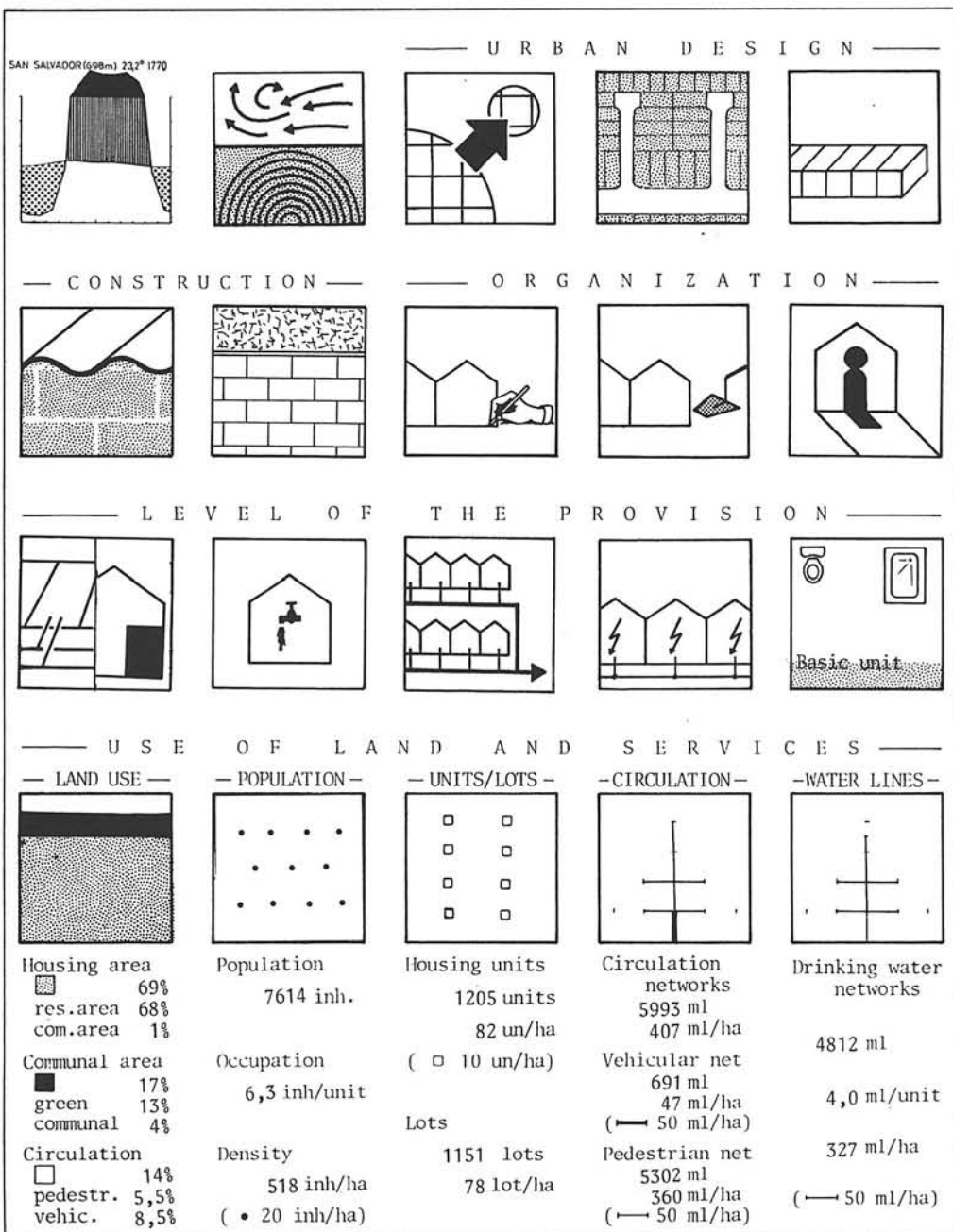
Cross-section access road



1977  
14.7 ha

# EL SALVADOR

## · La Presita · San Miguel



LA PRESITA  
IN SAN MIGUEL

By Maria Blender and  
Gerard Stalenhoef de Ayguavives

The project 'La Presita' is developed by the FSDVM (Fundacion Salvadorena de Desarrollo y Vivienda Minima). La Presita is located in the South-East of the city San Miguel.

San Miguel lies at 138 km distance from the capital. It has a population of approximately 60.000 inhabitants and is the third city of El Salvador. The Salvadorian Foundation here has supplied units for 1209 families with low income (100-250 colones per month) and with medium income (250-600 colones per month).

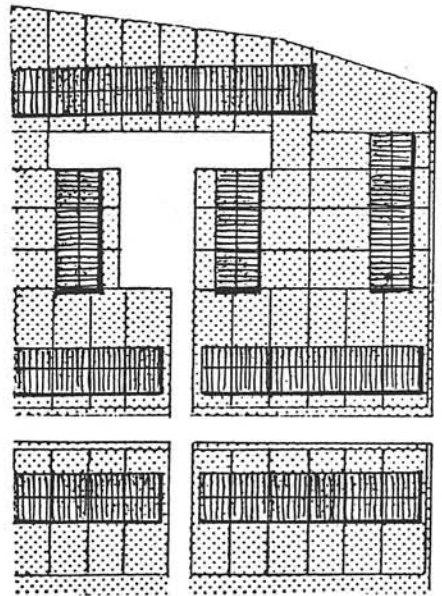
The surface of La Presita is 17,5 ha, out of which a 2,7 ha-stripe along the 'Rio Grande de San Miguel' is protected. The lots are arranged in blocks with a green border; cul-de-sacs end in communal patios inside the blocks. These patios give access to the lots and are part of the pedestrian area. Other green zones are concentrated in larger areas. They are used for communal and recreational activities of the population.

80% of the lots have a surface of 80 m<sup>2</sup>; (5 m x 16 m), the others are irregular with surfaces between 60 m<sup>2</sup> and 103 m<sup>2</sup>. The provision varies from sites with only the public services, to different types of basic units and completed dwellings.

The costs of the undeveloped terrain amounted to 2,68 ¢/m<sup>2</sup>, the costs of the development amounted to 18,82 ¢/m<sup>2</sup>, that is an average sum of 2746 ¢ per lot.

For the total investment we have to sum up the direct costs for the different constructions (see opposite specifications) and the indirect production costs, such as for administration, supervision and financial charges.

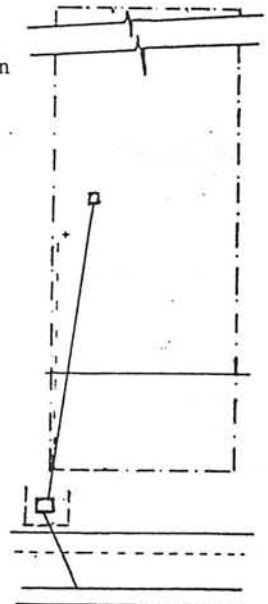
The sale-prices of 2205 colones to 5281 colones have to be paid in monthly amounts between 18 and 46 ¢ with a term of 20 years. (The annual interest rate is 6%.)



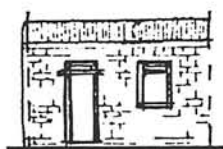
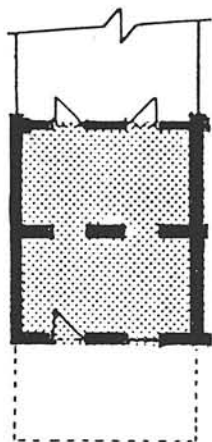
Detail of the grouping

Below and opposite page:  
The different types of housing provision with some technical and financial data

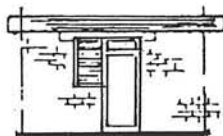
Type 1  
site & services  
site: 80 m<sup>2</sup>  
built area: 0 m<sup>2</sup>  
costs of the construction: 486 ¢  
sale-price: 2205 ¢  
monthly pay: 18 ¢



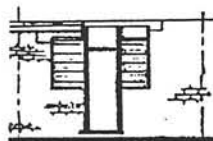
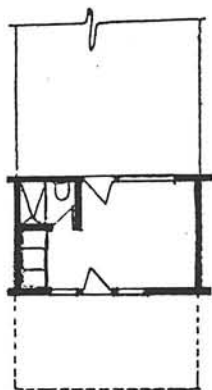
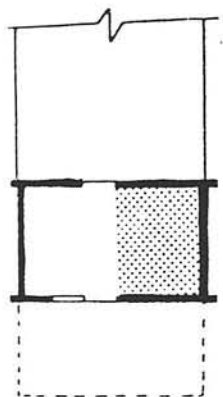




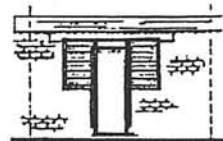
Type 1M  
Unit of adobe  
site: 80 m<sup>2</sup>  
built area: 28,5 m<sup>2</sup>  
costs of the construction: 1319 ₺  
sale-price: 3039 ₺  
monthly pay: 26 ₺



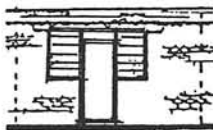
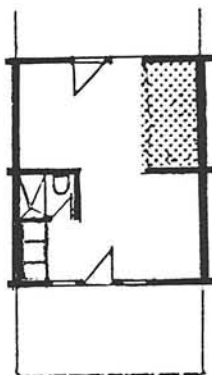
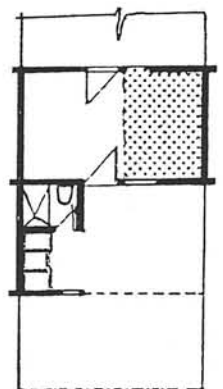
Type 2M  
Unit of bricks  
site: 80 m<sup>2</sup>  
built area: 14,25 m<sup>2</sup>  
costs of the construction: 1935 ₺  
sale-price: 3655 ₺  
monthly pay: 31 ₺



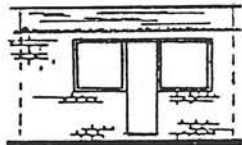
Type 3  
Half house  
site: 80 m<sup>2</sup>  
built area: 14,25 m<sup>2</sup>  
costs of the construction: 2192 ₺  
sale-price: 3912 ₺  
monthly pay: 34 ₺



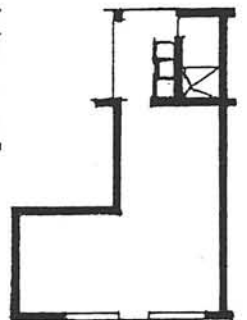
Type 3M  
Basic unit  
site: 80 m<sup>2</sup>  
built area: 18,81 m<sup>2</sup>  
costs of the construction: 2513 ₺  
sale-price: 4232 ₺  
monthly pay: 37 ₺



Type 4  
Complete house  
site: 80 m<sup>2</sup>  
built area: 28,5 m<sup>2</sup>  
costs of the construction: 2962 ₺  
sale-price: 5281 ₺  
monthly pay: 46 ₺



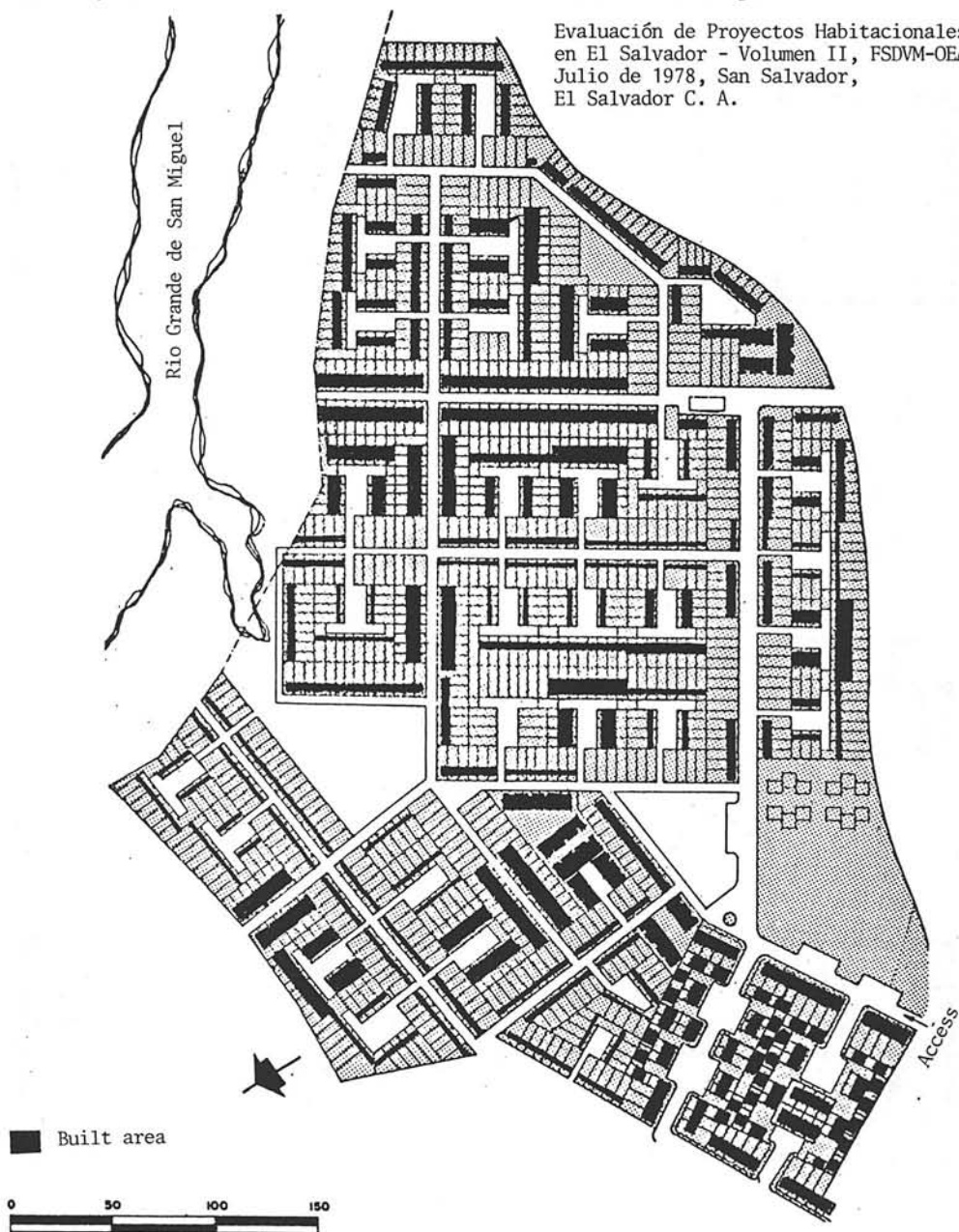
Type Apartment  
site: 60 m<sup>2</sup>  
built area: 31 m<sup>2</sup>  
costs of the construction: 2535 ₺  
sale-price: 3824 ₺  
monthly pay: 33 ₺



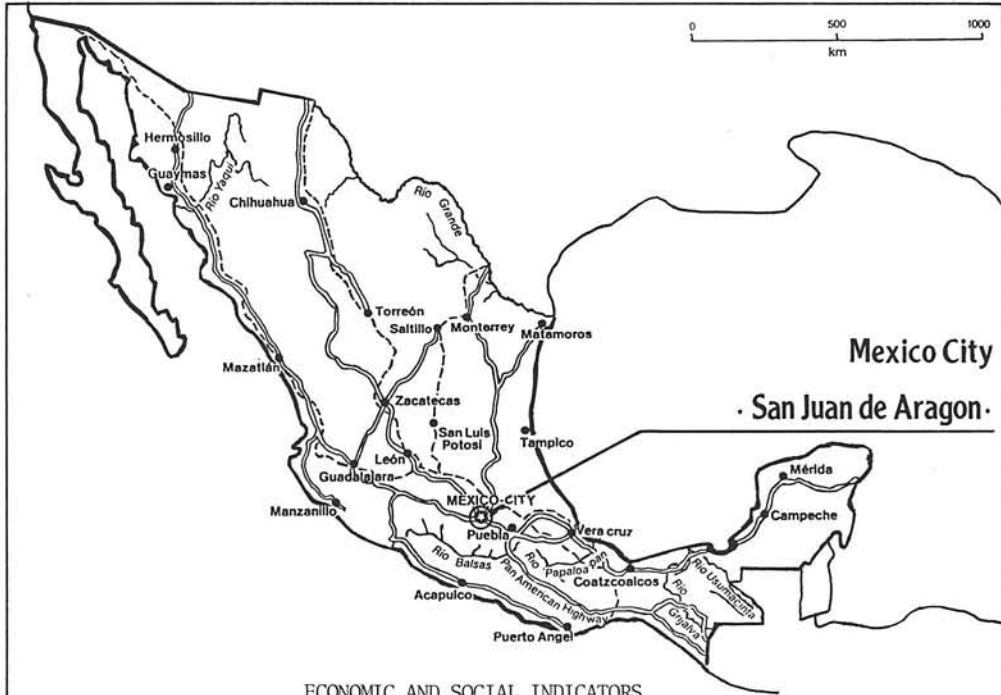
Urban lay-out

source and drawings:

Evaluación de Proyectos Habitacionales  
en El Salvador - Volumen II, FSDVM-OEA,  
Julio de 1978, San Salvador,  
El Salvador C. A.



# MEXICO



## ECONOMIC AND SOCIAL INDICATORS

<u>Population</u>	
population	73,1 mil inh. (1983)
density	37 inh/km <sup>2</sup> (1983)
annual growth	2,9 % (1982)

<u>Economy</u>	
GNP per capita	2270 \$ (1982)
debt per capita	1218 \$ (1983)
export	21400 mil \$ (1983)
import	9000 mil \$ (1983)
export goods: oil (70%), machinery, agriculture products	

<u>Social indicators</u>	
adult literacy	83 % (1980)
life expectancy	66 a (1981)
infant mortality rate	54 ‰ (1981)
largest populations: mestizos (75%)	

<u>Urban population</u>	
urban population	71 % (1983)
largest cities: Mexico City (15 mil inh)	
Guadalajara (2,5)	
clean drinking water available for more than $\frac{1}{2}$ and	
sanitary available for less than $\frac{1}{2}$ of urban population	

SPATIAL CONCENTRATION  
AND POPULAR HOUSING  
IN MEXICO

By Maria Blender

THE LAND

Mexico, with a population of 78 million, covers 2 million square kilometres between the Gulf of Mexico and the Pacific Ocean. The territorial centre of Mexico is formed by the Central Plateau, which turns in the North over to the Northern Plateau. With little precipitation and no other major river than the Rio Grande del Norte -border to the U.S.A.- the climate grows desert-natured, moving centre-northwards. This region takes up a great part of Mexico's mining and heavy industry. In the East the Central Plateau is bordered by the Sierra Madre Oriental (in the North of it Monterrey, third city of the country having 75% of the heavy industry) and in the West by the Sierra Madre Occidental.

In the South borders another range of mountains, running from coast to coast. This band concentrates a large part of Mexico's population, industry and agriculture. And within it, it is the Valley of Mexico (the Federal District), that contains nearly one quarter of the Mexican population and half of the national industrial park. Guadalajara, the second city of both this region and the country, is an agriculture trade centre. Lowlands are only to be found at the Western coast, with mainly irrigation agriculture; at the Eastern coast, exploiting mineral oil and natural gas; and on the peninsula Yucatán, which is together with the South of the country the poorest region.

In the urban agglomeration of Mexico City (the Federal District, 'D.F.', and the adjacent areas of Mexico State) live 18 million people, with an annual increase of 900.000. This growth is the result of both the steady immigration and the demographic growth. Estimations for the year 2000 predict a population of 32 million.

CONCENTRATION

In the D.F. are to be found the highest public expenditures for infrastructure, health and educational facilities, and it focusses the communitative and transport connections of the country. This concentration reflects the centralized political and economical system.

The political power is in hands of the president, who for six years is the head of the state, the government and the almighty Institutional Revolutionary Party PRI. Contrary to the constitutional prohibition of big land-owning and the law on land reform, for which the peasant has fought in the mexican revolution, landed property remains concentrated in the hands of few.

Mexico has chosen for a centralized economic development and has managed an open-door-policy towards foreign investments. This entailed a concentration of the means of production for a great part under the control of foreign trusts as well as a spatial concentration in the D.F., and in lesser extent in Guadalajara and Monterrey. Mexico City is becoming the prototype of an unlivable megapolis.

LIVING CONDITIONS

The economic growth of the country did not comply with an improvement of the living conditions of the majority of the Mexicans. In 1977 the poorest 30% of the families earned 8% of the national income, in contrast to the richest 20%, who earned 65%. 75% of the workers earned the m.w. (minimum wage), or less than this, or nothing. The purchasing power of a m.w. decreased with 24% in the four years period until 1981.

Street vending is for many the main revenue. 60% of the economic active women work for half the m.w. as domestic servants. . . . Approximately two million people annually migrate to the U.S.A. for work. The housing conditions of a great part of the Mexican population, in rural as well as in urban areas, are poor. The 1970 census and more recent estimations outline the following situation, which does not seem to have improved remarkably.

With an average occupation of 2,6 persons per room and 5,8 persons per dwelling (40% of the dwellings have only one room) in 1970, and 5,6 persons in each one-room-dwelling in 1976, the overcrowding level is one of the highest in the world.

In 1970 60% of the households lacked any form of sewage disposal and 40% lacked piped drinking water (whether in the house or from a public tap point). 40% of the urban population had no access to clean drinking water in 1981. This means that a great part of the rural population is dependent on the scarce natural water resources, which are often very far. The unsupplied urban population has to buy drinking water for exorbitant prices in the street.

The D.F. is built on the drained bottom of a lake; the - mostly - illegal waterpumps aggravate the instability of the ground. On the other hand, the great majority of the population is connected to electric power mains, whether legal or not. If we want to quantify the housing deficit we come to amounts between one third and 100% of the existing housing stock, dependent on the adopted standard of 'adequate' housing.

#### ACCESS TO LAND AND HOUSING

In which ways do people acquire land and housing?

Formal housing construction during the past decennia could only meet a little part of the annual need. The average of new units needed annually between 1970 and 1980 varied around one million. The total construction amounted to 1,2 million units in the period 1970-74, where of over 200.000 were sponsored by the state. Generally, formal sector housing is only affordable for middle and upper income groups, that is to say not for the majority.

One possibility is the renting of a dwelling in either an apartment building, or in a 'vecindad', the traditional multi-family housing type with one-or-two-room-dwelling along a passageway. In fact, live about 10% of Mexico City's population is overcrowded tenements in the central area.

But for more than the half of the population self-construction in uncontrolled peripheral settlements is the only solution. These 'colonias populares' take up the greatest part of Mexico City's growth. Besides the lack of drinking water, sewerage, telephone or garbage collection, the residents have to suffer an incredible pollution, smog and the enormously overburdened traffic system in the D.F. On the other hand they enjoy better health and school facilities and a greater part of the population is covered by social security than outside the Federal District. There are three ways for the formation of irregular settlements:

First, organized land invasions have been more common in the 1970's; their success depended on the willingness of the authorities.

Second, the occupation of 'ejidal' land is more extensive. 'Ejidal' land is agricultural land, controlled by a group of people; the 'ejidos' replaced landed estates after the land reform and become illegally alienated and subdivided.

Third, 'fraccionamientos clandestinos' (illegal subdivisions for sale), which represent the most important form of settlement, can have enormous dimensions. E.g. the municipality of Netzahualcoyotl has its origin in one of the earlier settlements: an area of 62 km<sup>2</sup>, subdivided into 160.000 plots by 34 companies, housed some 600.000 inhabitants in 1970, has increased to some one-and-a-half million today. Once the settlements have consolidated sharing, renting or purchase take place; decreasing lot sizes and increasing overcrowding are the result.

In order to give an idea of the attitude of the Mexican State towards the housing problem we will specify two aspects: state housing production and decentralisation policies.

#### PUBLIC HOUSING CONSTRUCTION

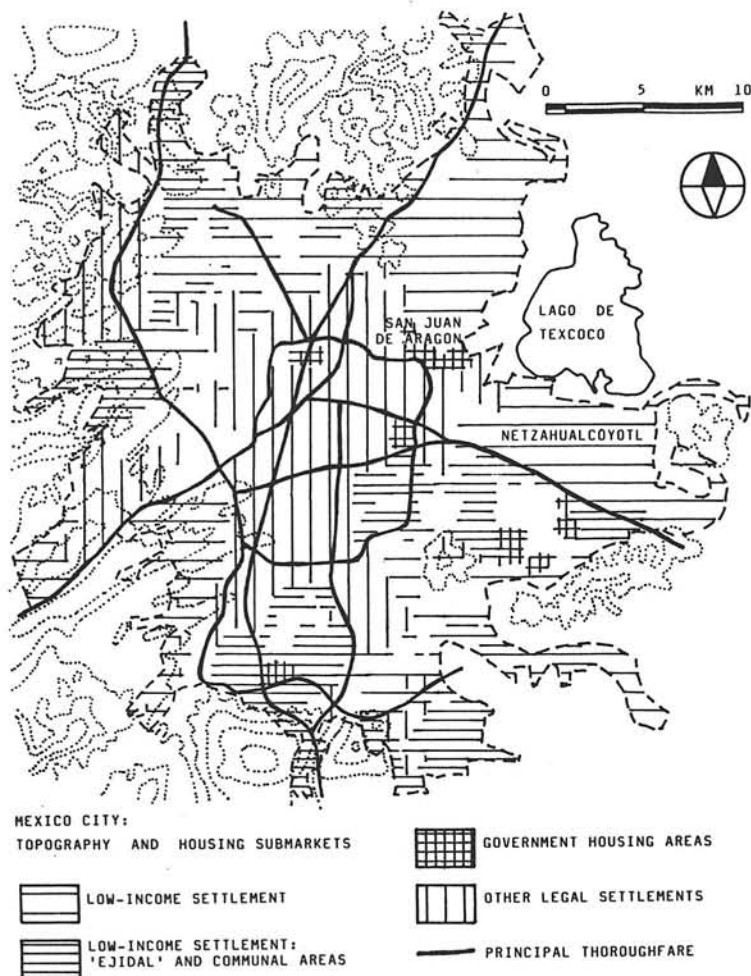
Public housing had been out of question in Mexico until the 1960's. In 1960 the Housing Finance Programme (PFV) was created in order to channel resources from the

private sector into housing production for low- and middle-income groups. The seed capital was provided by the Alliance of Progress initiative of the U.S. Government. As a supplement of the PFV two Housing Funds were started in 1963: the FOVI had to subsidize private credit-institutes for social housing and the FOGA had to guarantee housing loans made by credit-institutes.

The interest rates excluded the poorest 65% of the population from the benefits of the programme; it enabled however the construction of 85.000 houses between 1964 and 1970

for families with a middle income. The creation of three new Housing Funds in the first half of the 1970s gave evidence of a new approach to the housing problem. The Institute of the National Housing Fund for Workers INFONAVIT, the Housing Fund for Public Servants FOVISSSTE, and the Military Housing Fund FOVIMI, finance low-interest loans for the construction, enlargement or sale of houses.

Between 1972 and 1976 these funds financed the construction of 140.000 houses, even affordable for minimum wage earners.



In the same period about the equal number of houses was promoted by the continuing PFV (for middle income groups) and some experimental housing projects (for groups with incomes lower than the m.w.).

During the following administration period, public investments in housing were diminished.

This seems to be changing under the government of De la Madrid (1982-1988). A new programme for low income housing is added. After the 1985 earthquake the administration decided to expropriate some thousands of lots in popular residential quarters in Mexico City in order to prevent speculation and to rebuild cheap houses.

But even if the public sector should multiply, the great majority of low- and lowest-income households would have to find its own solution for shelter.

The new ministry for Urban Development and Ecology SEDVE has adequate funds for decentralisation measurements at its disposal.

In a programme for the promotion of medium cities the greatest part of the funds are destined for water supply and disposal, further for low-income housing, provision of building materials and others.

This policy could succeed in reducing the disbalance between the metropolitan areas and the country, mainly if the 1985 earthquake disaster is seen as an opportunity to spread public expenditure on the one hand and to remove private investments from the Valley of Mexico on the other hand.

But a real decentralisation would have to enclose basic changes in the power structure of the republic.

#### DECENTRALISATION POLICIES

The 1950s and 1960s saw the first initiatives for regional development and industrial decentralisation. These attempts proved unsuccessful or even impairing; e.g. tax incentives for private investments outside the Federal District resulted in the establishment of industrial parks just outside the borders of the D.F. but in the state of Mexico. Public expenditure and private investments remained concentrated in the agglomeration of Mexico City.

Since 1970 the governments are approaching the problem more seriously. The (mis-carried) growth-pole-policy under Echeverria (1970-76) was followed by a 'policy of medium centres' under Portillo (1976-82). A legal basis for a decentralisation was formed by the establishment of the Ministry of Human Settlements and Public Works SAHOP, the formulation of the National Plan for Urban Development (which was accompanied by a National Plan for Industrial Development) and by the passing of the General Law of Human Settlements. This planning framework, however, failed in its implementation.

The present administration of De la Madrid has granted priority to decentralisation.

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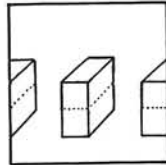
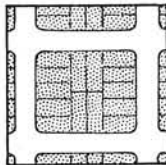
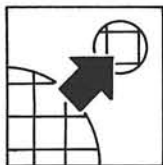
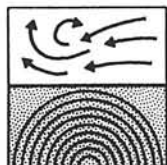
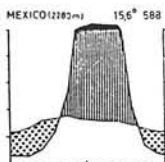


1964  
19,07ha

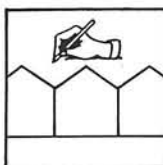
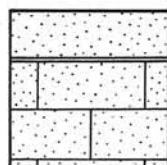
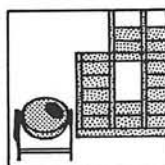
# MEXICO

· San Juan de Aragon · Mexico City

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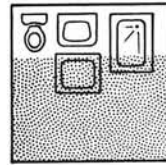
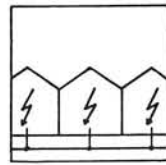
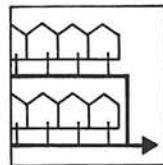
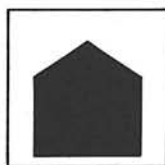


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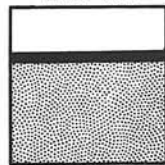
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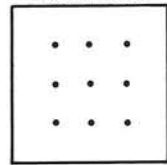


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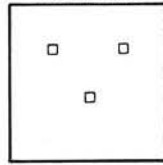
— LAND USE —



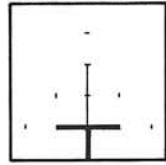
— POPULATION —



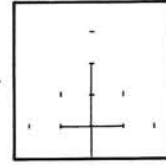
— UNITS/LOTS —



— CIRCULATION —



— WATER LINES —



Housing area  
 ■ 65,7%  
 res.area  
 com.area

Communal area  
 ■ 7,6%  
 green  
 communal

Circulation  
 □ 26,7%  
 pedestr. 8,9%  
 vehic. 17,8%

Population  
 3394 inh.

Occupation  
 5,5 inh/unit

Density  
 178 inh/ha  
 ( • 20 inh/ha)

Housing units  
 620 units  
 32,5 un/ha  
 ( □ 10 un/ha)

Lots  
 620 lots  
 32,5 lot/ha

Circulation networks  
 4691 ml  
 246 ml/ha

Vehicular net  
 3127 ml  
 164 ml/ha  
 ( — 50 ml/ha)

Pedestrian net  
 1564 ml  
 82 ml/ha  
 ( — 50 ml/ha)

Drinking water networks  
 4691 ml  
 7,6 ml/unit  
 246 ml/ha  
 ( — 50 ml/ha)

SAN JUAN DE ARAGÓN  
MEXICO CITY  
1964

By Gerard Stalenhoef de Agyuavives



location

The project of San Juan de Aragón was financed by the 'Banco Nacional de Obras y Servicios Públicos' in 1964.

It was constructed by the city government of Mexico City (DDF). Orinally the government wanted to house people with low income. However, the investments were so high that only people with middle and high income could pay the rent: one-third of the people have a moderate income and two-third a medium income.

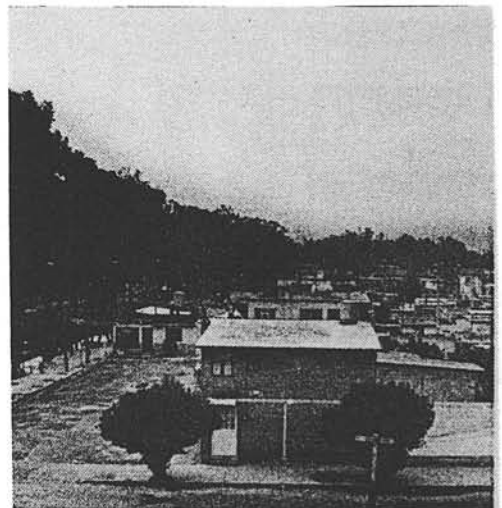
The colony is located on terrain which originally was part of the Lago de Texoco. The terrain is situated 5 km to the north side of the commercial center, connected by bus and metro lines.

The area is surrounded by highways, a zoo, sportcamps and old colonies. The total area is 193 ha.

The project was established in one phase. The houses are one or two storeys and are arranged in small 'manzanas'. They are made of concrete elements in combination with bricks. Stones were used for the foundation.

SERVICES

- gas (tanks)
- garbage collection
- communal transport
- telephone
- public lighting
- police-station
- firebrigade
- medical service
- schools and playroom
- open space for recreation



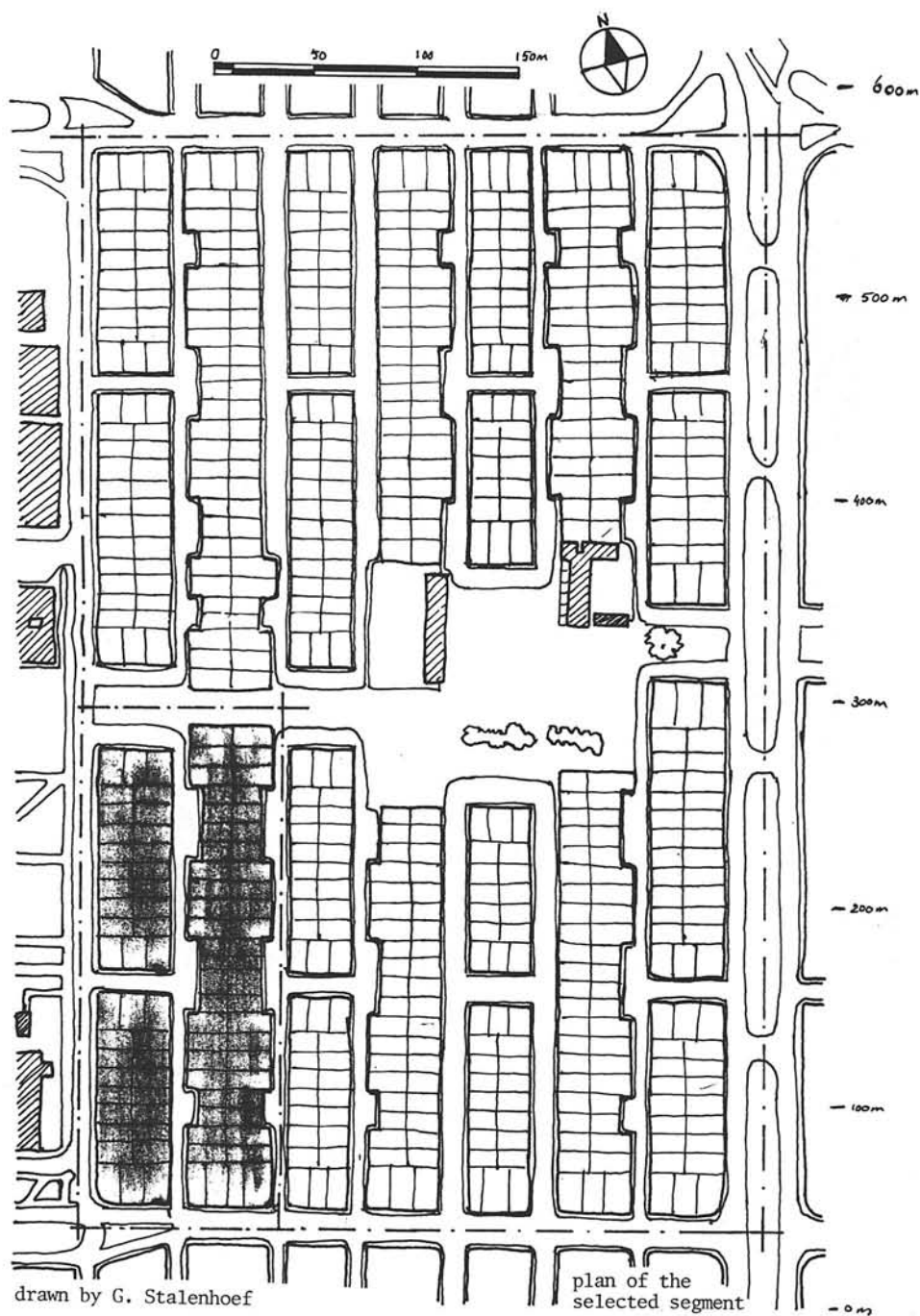


#### COSTS

- costs of the dwelling: 38.000 \$
- marketvalue of the ground: 300 \$/m<sup>2</sup>
- monthly rent/mortgage: 400 - 450 \$
- percentage of the income for the rent/mortgage: 13%

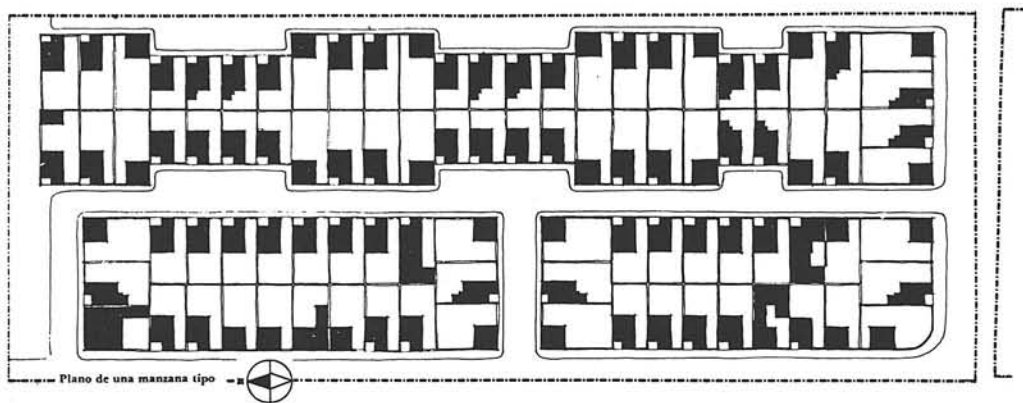
#### POPULATION ( in 1970)

1.182.895 inhabitants,  
 9.900 families,  
 5,6 persons/family,  
 55% is younger than 20 years,  
 average income : 23.000 pesos,  
 49% of the incomes are lower than 12.000 p,  
 11% of the incomes are higher than 30.000 p.



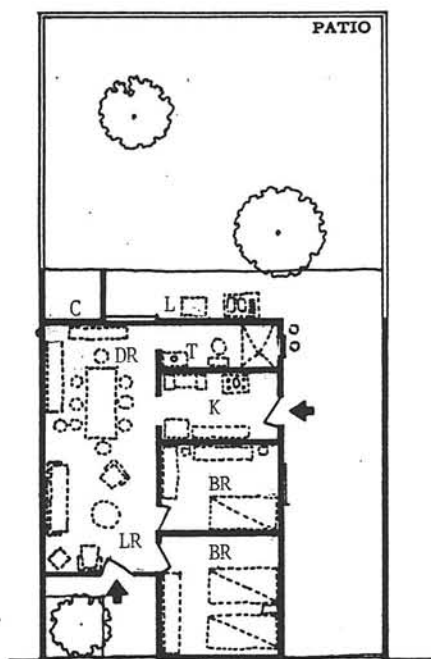
drawn by G. Stalenhoef

plan of the  
selected segment

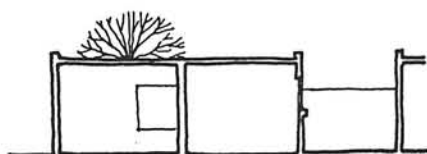


plan of typical manzanas

groundplan of a typical dwelling



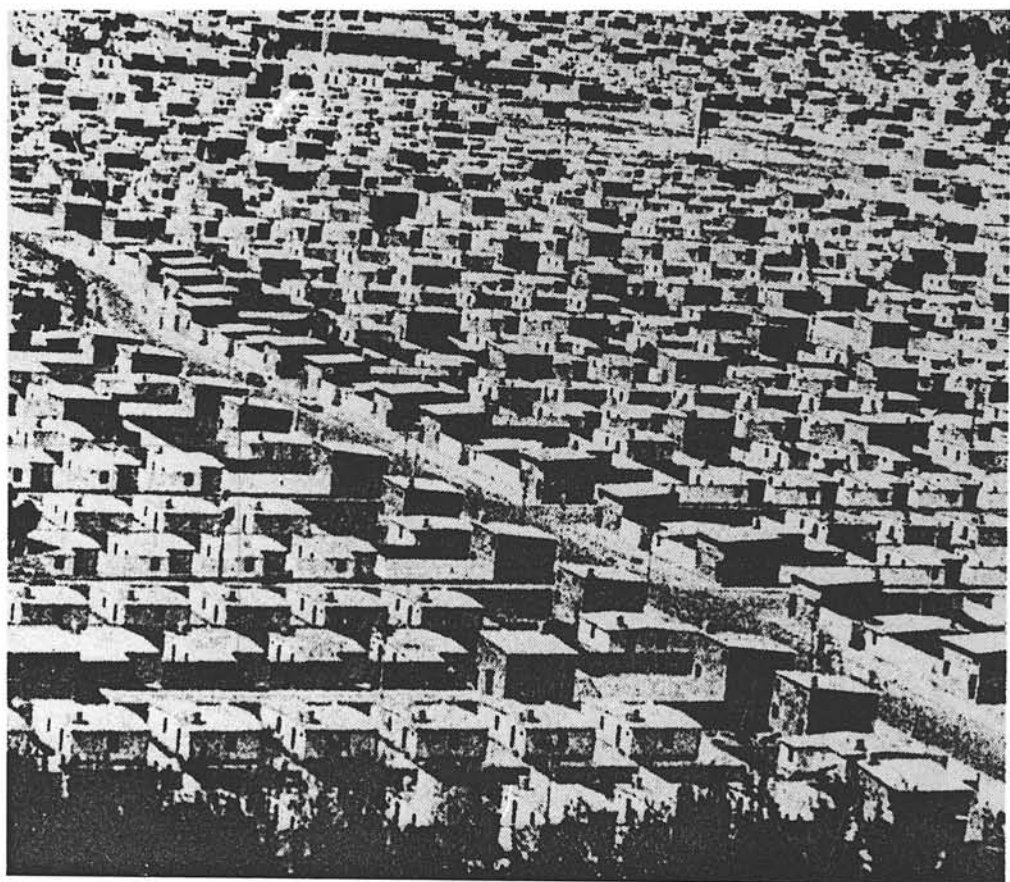
elevation



CROSS

KEY

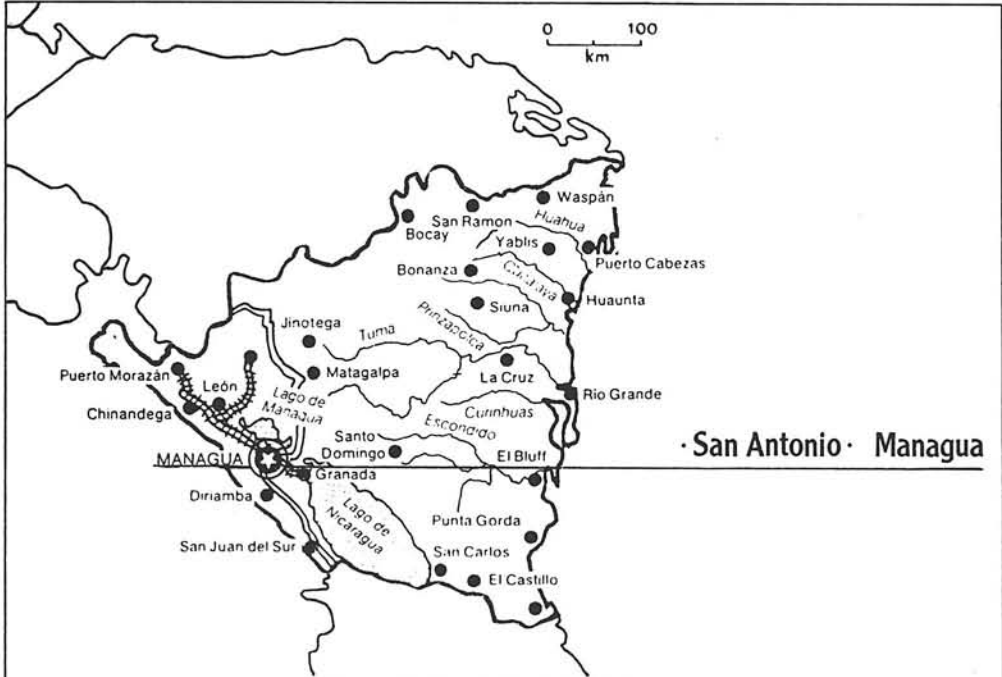
- LR - living-room
- DR - diningroom
- BR - bed-room
- K - kitchen
- T - toilet/bathroom
- L - lavatory (for washing cloths)
- C - cupboard/closet



source, photographs and drawings:

J. Bazant, S. Enrique Espinosa, R. Davila, J.L. Cortes,  
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# NICARAGUA



## ECONOMIC AND SOCIAL INDICATORS

### Population

population	2,9 mil inh.	(1982)
density	21 inh/km <sup>2</sup>	(1982)
annual growth	2,4 %	(1982)

### Economy

GNP per capita	920 \$	(1982)
debt per capita	1276 \$	(1983)
export	413 mil \$	(1983)
import	806 mil \$	(1983)
export goods: coffee (37%), cotton (27%), meat, sugar		

### Social indicators

adult literacy	90 %	(1980)
life expectancy	57 a	(1981)
infant mortality rate	88 ‰	(1981)
largest populations: mestizos (60%) whites (17%)		

### Urban population

urban population	57 %	(1983)
largest cities: Managua (750.000)		
clean drinking water available for more than $\frac{1}{2}$		and
sanitary available for less than $\frac{1}{2}$		of urban population



REVOLUTIONARY  
NICARAGUA:  
THE HOUSING SECTOR

By Gerald Pentzke

Free translation of "Sintesis de la Gestion del Gobierno Revolucionario en el Area de la Vivienda", a report by the Ministry of Housing and Human Settlements (MINVAH) of Nicaragua; Managua, in october 1985.

The Ministry of Housing and Human Settlements is the nicaraguan government's institution with political responsibilities in the fields of housing and human settlements. In the housing sector, Minvah concentrates its effort in answering those groups of the population with the greatest needs, giving priority to those directly linked to the productive sector, specially in the rural areas, and to the population that has been displaced by the war.

The situation with regard to housing is extremely difficult: there exists a 10% deficit for a population of 3 millions and a growthrate of 3.3% annually. In the face of this situation, and considering the economic limitations of Nicaragua, Minvah implements different lines of action, of progressive character, which go from the construction of a complete unit to the provision of plots with minimum infrastructure.

The Ministry's Programma "Complejos Habitacionales" consists of the provision of a dwelling unit and services; the "Banco de Materiales" Programme provides the dwelling unit only; and the Programme of "Urbanizaciones Progresivas" provides a plot with minimum infrastructure. These programmes are implemented by the different enterprises which conform the "Cooperacion Constructore de Vivienda" (COVIN) Minvah's building company, and the Ministry's regional delegations.

Since the Triumph of the Revolution in 1979 until 1984, Minvah has built 14,767 housing units and 19,759 plots of land have been delivered, in the whole nation. The implementation of the above number of

housing solutions, without precedent in the history of Nicaragua, is framed in a context of investment policy in which housing is not a priority.

In order to face the dramatic housing situation, the government favors the development of technological alternatives which would allow for mass-production of dwellings, that would take advantage of our resources and reduce costs.

The need to develop and optimize prefabricated systems to answer to housing demands

The traditional building systems in Nicaragua are based on the use of disaggregated elements which require a high percentage of workers in building sites, in quantity as well as in skills, and a great dependance on transportation of building materials which are produced mainly in Managua.

These "bottlenecks" which limit the mass-production of housing have had an answer at the governmental level: the implementation through the industrial branch of Minvah of seven pre-fab concrete plants (Sandino Plants) of which five are now operating and two under construction, and three prefab-wood plants.

Housing construction out of Sandino pre-fab elements started in 1983 and has accounted for 15% of the units built in the 80-84 period, and 30% of those units built in the 83-84 period.

Nowadays Minvah's building capacity is of 200,000 sq.mts. a year or 50,000 units; 30% of that capacity is today destined to build facilities for the Army.

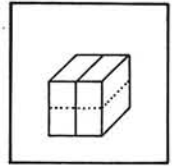
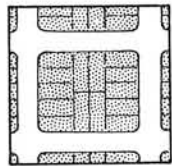
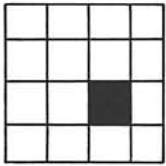
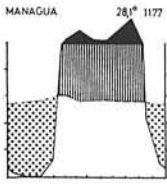
To have an effective impact on the housing situation, it would be necessary to build, in the next 30 years, 26,500 units or 1.060,000 sq.mts., to attend the natural growth which means 16,500 units or 660,000 sq.mts., as well as the existing deficit of 10,000 or 400,000 sq. mts.. Consequently, Minvah must improve its technology at the industrial as well as at the constructive levels, in order to increase the level of production as to intervene progressively in the housing situation with the intention to avoid, as much as possible, increments in the existing deficit.



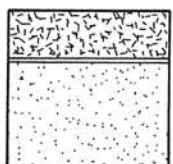
1982  
6,82 ha

NICARAGUA  
· San Antonio · Managua

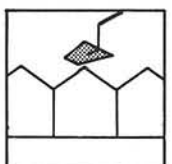
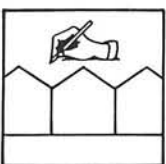
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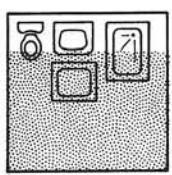
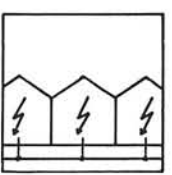
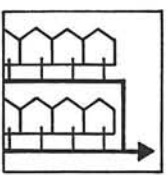
— C O N S T R U C T I O N —



— O R G A N I Z A T I O N —

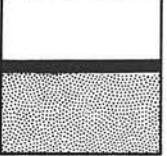


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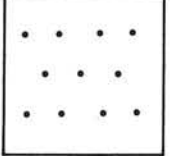


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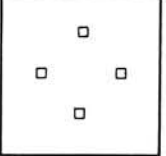
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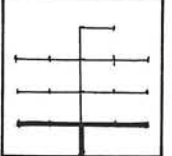
— POPULATION —



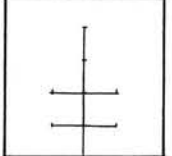
— UNITS/LOTS —



— CIRCULATION —



— WATER LINES —



Housing area  
 ■ 56,2%  
 res.area  
 com.area

Population  
 1524 inh.

Housing units  
 254 units  
 37 un/ha

Circulation networks  
 5733 ml  
 840 ml/ha

Drinking water networks  
 2700 ml

Communal area  
 ■ 7,5%  
 green 1,6%  
 communal 5,9%

Occupation  
 6,0 inh/unit

( □ 10 un/ha)

Vehicular net  
 1742 ml  
 255 ml/ha  
 ( — 50 ml/ha)

10,6 ml/unit

Circulation  
 □ 36,3%  
 pedestr. 16,7%  
 vehic. 19,6%

Density  
 223,5 inh/ha  
 ( • 20 inh/ha)

Lots  
 254 lots  
 37 lot/ha

Pedestrian net  
 3991 ml  
 585 ml/ha  
 ( — 50 ml/ha)

396 ml/ha  
 ( — 50 ml/ha)

MASS HOUSING PROJECT  
SAN ANTONIO - MANAGUA  
2nd STAGE

By Maria Blender

The residential quarter San Antonio in Managua shares its border in the East with the Central Area of the capital. It is in the North limited by the Dupla Norte and in the South by the Dupla Sur, which are the main East-West connections through the centre.

San Antonio has been devastated by the earthquake in december 1972 and has laid idle for 10 years.

In 1982, the MINVAH began with the planning of the first stage of the mass housing project because of the 'Complejos Habitacionales'-programme. This programme means conventional mass housing in the biggest cities, normally following a standard design and aiming at a relatively high standard. During the first four years after the revolution some 4000 units were built annually. The construction is realized by the state building company COVIN.

The first stage, eight blocks of four storeys with in total 64 dwelling units, is located in the middle of the terrain.

The second stage, the building of two-

storey uniform and duplex houses, was stopped in 1986 when only two-thirds of the dwelling units had been built. The construction consists of concrete, casted in a prefabricated metal boarding ('Chorreado en sitio').

The interior walls of the first floor are of timber and the roofs are covered with corrugated asbestos-cement. The existing grid-pattern has been maintained and extended with pedestrian ways cutting the squares into halves. Because of the irregular extensions of the squares the original duplex-house-design had to be cut in half in some cases. The 'Area Communal' which takes one square, has been used as workfloor and storage yard during the construction phase.

Planned were 113 duplex houses and 28 uniform houses (254 dwelling units) on an area of 68.200 m<sup>2</sup>. Built were 71 duplex houses and 25 uniform houses (167 units) on 43.755 m<sup>2</sup>. They are partly unfinished and not occupied for a number of years. The average lot surface is 151 m<sup>2</sup> with a built surface of 38,3 m<sup>2</sup>. Only few people can afford the cost-related rent of 3900 Cordobas (the minimum salary amounts to 1350 Cordobas).

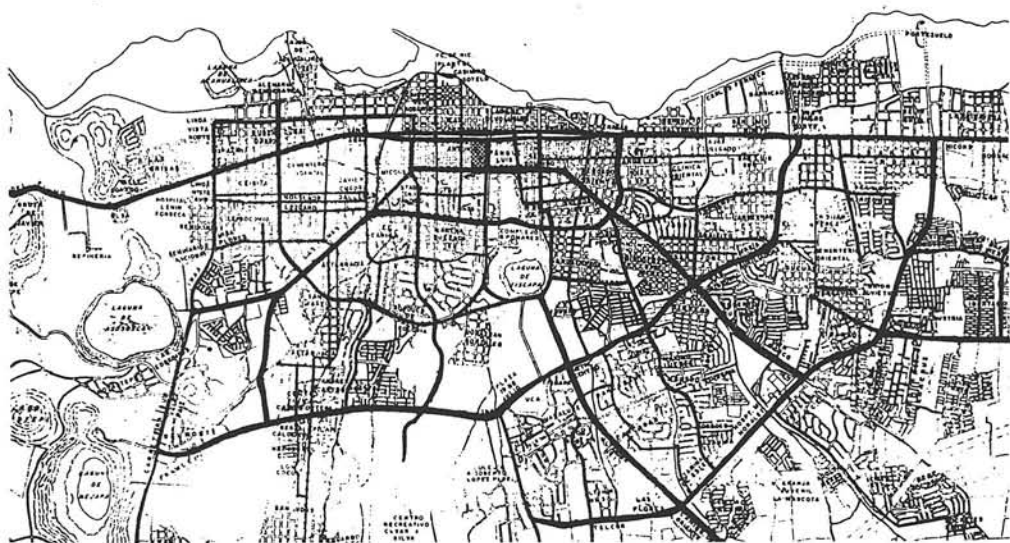
sources and drawings: Planning Documents of the MINVAH and Housing Policies in the Sandinista Nicaragua, K. Mathey, in TRIALOG 6 - Socialist Housing, Darmstadt, 1985.

Photographs: Octavio Tapia, Ecotectura



The first eight blocks, seen from the North-East.

LAGO DE MANAGUA

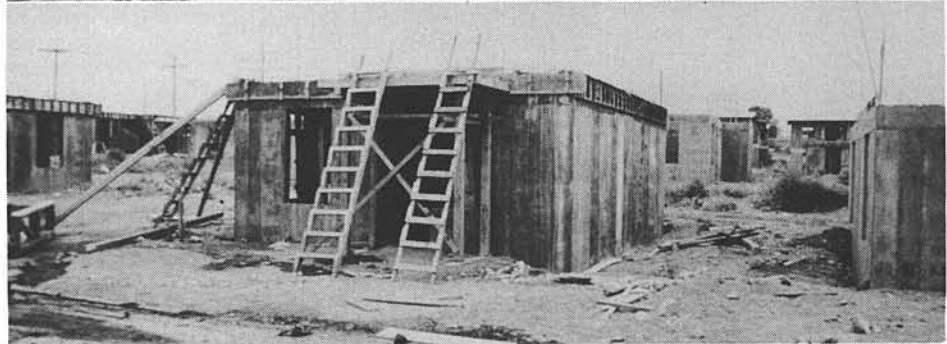
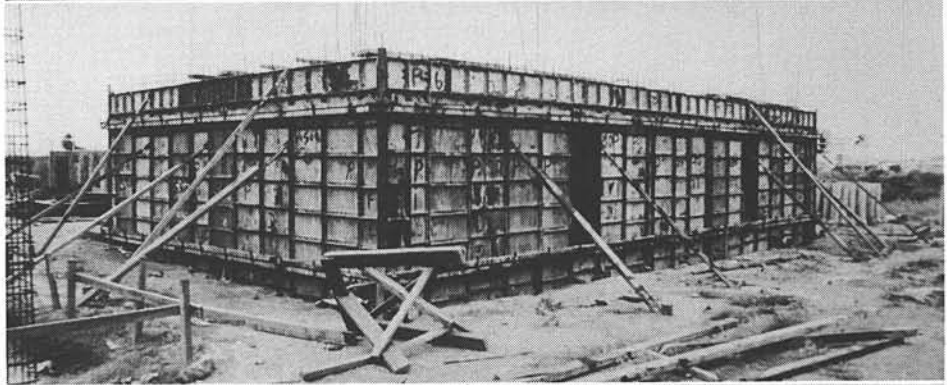
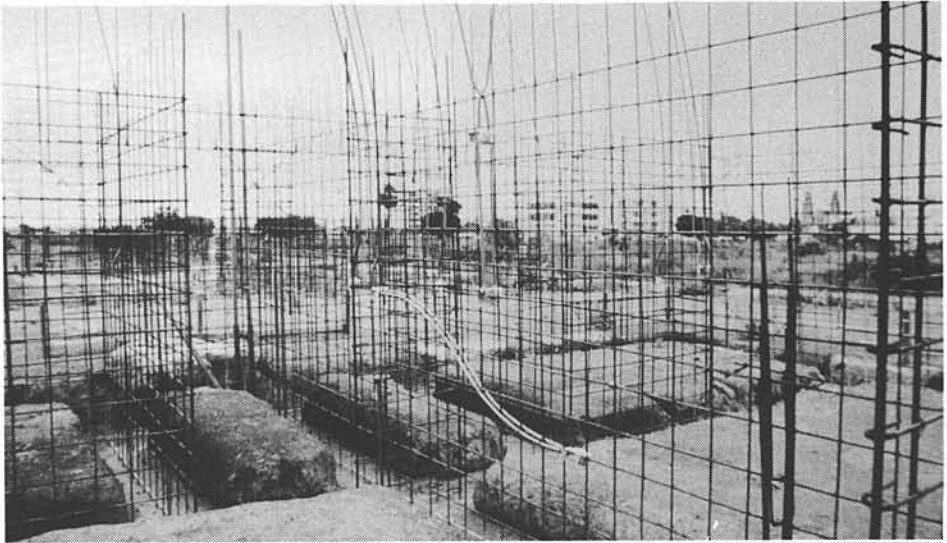


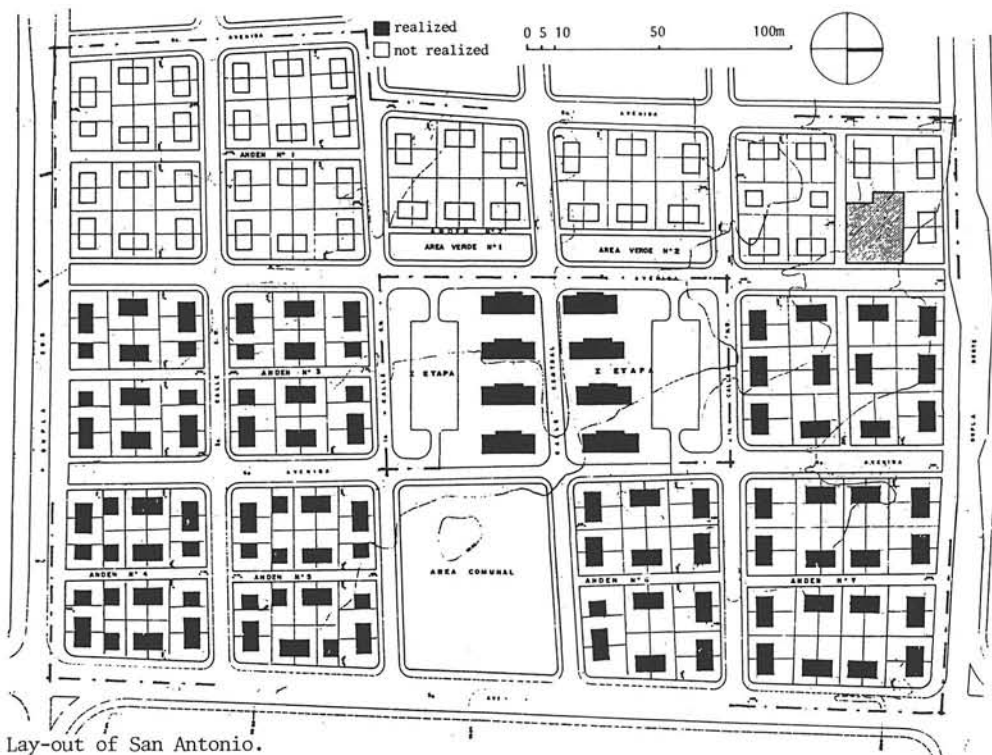
Location of San Antonio in central Managua.



One of the first four-storey blocks

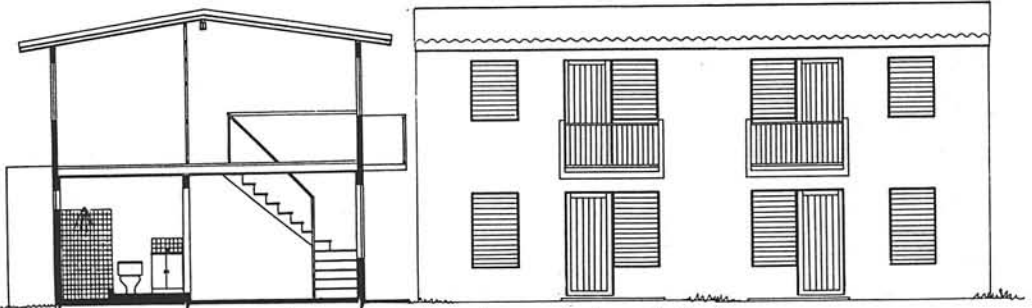
Duplex houses under construction (continued on the following pages).





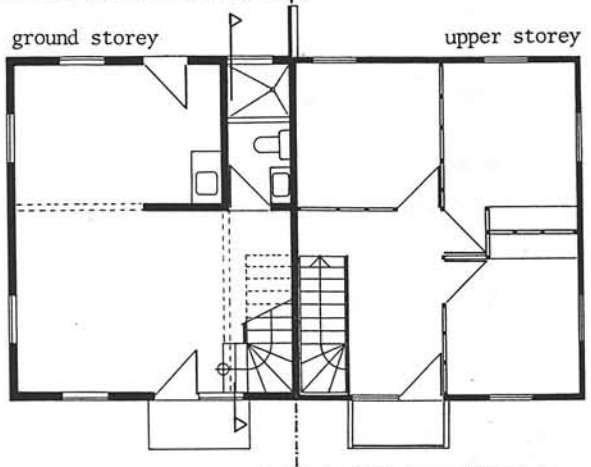
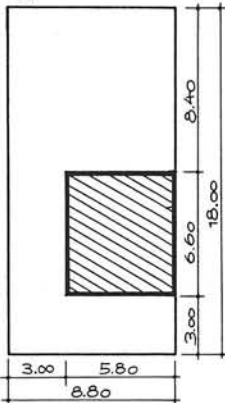
Lay-out of San Antonio.





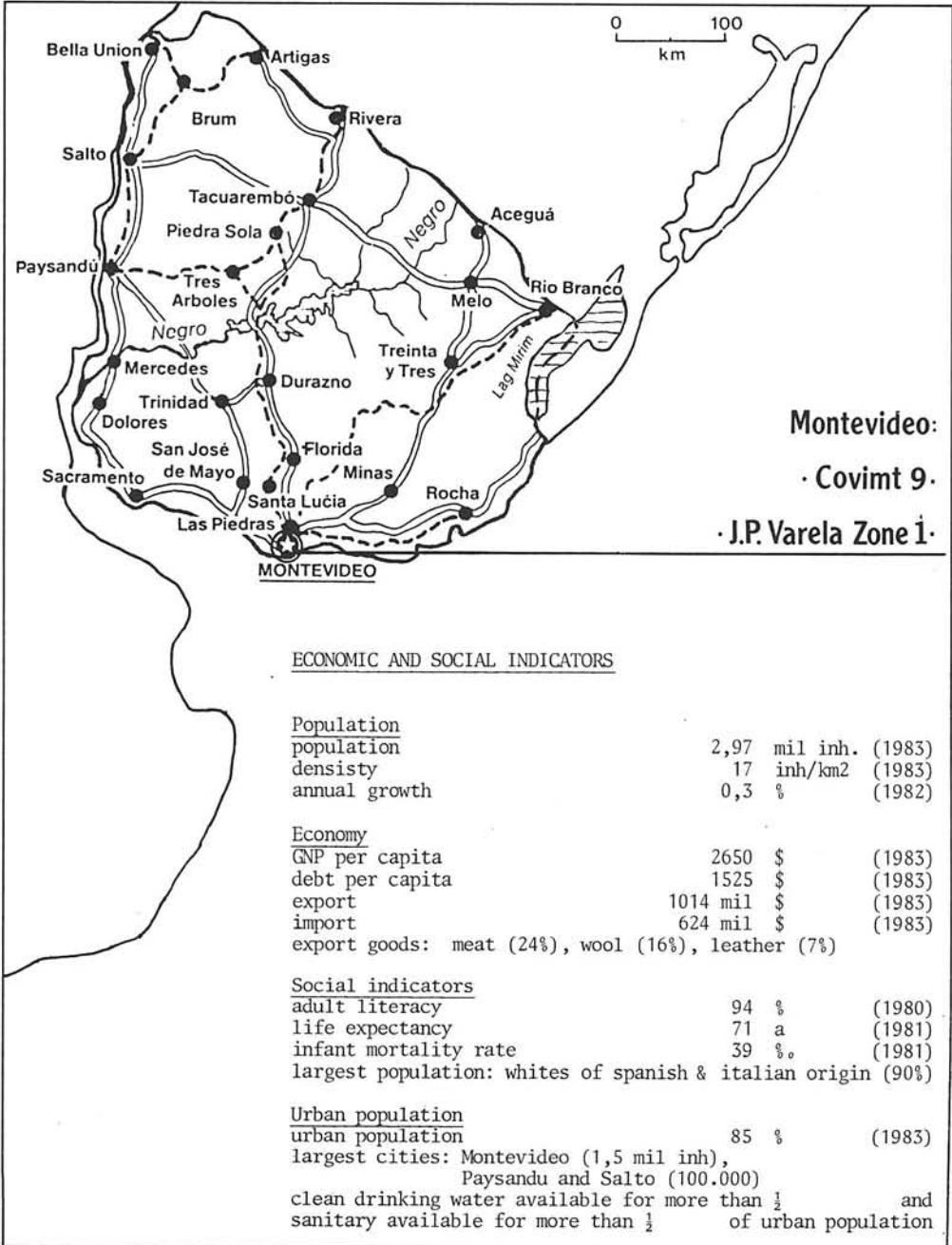
Duplex houses: cross-section, elevation and ground plans (below)

Typical lot





# URUGUAY



## HOUSING POLICIES IN URUGUAY

By Gerald Pentzke and Maria Blender

### THE NATIONAL HOUSING PLAN

After 12 years of neo-liberal housing policy, developed by the military regime in Uruguay, a Five Year Plan was presented by the Organism Coordinator of Popular Housing (CO.VI.P.) to the new elected Parliament in order to overcome the existing shortage that according to various sources reached 100.000 dwelling units.

During the years of struggle against the right-wing regime, all political parties, together with social and entrepreneurs organizations were committed to the Programmatical National Commitment (Concertación Nacional Programática) in order to give a real and definitive solution to the housing problem of the popular sectors, which were affected by enormous shortages. These real solutions involve employment opportunities for thousands of workers and in this way the building industry should contribute to activating the country's economy. These aims are now estated in the National Housing Plan 1986-1990, August 1985.

In 1980 the National Funds for Housing F.N.V. was transferred to the Banco Hipotecario del Uruguay. The F.N.V. was the public institution involved with the organization, financing and building of popular housing and was structured from the Housing Law of 1968 (Ley 13.728) one of the most coherent and effective legislations concerning popular housing in Latin America.

In 1985, the financial situation of the Bank was severe because of the management of the last years and specially due to the enormous foreign debt that was created. There was a deficit of 492 mil. US-dollars ( in values of 1984). In front of this situation, the first measure taken by the New National Plan was the independence of the F.N.V. in relation to the

B.H.U.. By doing this the political authorities of the P.N.V. (National Housing Plan) would be responsible for the management of the resources while the B.H.U. would be placed only as the administrator.

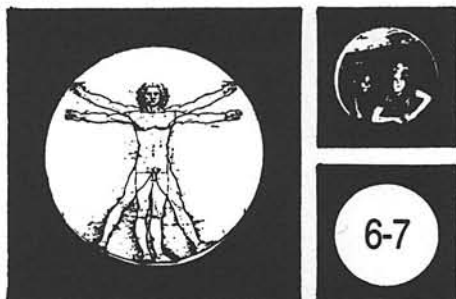
During the dictatorship the Housing Law of 1968 suffered such variations that contradict the spirit of the law and didn't permit differential subsidies for the powerless and homeless segments of the population. Among others the law defined a maximum of 20% of the income to be payed for housing loans, this percentage was increased to 35% with the military regime and couldn't be afforded by the lower incomes.

At the same time all differential interest rates of Mutual-Self-Help-Cooperatives, inferior to 20% were eliminated. Also eliminated are the Institutes of Technical Assistance, an organism on a non-profit basis which supported the creation, management and implementation of the Housing Cooperative System. The Ministry of



## PLAN NACIONAL DE VIVIENDA 1986-1990

PROPUESTA DE LA COVIP  
COORDINADORA DE LA VIVIENDA POPULAR



DOCUMENTOS ARQUITECTURA



Housing and Social Promotion was transferred to the Ministry of National Defense until its final dissolution and the tasks were distributed amongst the different institutions.

The Public System of Housing Production was ended with the suppression of the National Direction of Housing DINAVI. These functions are to be concentrated in the B.H.U. and the Executive Power, with advice from the B.H.U., which shall give expertise and transfer of know-how programmes to the Housing Cooperatives Educational System. The same Executive Power shall send to the Legislative Organism, with the help of the Secretary of Planning, Coordination and Communication, the Five Years Plan of Urban and Housing Development. (The Legislative Organism has appointed members, not elected ones.)

The neo-liberal system concentrates all institutional organization of housing and urban development in the B.H.U. and thus all the policy of the sector started to be regulated according solely to financial criteria. On the contrary the whole period 1969-1977 was socially oriented and was closely to meeting the goals established in the 1968 law, specially through the Cooperatives Programmes and Public Systems, the mechanism for housing assignments and the control of prices of the private activities.

From 1978 the neo-liberal policy, started to be implemented with which the partici-

pation of the private enterprises is supported with the Plan of Private Promotion, where all former control is ended. The Cooperative System is diminished and only the Public Sector started to have a notorious participation from 1980, because a mass housing production was needed because of the shortages produced by the new law of tenants, which implied the free fixation of rents and abolition of state control.

Table 1 illustrates the changes in the conventional neo-liberal policy developed during 1978 and 1982. It obviously is to see in the great support for the private sector whose percentual share of the housing construction at the end of the period 1978-1984 was half as much as compared with the period 1969-1975. This support for the private sector affected the well organized Cooperative System and the Public System whose percentual shares decreased to less than one fifth and less than three-quarter of the amount of 15 years earlier.

The historical tendency to spatial concentration around the capital city was accentuated during the same period. While the total of housing solutions (understood as all constructions, purchases, repairs and expansions of dwellings) in Montevideo goes rarely beyond 50% of the country, and so roughly corresponds with the Montevideo proportion of the population, the investments of the private enterprises and Civil Societies (including cooperat-

Dwellings built in the periods 1969-1975 and 1978-1984 according to the different systems. (Source: Plan Nacional de Vivienda)

TABLE 1.

	1969-1975		1978-1984		Variation of %ual share
	number	%	number	%	
Public System	15.178	51,1	21.293	36,7	0,718
Cooperatives	8.018	27,0	2.743	4,7	0,175
Civil Societies	-	-	3.877	6,7	-
Private Enterprises	6.511	21,9	19.929	34,4	1,57
Individual loans (BHU)	-	-	10.130	17,5	-
total	29.707	100	57.972	100	-

ives) in Montevideo amount some 85% of the investments in the whole country.

#### THE HOUSING SITUATION

According to the III. Censo de Vivienda in 1975 the number of houses in Uruguay was 848.096. This includes all houses, apartments, dormitories, workshops, offices, "ranchos" and rural huts, but excludes the "inquinilatos" and those illegal huts built with throw-away-materials and non-residential buildings. While 714.644 houses are located in the urban areas, 366.972 are located only in Montevideo.

According to the definition of the CIDE of 1965, the housing shortage is formed by three categories:

1. The absolute or quantitative shortage, that is the number of houses that should be built immediately in order to shelter the homeless or to replace those being considered to be in bad state according to the levels and standards in force.

The last census in Uruguay is dated in 1975, and according to estimations of both this census and those of the

Uruguayan Architects Association a total shortage of about 100.000 housing units has been established.

2. The qualitative shortage is formed by the housing stock that needs complementation, repair, amplification of improvements, insufficiency of area, shortage of services and bad state of deterioration.

Table 2 is a reproduction of the uruguay-an situation with respect to the supply of infrastructure.

In 1975, 200.000 housings were not connected on the public drinking water net and 250.000 housings had no pipe-connection inside. 150.000 housings had no power supply. 350.000 households had no individual water-closet, 450.000 households were not connected with a sewerage, whereof 70.000 lacked any sewage disposal supply. 350.000 households had no individual kitchen with installations available, 70.000 of these households had no access to a kitchen at all. Comparing the provision of basic services with the family income we can identify

TABLE 2. Provision of basic services in percentual share of the population (Source: Encuesta del Gasto Publico Social, 1983)

	Monte- video	other urban areas	total urban areas	rural areas	total coun- try
Origin of drinking water of the dwelling					
1. Public net	94,2	81,6	88,5	2,5	75,3
2. Well water	4,5	12,5	8,1	70,2	17,7
3. Cistern, brook etc.	1,3	5,7	3,3	27,3	7,0
Water provision in the dwelling					
1. Pipes inside					73,1
2. Pipes outside					12,9
3. No pipe provision					14,0
Sewage disposal in the unit					
1. Public net	77,2	27,2	54,4	0,0	46,0
2. Septic tank or privy pit	21,8	70,1	43,8	84,8	50,1
3. other	1,1	2,7	1,8	15,2	3,9

the following characteristics: while in urban areas an increasing income corresponds with increasing connection on the public networks, in rural areas it corresponds with a better quality of the traditional means, e.g. an own well in place of river-water.

3. The deficit of the offer in relation to the solvency of the demand. This shortage comprehends all segments of the population whose family-incomes do not permit the entrance to the housing market (renting or buying new or old dwellings) without affecting a big part of their incomes.

In the 1980s the continuous decrease of the real wages and the increase in unemployment sharpened the deterioration of the family incomes. The proportion of the population with an income up to three minimum wages increased during one year from more than 40% to more than 50%. According to the Encuesta Nacional de Hogares 1984 about 50% of the families of the country had incomes too low to allow them access to the loans of the B.H.U., the Mutual Aid Cooperatives and the most economical houses of the Public System. For the acquisition of housing from these systems family incomes of about 2,8; 3,2 and 3,4 minimum wages resp. are necessary (one minimum wage is little less than 1.700 nuevos pesos).

Less than 10% of the population has an income sufficient for the purchase of a house built by private enterprises.

#### HISTORICAL TENDENCIES OF THE CONSTRUCTION OF HOUSING

The analysis of the rhythm of housing construction differentiates some periods in past uruguayian history. Being namely a monoproducer country which economic base is the cattle and grain production, with incipient industrialization and high level of consumption as consequence of its favourable foreign commerce, the period 1955 and 1960 was characterized by a policy of "welfare state". There was a regular production of housing of high values with an average of 23.068 units per year. During 1961 and 1978 the

country supported first an economic crisis, later the initiation of social struggles and social reforms. Following the start of a military regime, the housing production suffered a strong downfall, nevertheless values are rather lower as result of the housing law of 1968. The production of houses is 13.204 units per year.

Only in 1978 it was possible to return to the production rhythm of 1961. In 1979 a "boom" was started in the building activities, given the "shock" policy of the neo-liberal strategy in this sector. In this period 27.854 houses are built per year, this average decreased again in the last three years of the military regime to 13.000 houses per year.

In Uruguay the increase in the amount of houses has been maintained above the global increase of population. Actually until 1973 the private dwellings increased with an annual accumulative rate of a little less than 3% while the population grew at 1.7%. This is a consequence of the logic of variation in the family composition rate. The average of family composition changed from 7 to 3.7 in the period comprehending 1908 to 1973. In 1973 these global numbers are influenced by the increase of the rate of emigration which causes is to be found in the political repression of the period 1973-1984.

On the other hand the tendency of the housing sector in relation to the economy as a whole, varies strongly in 1980. In this year housing corresponded to 50% of the investments of the building sector, 5.5% of the G.N.P. and 32% of the brute Formation of Fixed Capital. This amounts are nevertheless below those limits established by the CIDE in 1965 which gave a 6.4% of the G.N.P. and 36% BFFC. The average investment in housing was close to the 5% of the G.N.P. in the 1950s, and reduced to 4,5% in the 1960s and to 3,92% in the period 1961-1978.

To this data must be added the characteristic of the building industry in relation to its condition of multiplier factor of the investments, the intensive utilization of labour force in normal condition of productivity and the low incidence of imported materials. All

this makes it possible to think of a high potentiality of dynamization of the economy. This quality is specially important in present moments, when it is necessary to overcome the recessive situation, supporting the increase of the national product and a systematic reduction of the rate of unemployment.

The Five years Housing Plan submitted by all sectors of the uruguayan community concludes in:

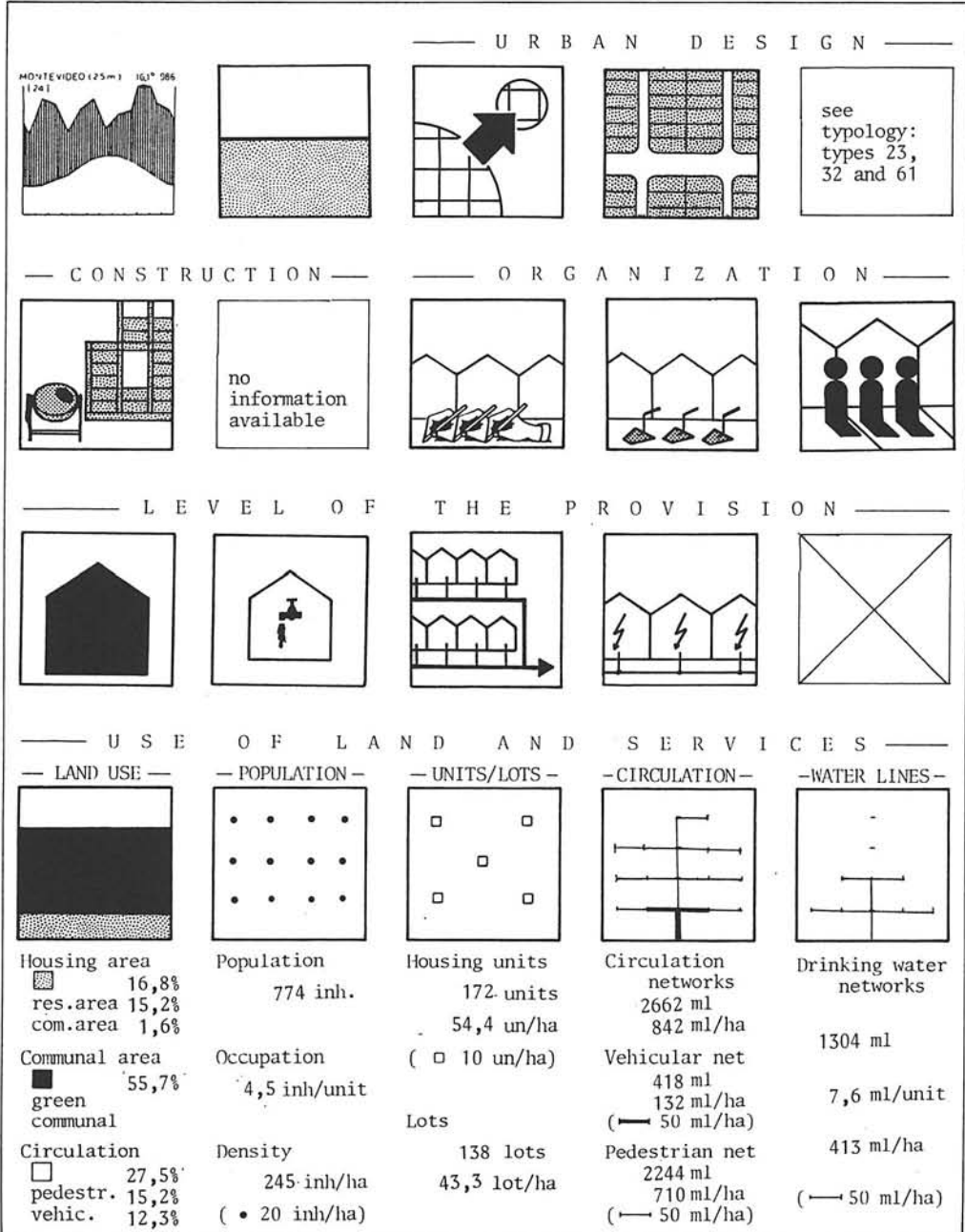
- a. It is necessary and convenient to assign annual amounts of housing investments that range between 4% and 5% of the G.N.P., with the goal of satisfying the primary demand for new dwellings, improve the condition of the housing stock, reduce progressively the accumulated shortage, increase the level of employment and generate strongly a reactivation of the whole economy, without affecting negatively the investments in other sectors.
- b. It is fundamental to channelize in a dominant way the investments towards the low-income sectors in order to perform a more just, rational and efficient use of the available resources, having in mind a more equal distribution of the houses in the territory.
- c. The need of an inter-institutional coordination in order to obtain a direct participation of the users in the whole process of improvement of the built environment and the achievement of minimal standards of decent habitat. It will be tried to maintain and support the existing community participation with the technical advice and adequate subsidies and financial mechanism for the lower income groups.

Source:

Plan Nacional de Vivienda 1986-1990  
(Coordinadora de la Vivienda Popular COVIP);  
Montevideo; Octubre 1985.

1983  
3,16ha

# URUGUAY · Covimt 9 · Montevideo



COVIMT 9  
MONTEVIDEO  
 CCU 1983

By Gerard Stalenhoef de Ayguavives

Covimt 9 is one of the projects of CCU (Centro Co-operativista Uruguay); CCU's goal is to provide houses for people with low incomes. In this project the dwellings are planned for workers in the factories. As an average they have a double minimum wage.

First research was done to find a typology that answers the demands of CCU. It resulted in a typology that refers to solutions used for the popular sectors in the urban zones with a low density, a solution that has been used in most of the cities of Uruguay.

During the planning the social interests of the newcoming inhabitants were considered. Their ideas were used for the design of the communal areas, including the facades of the dwellings.

The lay-out of Covimt 9 is simple: Two roads for pedestrians which are different in profile because of the varying altitude organize the settlement.

One of these roads is related to the commercial buildings. These roads are very important for the pedestrians.

The entrances and stairs between the blocks are related to these roads.

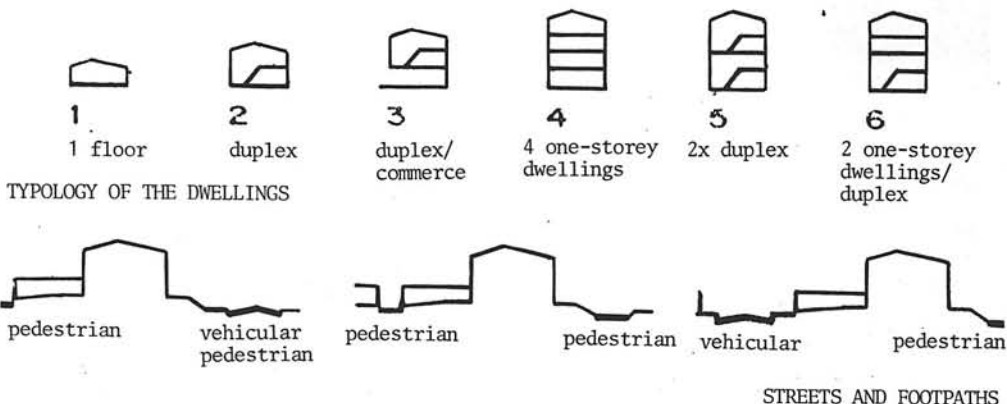
The scale of the buildings on eye-level was seen as very important.

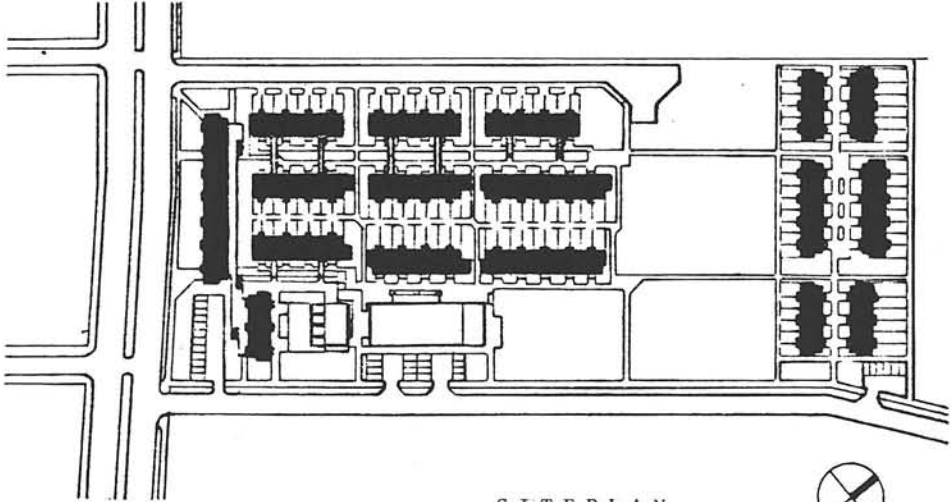
Some characteristics of the housing typology: - limited flexibility; only flexibility in the distribution of the livingroom;

- the livingroom is double orientated; this dictates the volume of a dwelling, it limits the surface of a terrace and eliminates the possibility of a balcony;
- the land-use: a clear differentiation in the space between communal and individual land; the double orientation of the livingroom implicates an organisation and confirmation of the blocks in rows ('tiras');
- amplification: a construction was foreseen to amplify the dwellings to an acceptable volume; the inhabitants didn't make use of this possibility, mainly because of a financial incapability.

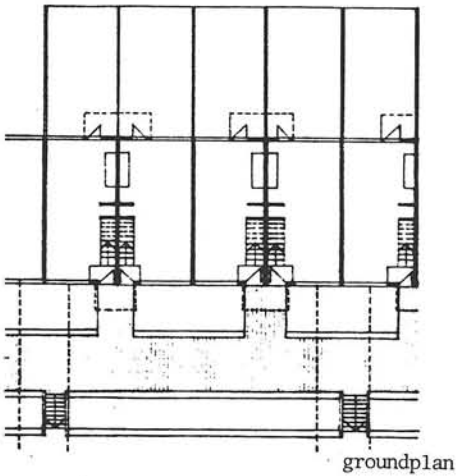
The technology had to be as simple and standardized as possible. Therefore some norms for the technology of this project were invented: economic scale, minimum lengths for the infrastructure (this can result in reduction of the costs) and rationalisation.

With the help of the inhabitants Covimt 9 was available to be lived in, in 1983.

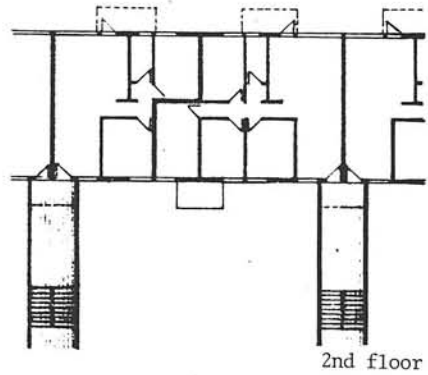




SITEPLAN

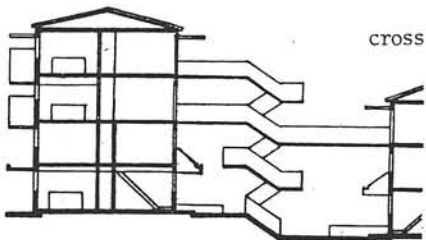


groundplan



2nd floor

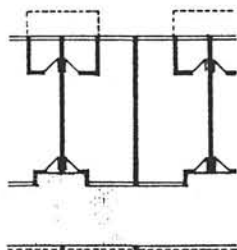
TYPE 61



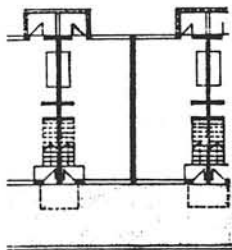
cross

Characteristics:

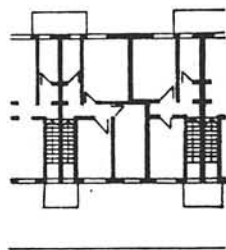
- basic typology 23 and 13;
- one-floor dwelling above a duplex dwelling;
- arrangement in rows with stairs between two opposite blocks.



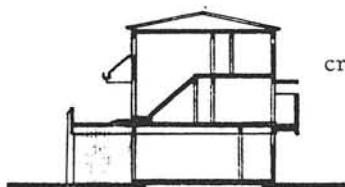
groundplan



1st floor



2nd floor

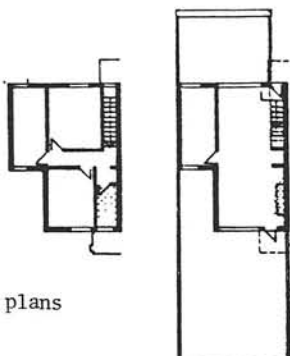


cross

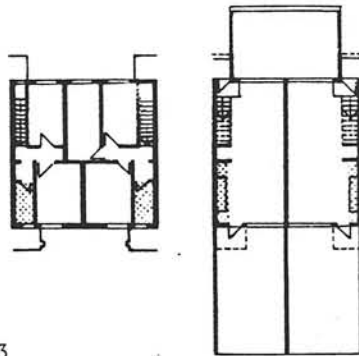
T Y P E 3 2

Characteristics:

- basic typology 23;
- arrangement in rows with elevated footpaths;
- covered gallery on groundlevel
- duplex/commerce



plans



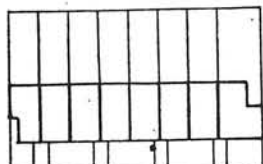
T Y P E 2 3

Characteristics:

- livingroom, diningroom and kitchen are integrated in one room with double orientation;
- bathroom orientated to the patio;
- arrangement in rows;
- duplex.



cross



arrangement

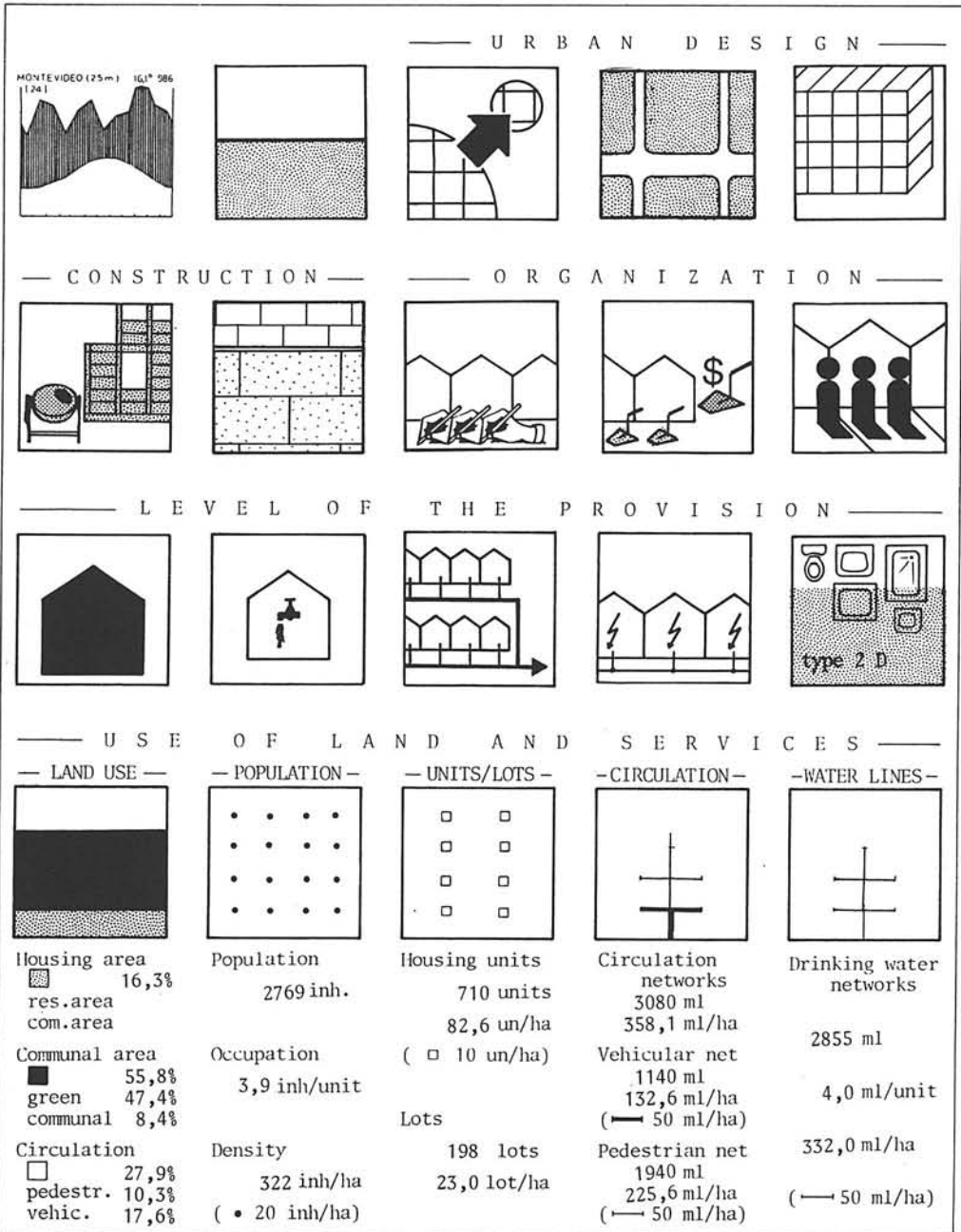
source and drawings:

M. Spallanzani, M. Cecilio, E. Wibmer,  
La imagen urbana de los conjuntos  
habitacionales de baja altura, la  
experiencia del C.C.U., Montevideo 1983



1973  
8,6 ha

# URUGUAY · J.P. Varela Zone 1 · Montevideo



JOSE PEDRO VARELA

ZONE 1

MONTEVIDEO

CEDAS 1973

By Gerard Stalenhoef de Ayguavives

The settlement of Jose Pedro Varela is located at the eastern edge of the center of Montevideo. It touches on the 'limit of sanitation' (see map). The total area of 50 ha is divided into 6 zones. All the projects are included in the plans for the center of Montevideo. We will focus our attention on zone 1, the first built.

This project was set up by the institute CEDAS, which supported the initiatives of the co-operative Jose Pedro Varela. In Uruguay housing co-operatives are a product of the Housing Law created by the National Housing Board (DINAVI) and the non-profit institutes for technical assistance. A minimal of 10 members and a maximal of 200 can participate in a co-operative. There are two kinds of co-operatives: co-operatives for users and co-operatives for proprietors. The National Housing Board decided in the first 5-year plan (1973-1978) to spend 33% of the total investment on the co-operatives. The co-operative of Jose Pedro Varela is a mutual self-help co-operative, with a technical supervisor and with their own financing system.

Much was done to make participation of the workers possible. The construction was done by technical groups which during the project had the same job. Everything was made on the terrain. The houses were arranged in blocks of flats with galleries and stairs. They were built of concrete blocks for the walls and brick panels for the floors and the roofs. In later projects they changed the building-system (zones 3 + 6) in order to improve the productivity: the floors of concrete elements, the walls of brick and the roofs of corrugated asbest-cement plates. The change of the building-system had two reasons: A) market-technical reasons: the price of the concrete blocks for the walls increased enormously; the bricks that were used for the bearing floors were getting

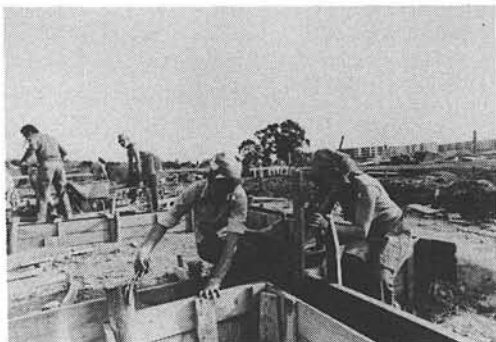
scarce. B) internal reasons: the concrete blocks were too heavy for the members of the co-operative, besides they wished to plaster the walls and the roof.

The inhabitants pay a rent for their house; the co-operative receives a loan for a part of the new-value; the co-operative pays the difference between the new-value and the loan and is responsible during all stages in the project.



Everybody could participate in the work; this was possible through:-

- the division of the total work in simple tasks;
- the formation of working squads;
- the provision of the collective meals
- the organization of a crèche.



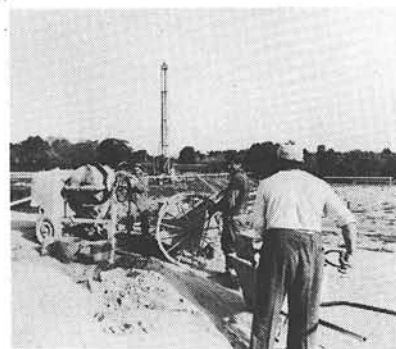
## CONJUNTO F. SANCHEZ.



## CONJUNTO J.P. VARELA



## LOCATION



### DATA (for the entire area)

- total area: 50 ha.
- 2618 dwellings
- population: 10.210 inhabitants
- density: 270 inhabitants/ha.
- surface of the dwellings: 170.170 m<sup>2</sup>
- 3,9 persons per dwelling

### ZONE 1

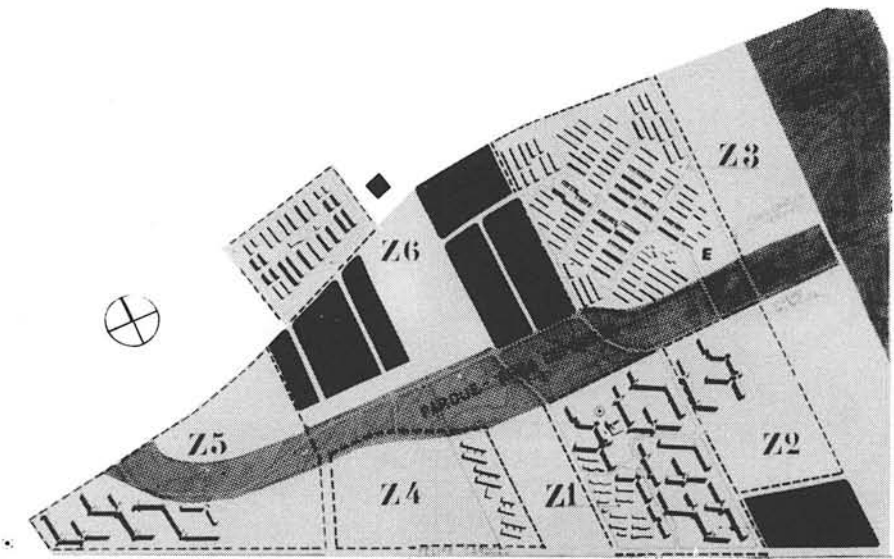
dwellings type 'BLOQUE': 628  
 dwellings type 'DUPLEX': 82

710 total

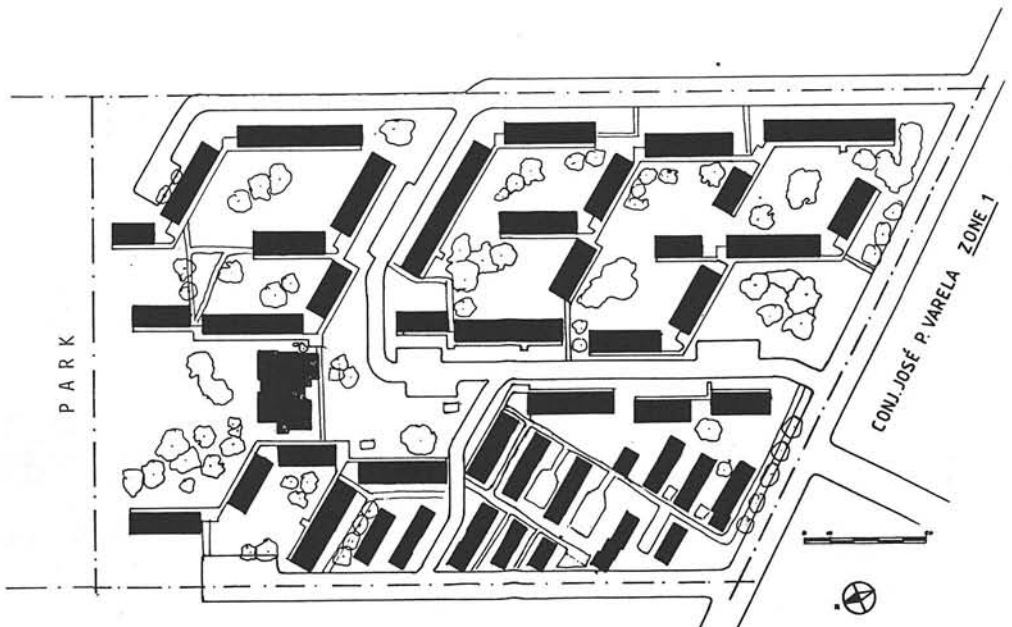
- population: 2769 inhabitants
- density: 322 inhabitants/ha.
- rate of building occupation of the land: 0,16
- surface of the dwellings: 46.150 m<sup>2</sup>



An artist impression of the plan



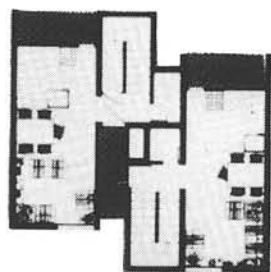
Plan of the entire area.



Plan of Zone 1

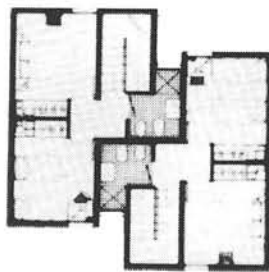
drawn by Gerard Stalenhoef

## DUPLEX



p. baja

+  
2D  
+  
2D

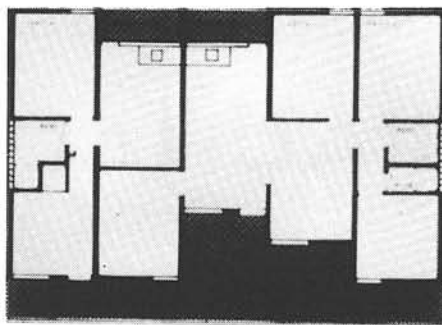


p. alta

## BLOQUE

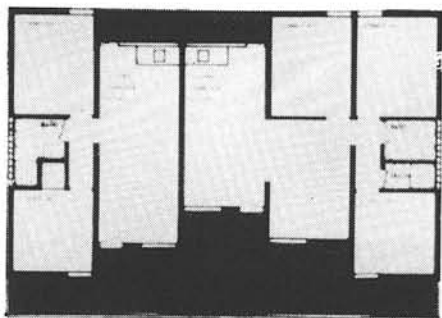
1D + 4D

circ. peatonal

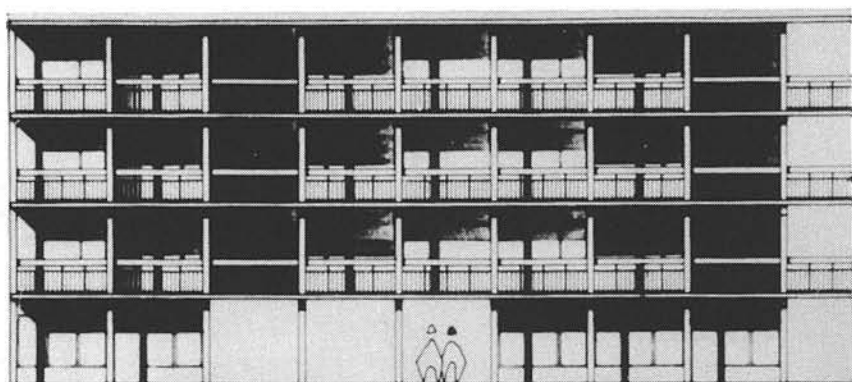


2D + 3D

circ. peatonal

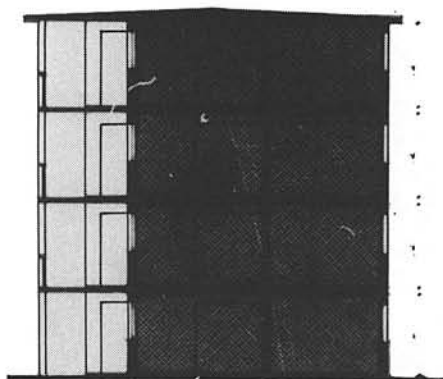


# BLOQUE

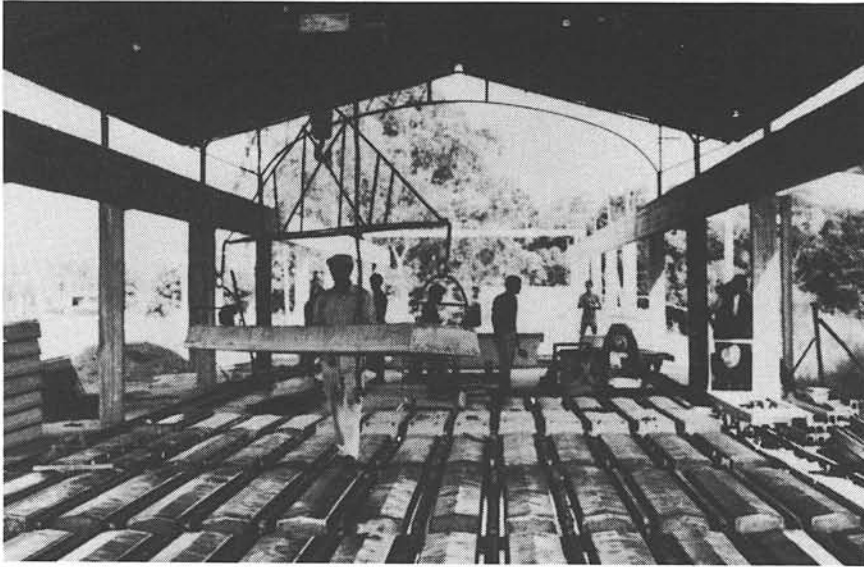


# FACHADA

0 1 2 5



# CORTE



COMPARATIVE SUMMARY OF THE COSTS (in \$)

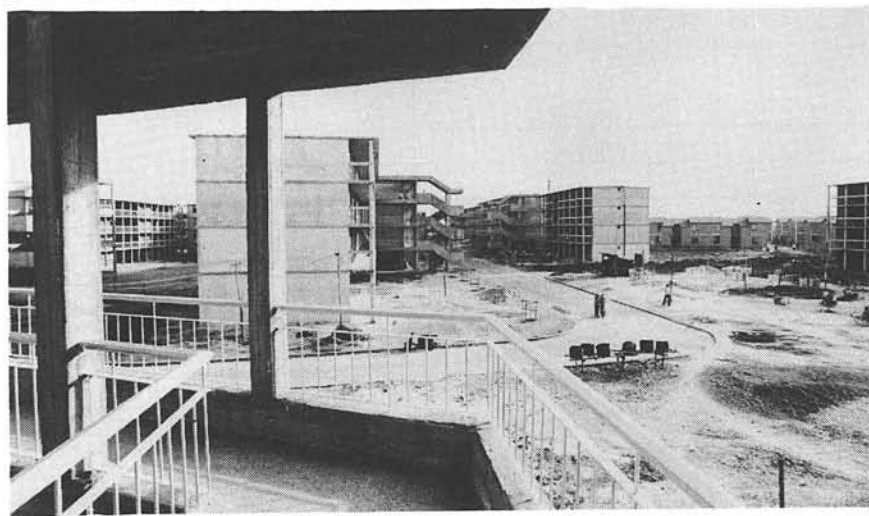
	floors of elem. of prefabricated pre tense concrete	floors of elements, type 'STALTON'	floors of reinforced concrete	floors of brick - elements
transport	7.626	8.400	13.675	6.700
placement	170	750	-	890
concrete finishing	3.940	4.600	-	4.800
isolation	900	-	900	900
finishings	-	2.700	2.700	2.700
TOTAL	12.636	16.450	17.275	15.990

The saving of costs for 75.000 m2 floor-elements by using floor-elements of pre tense prefabricated concrete (in 1000 \$) is great.

When comparing the pre tense prefab elements with the other systems:

SORT OF SYSTEM	SAVING
concerning floor-elements of the type STALTON	\$ 286.050
" " " reinforced concrete	\$ 347.925
" " " bricks	\$ 251.550

The lowering of the mentioned savings of costs influence 4,7% of the total costs of the work. This means 49,5 more dwellings that could be built, or 79.200 working hours that can be saved.



sources and drawings: Planning Documentation  
of CEDAS-- by Guido Armand Ugón  
and in: Stedelijke Crisis in de Derde Wereld  
nr.2, editor: Marisa Carmona, Delft 1983.

photographs: Guido Armand Ugón.







# ANEXE

## Some Reflections on Restauration and Social Housing

### Gerard Stalenhoef de Agyuavives

Including a free translation by Maria Blender of a part of:  
K. Mathey, F. Steinberg, Erneuerung historischer Stadtzentren.

Most of the efforts to maintain innercity areas for their inhabitants have not been very successful till now. In so far as the inhabitants still live in these areas their living conditions have not improved. The monumental housing-stock finds itself in a critical situation.

Latin America carries a great potential of monumental structures from its rich past. The historical sites in the cities are a very important element of the heart of every nation, the embodiment of the cultural heritage. In order to keep the fire burning and to safeguard the history, we have to be aware of the necessity to prevent a demolishing of the environment and the architectural resources.

For a better understanding of the issue we first want to point out the specific problems which are to be found in the historical centers.

Next, in order to place the restauration activity in a broader context we quote the questions formulated by K. Mathey and F. Steinberg.

We will conclude with some proposals in order to create a framework in which appropriate restauration can be worked out.

In many historical centers of Latin America we find popular residential areas with extremely high densities; the so-called 'conventillos' and 'callejones' (tugurios) in Peru and Ecuador, the 'vecindades' in Mexico, the 'mesones' in El Salvador, the 'cortigos' in Brazil and so on.

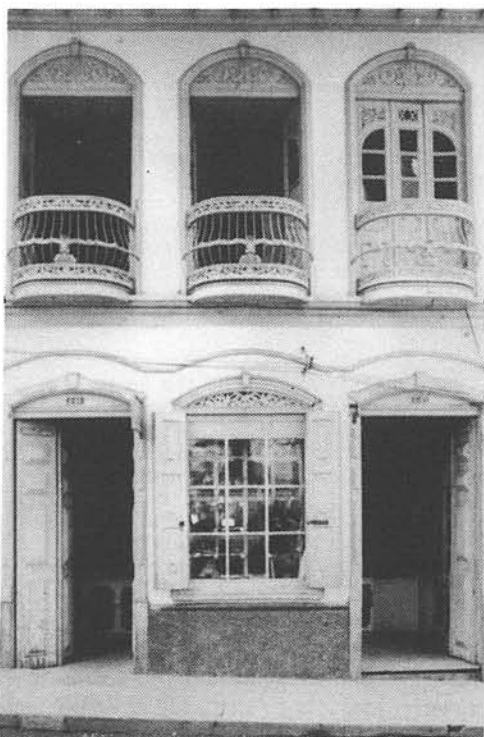
With the change of the century there was a change of use of the buildings. During the first decades, incipient forms of industrialisation, commerce and satellite-cities appeared.

When the high bourgeoisie change their residences to other more sophisticated parts of the cities, new owners used these old houses for speculation. They subdivided the houses in very small units and rented the rooms to various families.

The process of 'tugurization' started. In the quarter 'La Union' in Lima, now

75% of the dwellings have an area of less than 7,5 m<sup>2</sup>, which is used by an average family of 5 persons (Mathey 1985/1986).

However: despite their miserable living conditions the inhabitants chose to stay in the center, where they have their income and where they are close to the services and the urban equipment. These innercity areas have more or less fixed sizes, what means they cannot expand; the densities can even increase.



How many families are living behind this facade?

photo: PROA 306, page 35

This situation results in a range of problems. Most of the problems are a result of the disbalanced property-relation:

- The only profiteers of such bad conditions are the landlords and the speculative estate agents. They can obtain high rents for very low investments, have all legal instruments on their side and belong to the social groups who control the decision making process in the government. Because of this they would not do very much to stop the urban exploitation.
- Most of the inhabitants are not owner of the dwelling they live in; they are not able to make any investment to maintain the dwelling.
- The high landprices in the centers make it impossible for individuals to obtain sufficient room; secondly they are related to speculation by groundspeculators who have other objectives with their building-stock than the preservators.

Further there are the great social problems which are more or less due to this relation:

- instable and low incomes: many inhabitants need to work in the informal sector, due to the shortage of secure jobs;
- integration problems: floating groups (e.g. peasants) don't have their own resources, and remain socially behind other groups;
- tendency of removals: the upper-class has been moving out of the center since the beginning of the century, to the well-serviced suburbs; this means that the investments in the centers have been decreasing; there is also the tendency of replacing the traditional residential functions by the functions which allow higher profits, for example: public buildings, office buildings, commerce, banks, tourist-services, etc.

Finally we mention some other problems:

- oldfashioned legal instruments: most of the legal instruments have been made in times with other societies; e.g. laws for building have remained technical execution regulations;
- tendency to centralisation of an urban function in the historical center;
- infrastructural problems: the capacity

of existing traffic-, sewerage- and drinkingwatersystems is often too small; they are mostly old and of bad condition, new systems often ask for great sacrifices of the built environment and are quite expensive;

- waste disposal and garbage collection: the waste production in high density areas endangers the health of the population: hygienic problems, pollution, sickness, etc; this becomes even worse when there is a lack of public services;
- technical deterioration and destruction: the occupants make use of the constructions; besides, time has a stronger effect when nothing is done to preserve the monumental structure; every day monuments are disappearing;
- introduction of modern techniques: the development of modern techniques and the resulting going down of traditional craftsmanship and technologies (e.g. 'adobe' and 'quincha' building), complicate the realization of a restoration.

Facing this list of problems, to which we have to add the specific problems of each city, the question arises whether such situations are suitable to house great masses of people, without losing the historical values.

With Mathey and Steinberg (1985/1986), we want to stress a flexible approach of 'careful urban renewal', what means "to adapt to the continuously changing development processes of a country and its habitants, to maintain resp. develop the cultural characteristics", not to aim at a "static product, the 'saved' old city, but at a method of planning and acting for different alternatives of development". From this point of view Mathey and Steinberg formulated the many questions outside the technical ones. These questions refer to political, cultural, social, economical and spatial viewpoints.

FREE TRANSLATION FROM: ERNEUERUNG  
HISTORISCHER STADTZENTREN,  
K. MATHEY, F. STEINBERG, TRIALOG NR.8,  
PAGE 5-6, DARMSTADT, 1985 /1986

by Maria Blender

#### 1. POLITICAL VIEWPOINTS

Can urban renewal be presented to the political decisionmakers as an acceptable strategy for economic, social and cultural development and can it find their support?

What can be the -partly very differing motives for urban renewal? Which pressure groups or capital sectors sponsor or block a renovation?

Should the creation of a museum of national heritage be reached, or the strengthening of the standing and reputation of the national state, or a modern commercialisation of the 'inopportune' old center, or the development of the old-town for a culture-minded jet-set?

#### 2. CULTURAL VIEWPOINTS

In how far does a renovation plan consider, intent or succeed in not only maintaining the built environment, but also to counterbalance a general internationalization?

#### 3. SOCIAL VIEWPOINTS

Can urban renewal and reconstruction also improve the housing and living conditions of the poorer strata of the population? Can the extraction of the old centers - through the departure of the rich- get hindered or cancelled; or is in any case the crowding out of the poor - through the renewal, which always will be a 'gentrification', the definite prospect for the future?

If old centers cannot be maintained in the actual state, does this mean that they only can be 'ennobled' and get 'luxury functions' through renovation?

How should -urban renewal be organized, that- in order to prevent crowding out- in the first place the poor are able to bear the costs of the renewal process together with others?

Should repair of buildings and new building be stimulated by means of tax incentives, or should on the other extreme dweller-co-operations as 'agents of social change' help to maintain and save the

social environment of the old center?

Is there a participation of the population concerned, in the planning of the urban renewal in order to prevent the crowding out of the poor by means of this participation and control?

#### 4. ECONOMIC VIEWPOINTS

How should the urban renewal be financed? Shall the state or private means be preponderate? How will subsidizing measures for building investments of the private sector change the structure of the old centers; which are the consequences for the inner-city housing market and for the trade structure from this?

Does urban renewal on a free economy base need to result in increasing rents and costs in each case?

Is it possible to maintain the previous population and trade structure by means of state control or a broadly laid out strategy of an economic and social policy of subsidizing the poor at the expense of the wealthier (cross subsidies), while a more solvent resident population and modern, more productive trades come to the old centers?

Shall the revitalisation of old quarters only aim at maintainance and support of existing economic activities, or shall it develop new productive sectors?

Will transmitted, historic economic activities -for reasons of low productivity and bad quality of the working conditions- result contradictory to the adaptation to actual requests?

Can 'bazar-economies' and medieval forms of street traffic be saved for the modern times at all?

Do the so-called 'clean' industries unconditionally surpass the 'dirty' branches of industry?

As the most often mentioned options for the future of the old centers emerges often even in the first place, the development for tourism (through a sort of 'Disneylandisation'), which can be economically favourable, but -as far as there is no considerable inland tourism- can imply a problematic, new foreign dependency and important dangers for the social and cultural environment.

The option of supporting traditional crafts here surely seems to be more worth aspiring to, its prospects however are also confined to the advantage of location



static or alive?

photo: PROA 309, page 46

in the center through the modern trends of development and the high economic pressure.

Thirdly, the latest vision, to prepare the old centers for the moving in of modern technologies (high-tech, soft-ware, etc) trying to link them to the newest technological developments for the end of the century, seems utopical.

##### 5. SPATIAL VIEWPOINTS

Can it be achieved to maintain or even revalorise spatial relations, grown in the past, in their qualities concerning urban lay-out and architecture?

In which way is the new urban space useful and stimulating, not only for economic aims but also for a complex and multifold mixture of activities in all sectors; or will appear the monotone sterility of new housing estates or of western inner city areas, known from the latest past, only expedient to the capital interests of the trusts?

The prospects of development for urban renewal thus lay between two extremes: a) a static, museal maintenance of past patterns, a 'fossilization' of life-styles; b) a renewal of lively urban organisms, which can develop under the control of the state and the concerned resident- and working population, and bringing with it an improval of living-, housing- and working conditions.

All these questions indicate the urgency for action. The issue is however very complicated: each monumental structure demands a specific solution.

On the other hand there are many similar problems and subjects to be discussed by local, national or international organizations.

Through interdisciplinary, multinational organizations like UNESCO, ICOMOS, FIVUP, OAS and others, knowledge can be exchanged and strategies can be developed.

This has already resulted in many charters, recommendations, seminars, publications, training-courses, etc. With regard to Latin America we can mention: the Charter of Venice (1964), the Norms of Quito (1967), the Recommendations of Belgrade (1971), the Reunion of Sao Paulo (1972), the Recommendations of Mexico-City (1972), the Declaration of Bogota (1978), the World Conference on Cultural Policies in Mexico-City (1982), etc.

The formulation of the World Heritage List, which includes now about 150 monumental structures throughout the world, by UNESCO, was a motive to realize some concrete projects: COPESCO plan in Peru (1969), Ouro Preto in Brazil (1980), Bahia de Salvador in Brazil, jesuit-posts spread over some countries, Cartagena in Colombia and others.

In order to formulate some proposals on which we have to think, we first have to be aware of our purposes concerning the relation between restauration and social housing. Besides the 'saving' of the monumental building-stock, the purpose is a structural improvement of the living-conditions, what means the technical improvement, the maintainance of the social structure and the maintainance and revaluation of the local trade structure. In the following we will describe a number of means and conditions for the realization of such a 'maintaining' urban renewal.

Firstly the process of demolition of the historic centers has to be stopped. Than a proper line for maintainance and improvement has to be set up. This implies

the necessity to develop a clear policy, including a broad framework of all involved elements. This means in our view:

- to formulate a philosophy of preservation in every country (e.g. protection of the cultural heritage as a public service (Hardoy, Dos Santos, 1983)), and to give this philosophy a special priority; for example: the state can buy building-land in historic areas in order to prevent speculation;
- to develop legal instruments and along with them an effective administrative system:
  - to prohibit demolition;
  - to oblige owners to maintain their building(s);
  - to make rules for the level of rents, for instance to create indicators for maximal rents;
  - to give a legal status to organizations and initiatives of the population in the decision-making;
  - to reevaluate the historic areas by means of a 'masterplan': that means creating a balance of functions in the centers in order to prevent a centralization of functions like the marketfunction, the dominating role of 'cultural tourism', etc;
  - to create an attractive climate for investments by private organizations, specially co-operatives, local trade corporations, inhabitant-organizations, Non Profit Organizations, etc, by presenting them financial advantages like subsidies, tax incentives, etc.

The creation of a legal framework depends on the good-will of the political decision makers. However, they need to consider what will happen when the historical, social, economical and cultural structures in the centers disappear.

The success of the execution of projects can be ameliorated by a favourable organization:

- a good co-ordination, during planning and realization, between all involved institutions, persons and disciplines is a necessity;
- an important role in the research, investigation, documentation, analysis, etc, can be played by universities and students;
- the possibilities for self-help must be taken into account (whether individual, mutual or in co-operatives);
- a flexible planning is needed because of the variety of the situation (e.g. trade structure);
- a crowding out of the population during the restauration activities has to be prevented, for instance by offering temporary houses;
- a development and selection of the most acceptable (cheap, flexible, etc) technology must be done by considering as well the possibilities of mass-production, standardization and rationalisation, as the possibilities of traditional techniques ('craftmanship').



photo: PROA 306, page 35

a witness from the past for the coming generation.

This list can be enlarged and more detailed. A good start can be made with the execution of plans for priority areas. These small projects can lead to more consciousness; their experience can easify following projects.

But we always have to keep in mind:

'Reality is faster than Planning'.

When we see that historical residential areas are pauperizing, revaluation is a necessity. We have to use than the opportunity to protect the cultural heritage, so that it will be a witness of the past for the coming generations.

sources:

- A propósito del patrimonio arquitectónico, y su conservación, Municipio de Jericó, Antioquia, in: PROA 306, Bogota 1982;
- G. Bustamante, Sedé para los consultorios "Macia", Cartagena, in:PROA 309, Bogota 1982;
- K. Mathey, F. Steinberg, Erneuerung historischer Stadtzentren in: TRIALOG nr.8, Darmstadt 1985/1986;
- J.E. Hardoy, Dos Santos, Programas Regional de Patrimonio Cultural, Lima 1983;
- Centro de Investigaciones historicas y esteticas, Universidad Central de Venezuela, BOLETIN 16, Caracas 1973;
- E. Bruno, A. Körte, K. Mathey, Umgang mit städtischen Wohnquartieren, Darmstadt 1984;
- UNESCO, What it is, What it does, How it works, Paris 1981;
- L. Hinsch, ICOMOS 1965 - 1980, Oslo 1980.





# The charts

The structure of the charts is developed from two methods of comparison.

Firstly, in

"Arquitectura y Calidad de Vida"  
(Official periodical of the Chilean Association of Architects), No 41,  
Catalogue of the V BIENAL DE ARQUITECTURA  
- Santiago, sept. 1985.

a synopsis of Chilean social housing projects is presented (p. 59). This synopsis shows the types of solutions concerning urban action, terrain, type of housing, altitude, technology, builder-actor, and property system and relates them with the housing production under the different governments since 1953.

We have adapted this system by extending it to more detailed information about location, lay-out, construction, the organization of the building activity (participation of the inhabitants in promoting and building) and the out fit of the provided housing. We took the climate-diagrams from:

"Klimadiagramm - Karten der einzelnen Kontinente und die ökologische Klimagliederung der Erde" by H. Walter, E. Harnickell, D. Mueller-Dombois;  
Stuttgart: Gustav Fischer Verlag, 1975.

Secondly, our analysis of the 'use of land and services' is a slightly adjusted version of the method used by the FSDVM, the Salvadorean Foundation, for the comparison of low-cost housing projects in El Salvador. We refer to

"Evaluación de Proyectos Habitacionales en El Salvador", FSDVM - OEA, San Salvador, El Salvador C. A., Volume I, june, 1976, and Volume II, july, 1978.

# GENERAL INFORMATION

**YEAR/AREA**

We give the year in which the project is constructed (resp. the last year of construction). The given useful area is the total area of the terrain less the protected areas e.g. along principal carroutes or rivers. This useful area is the basis for the calculations.

**CLIMATE**

For the local climate we refer to the well-known climate-diagrams for the amount of information they clearly define. For places they are not available, we chose a diagram of a comparable location nearby.

a) station and height point above sea level (m);  
 b) mean annual temperature (°C) and mean annual precipitation (mm);  
 c) curve of mean monthly temperatures (one scale interval = 10°C);  
 d) curve of mean monthly precipitation (one scale interval = 20 mm);  
 e) relatively dry season;  
 f) relatively humid season;  
 g) monthly precipitation in excess of 100 mm (the scale is reduced to 1:10, so one scale interval = 200 mm).

**LOCAL GEOPHYSICAL PROBLEMS**

no special problems		danger of tropical cyclones	
danger of landslides (precipitous area)		danger of earthquakes	

# URBAN DESIGN

URBAN ACTION	TRAFFIC SYSTEM	BUILDING LAY-OUT
urban expansion	grid pattern	housing unit of 1 storey, housing unit of 2 storeys, 1-storey uniform houses in a row
(re)filling gaps in built environs	primary and secondary roads	1-storey duplex houses in a row, 3-storey duplex houses in a row
upgrading	cul-de-sac pattern	2-storey duplex houses, highrise block(s)

# CONSTRUCTION

**TECHNOLOGY**

traditional		rationalized	
open pre-fab (light systems) fabrication in situ		closed pre-fab (heavy syst.) fabrication in situ	
open pre-fab (light systems) fabrication in plants		closed pre-fab (heavy syst.) fabrication in plants	

**BUILDING MATERIALS**

metal		roof covering of asbestos cement, construction of bricks	
asbestos cement		roof covering of metal, concrete structure with bricks	
tiles		roof covering of tiles, construction of timber	
concrete		concrete roof, construction of concrete blocks	
brick			
timber			

The symbols show in the upper third of the field the material of the roof covering and in the lower part the principal construction material(s); an eventual structure is represented in T-form.

# KEY to the charts

Note:  
 \* Data with this sign are based on estimations.

# ORGANIZATION

PROMOTER	BUILDER	PROPERTY SYSTEM
private institution	private enterprise	individual property
participation of the inhabitants	skilled work, unskilled work	co-operative property
private non-profit institution	private non-profit enterprise	lease of dwelling and site
state institution	state enterprise	property of the dwelling and tenancy of the site
state inst. with participation of the inhabitants	mutual self-help	
	state enterprise using unskilled individual self-help	

# USE OF LAND AND SERVICES

LAND USE	POPULATION DENSITY	UNITS/LOTS	CIRCULATION NETWORKS	DRINKING WATER LINES
The useful area (s.above) is subdivided acc to use: <b>Private use:</b> Housing area - Residential area - Commercial area <b>Public use:</b> Communal area - Green area (e.g.parks) - Communal services Circulation area - Pedestrian area (paths and trottoir) - Vehicular area (access for cars,incl parking) The data are represented as percentage of the useful area which is 100%.	The concentration of persons is indicated by the <u>occupation factor</u> (the average number of persons per household) and the <u>population density</u> (that is the total number of inhabitants divided by the useful area of the terrain). The population density is closely related to the type and size of the lots. One point in the graphic represents 10 inhabitants per hectare.	The concentration of housing units ( <u>housing density</u> ) also defines the concentration of households. The concentration of lots depends on the building lay-out; in the cases of one-family-lots it is identical with the housing density. For the housing density (total number of housing units divided by the useful area) one little square in the graphic represents 10 housing units per hectare.	The circulation network is formed by the <u>pedestrian</u> network (footpaths plus trottoir) and the <u>vehicular</u> network (ways with access for cars, exclusive parkings). In order to compare the use of the networks we divide the total lengths in linear metres by the useful area. This 'density' is shown in the graphic: one dash (heavy for the vehicular net and soft for the pedestrian net) represents 50 linear metres per hectare.	The drinking water net is analysed in the same way as the circulation net: one dash in the graphic represents 50 linear metres of water lines per hectare. Another indicator is given: the length per housing unit. In the cases that we had no information about the design of this net (signed with *) we started from the assumption that the piping runs under the streets and chose a current design for the comparison.

# LEVEL OF THE PROVISION

TYPE OF THE PROVISION	SUPPLY WITH SERVICES	STANDARD OF HOUSING
site and services	individual septic tank	public sewerage networks
basic unit (sanitary construction)	common access to drinking water	individual drinking water supply
building without finish	illegal connection to the mains	individual supply with electricity
finished building		The standard of housing is indicated by the supply of <u>sanitation fittings</u> and the <u>housing space</u> (understood as the built surface multiplied with the number of storeys). The sanitation fittings per unit, such as WC, hand basin, shower and washing trough are symbolized. The dotted field represents the housing space as percentage of 100 m <sup>2</sup> ; the whole square = 100%.



With this comparative analysis of Latin American housing projects of social interest we want to stress an integral vision of the housing problem. This is to say, we think that every approach to the housing problematic needs to consider the specific local and regional determinants in the context of the structural elements, both at macro and micro level, that conditionate and reproduce the miserable conditions of the habitat of large majorities.

In part I we present some papers which enter into political, technological, typological and facility issues.

Part II consists of the presentation and analysis of 19 housing projects in 10 countries. We have developed a method of comparison that regards the types of solution on urban, dwelling and organization level as well as quantitative aspects of the provision and the use of land and services.

