RICE UNIVERSITY

Study of Town Planning Concepts for Mexico
The Case of Jalisco

by

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ABSTRACT

STUDY OF TOWN PLANNING CONCEPTS FOR MEXICO
THE CASE OF JALISCO

by
José Morales G.

The migratory phenomenon is a process unchaining unprecedented forces in the formation of the Mexican urban structure.

To master these forces and convert them into a tool that will properly shape the nation, it is necessary to assess a directing concept.

This thesis is a search for a feasible concept.

Migration is in depth a blind search for urban conditions. Today, these conditions must be proliferated to an enlarging number of settlements. The quality of the city must be given to the town.

The search is conducted through three processes:

I. A time-past - Tributary process or analytical approach
II. A time-less - Directing process or theoretical approach
III. A time-future - Formative process or design approach.

The forces at work are the time present; the relationship between the past with the future.

As a response from these processes, a basic proposition is made:

The gradual change toward an urban condition can be achieved by functionally linking series of existing towns. This linkage pattern is here referred to as "organic solidarity". In this concept of organic solidarity, each town requires the other in order to perform its major functions.

The resultant urban unit is as the concept of a molecule in physics: the smallest structural unit made of several different parts necessary to each other to remain balanced and at the same time coexisting as an integral part of a
major whole; this whole is equilibrized by the balance of every one of its molecules.

The existence of this urban unit is transitory. The concept is a process of urban formation, not a form.

The purpose of the demonstration design is to represent the concept in an urban form as a synthesis of proposals and ideas. The resultant image is only one interpretation. There can be others.
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Study of Town Planning Concepts for Mexico
The Case of Jalisco

Statement of Intent

A. The urban structure of Mexico has become an unbalanced human settlement affecting the whole country. The few major cities—Mexico, Monterrey, and Guadalajara have absorbed the country's intellectual and economic potential.

El Problema del Campo. "The Country Problem", as this phenomenon is known, is one of the most important national problems to be solved.

The Causes: the uneven living conditions between the city and the countryside town.

The Symptoms: the apparition of a migrating population.

The Effects: impoverishment of both the individual and the national life, by overcrowding the cities, by deserting the towns.

B. As symbols of culture vs. nomadism, towns are places to stay in. They are establishments, population containers.

The functions of these settlements have evolved to a greater complexity, but the countryside town has not responded to such evolution. Its shelter is no longer efficient. It does not provide for its inhabitants fulfilling living conditions, thus forcing man to migrate—to become a nomad again.

C. The complexity of this problem makes it imperative that it be analyzed by all the cultural forces within the nation.

This thesis will attempt to initiate one force: the force of planning.

The gradual improvements of government, economy, education, and industry must be coordinated into an architectural expression of the Mexican town. This is the contribution asked of the Mexican architect. The planning portion for the solution of "El Problema del Campo".

D. This study is a search for ideas applicable to this "Country Problem". It is essentially a search for answers to these questions:

1. Can a comprehensive planning concept control the migratory phenomenon?
2. Can the physical environment of the Mexican town be modeled or remodeled to make of it an efficient human settlement?
The main effort will be directed toward solving the problem in conceptual depth rather than to an academic, formal solution.

The intention is to establish the basis of a criterion. This criterion will be applied as a demonstration to towns in the state of Jalisco, giving an ideogramic expression to the concept.

I am not in defense of peasantry, but I am in defense of those towns which will be future cities where architectural experience may be rich.

José Morales González
INTRODUCTION
Chapter I

Introduction

This is Mexico. A country committed to the concept of progress, struggling to grow in the best possible way, searching for its own identity. This identity is certainly linked to the greatness of its past. The success or failure of its future depends upon the action taken today.

The need for nationwide planning from the early stages of development is certainly the most important step toward a well-settled society.

Mexico is in its early stages of developing into a modern country. It has grown to the point in which further advance in planning must be based on appropriate concepts for its present and future wellbeing.

This concern for new planning concepts today is not just a speculative exercise; in view of the rapid social transformations, the need is urgent.

These new planning concepts must be based on a clear understanding of the Mexican problems.
The Problem

The "Problema del Campo" is the generator of this study. The solution to this unbalanced human settlement is essential to Mexico's welfare and progress. The problem has existed for centuries and it is increasing daily. The attempted solutions to date have only been palliatives. "El Problema del Campo" remains as an unsolved challenge. In summary, the uneven living conditions between the countryside settlements and the city force the people to migrate.

Migration is a phenomenon of population movement, in this case from the town to the city. It is a common occurrence in underdeveloped countries. Migration in itself is a process and does not implicitly mean progress. Man needs to master the phenomenon, to control it, to direct it, and to mold it into a tool of progress.

These movements of population are adversely affecting the urban structure of Mexico: the migration imperils the individual and the national life.

The effect upon the individual: the needs of man are defined in two fields, the spiritual and the material. The satisfactions of both are mutually related in an equilibrate interaction.

These needs of a man are so vital to his general welfare and happiness that much of his existence consists of a continuous series of attempts to satisfy these deep stated needs. The extent to which it succeeds is in a very large sense, a measure of its personal fulfillment. *

Spiritually: the small town inhabitant lacks a stimulating and cultural life. These intellectual and cultural factors must be taken to the town inhabitants. Current intellectual thought must be made available in order to enrich their lives.

Materially: the socio-economic, political and technological achievements have not been applied to solve the needs of the town inhabitant.

There are no opportunities of interchange... experiences... communication... with the resultant lack of social enjoyment. The individual's response to this vacuum is invariably negative.

The person living in countryside towns lives without fulfillment in his life. This person who lives in this deficient environment is forced to migrate. His normal sense of belonging, his relationship to his territory, his propriety, and his social behavior is maladjusted.

*Carlson Deppe, "Recreation in American Life", p. 312.
This experience results from the lack of attention given by intellectuals to the town community. Planners and architects are certainly responsible for the present unsatisfactory environment.

The Effect Upon the Nation

Economically: Mexico is an agricultural country. Agriculture is the main source of income and employment. Migration tends to deplete the agricultural labor force. This source represents 70 per cent of the national economic power.

Sociologically: the deracination of population tends to disintegrate the social system (or at least deteriorate it) since a change in the social behavior occurs.

Politically: among the most important principles that resulted in the Mexican Revolution (1910) was the agrarian system of land ownership and colonialization. An important issue in all political parties of the country today is this menace of migration.

The Measure of the Problem

Components of Mexico's Urban Structure

The settlements in order of size are described thus:

Building
Group of Buildings

<table>
<thead>
<tr>
<th>Villages</th>
<th>Pueblo</th>
<th>Minor Urban Forms</th>
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<tr>
<td>Towns</td>
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<tr>
<td>City</td>
<td>Ciudad</td>
<td>Major Urban Forms</td>
</tr>
<tr>
<td>Metropolis</td>
<td>Guadalajara</td>
<td>Monterrey</td>
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<td></td>
<td>Mexico City.</td>
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For this study, the components are towns and cities. It is in the environment of both that migration occurs. The classification of these components falls in the "noncontiguous urban structure" concept.

The concept of metropolis as far as the population and urban facilities are concerned is only applicable to three human settlements in Mexico.

Mexico City has 5,000,000 inhabitants
Monterrey has 1,000,000 "
Guadalajara has 1,000,000 "
for a total of seven million. *

Then these are the major urban forms.

The total population of Mexico is 46,000,000; therefore, 80 per cent of the people are sheltered in minor urban forms varying from villages to promising future cities. However, the former constitute the great majority of this percentage. It can be assumed that three-fourths of the population are suffering the consequences of this imbalance.

**Major Urban Forms.** Mexico City (Capital Metropolis), Guadalajara or Monterrey (state Capital Cities) have been objects of planning studies.

**Minor Urban Forms,** which are essential to counterbalance migration (villages and towns) have been given no thought. They are not prepared to reinforce the Mexican urban structure.

This is indeed the challenge of this study.

Man has to think of both.

**A.** Major and minor urban forms as shelters, that are shaped by a series of social, economic, technological, and political factors.

**B.** The forces holding together such shapes (communicating functions), only the adequate use of these inputs can form a planned urban structure able to control migration.
Not all minor urban forms should be reinforced, but only those which have growth potential. Those towns that could help to establish a normal curve of development can equalize the distribution of population thus enhancing the possibility of integral growth development.

These towns can provide for the national population a balanced settlement. These towns must be planned to survive and grow until they become cities. In this proposed urban structure, towns and cities (pueblos and ciudades) should be mutually involved. If they work together, with reciprocal respect of this concept, they may master the migration danger.

*Brian J. L. Beny, "City Size Distribution and Economic Development", Ekistics, February 1962, p. 91. (This graphic is repeated on p. 63.)
This restructuring of towns should not usurp the forces involved in city growth. The price to pay is not the death of the existing metropolis (Mexico, Guadalajara, Monterrey), but the formation of new ones evolving from existing towns or purposely created ones.

**Initial Criteria**

Urban growth is in some aspects similar to the process in nature, the city is born because some human activities give to it the necessary energy to live. Later the growth is conditioned to the always increasing needs of its inhabitants.

Assumptions: the functions of cities and towns have evolved to greater complexity but the town has not responded to such evolution. Its physical shelter is no longer efficient.

"The deterioration of Cities is a result of their denial of human needs".

--Walter Gropius*

Community components are forces involved in town shaping: the economic and socio-ecologic producers of the physical environment. If the increasing demands of the townspeople are not answered by the community it shelters, then the town requires a physical remodeling. This physical remodeling must be made in accordance with the modern community requirements.

It must be understood that the physical environment is only one of the factors in the total process of revitalization. It is only the end result that must combine all contributing forces.

Within this limitation, "the crucial element is the triumph of the human will driven by the social morality toward what should be", as Buber wrote.**

The physical environment must be used as a tool in the revitalization process. It is, therefore, valid to manipulate the environment in order to achieve better conditions in the Mexican town.

Who is going to solve this problem?

The problem is concerned not only with economic, political and technical ingredients, but also with the national forces of government, economy, education, and technique; in addition every professional and social organization united in a

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*Walter Gropius quoted by Frederick A. Styles in The Concept of the Ideal Urban Form, p. 4.

common effort (for example, the architecture and engineering professions, the Rotary and Kiwanis Clubs).

The problem will not be solved until the combination of local and national forces have a single direction.

The findings of government, economy, education, and industry must be coordinated into a coherent architectural expression for the Mexican town.

We must plan now in order to get ready for the future.

Why Plan?

Man is in some measure a rational animal, and it is by planning that he is able to insure the fullest achievements of basic values and of specific goals. Any plan for the improvement of Mexican urban development must be integrated with the national future.

This plan must also be a result of a combination of science, art, and a policy concerned with the shaping and guiding of the physical growth and arrangement of towns in harmony with the social and cultural needs.

The future plan must search for a positive response of environment upon man's physical and spiritual wellbeing.

The Attempts

The "Problema del Campo" should be the concern of every official planning institution in Mexico. These institutions usually approach the problem thus:

First, they are only concerned with growth problems of the major cities. The main cause of their growth is migration. The town itself is almost ignored.

Second, their designs are bound to the satisfaction of emergency needs. The projects usually end as palliatives rather than complete solutions.

This haste does not permit planners to search for the real concepts. This study for concepts should not be constrained by the limitations usually placed upon the officially responsible planner.

Actually, these planners are blind to the idea of the multi-discipline approach to their task. They have not been properly trained.

The present attempts to solve "El Problema del Campo" have been poorly conceived.
A Basic Step is Missing -

The search for essentials in planning Mexico's towns
The investigation of what would be an ideology
The search of a criterion shaping ideals.

To conceptualize the total aspects of Mexico's urban structure, one must make a search of the physical and non-physical facts affecting it, a search conducted through historical analysis and contemporary feasibility studies. This general search for ideas should be directed toward forming a Town Design System. The system should represent ideal goals and be grounded in the evolution of Mexico and its future reality.

Objective

The objective is then to compose a Mexican Utopia. This utopia will serve as a useful tool in the sense that it will hopefully discover concepts and illustrate clear ideas that finally can be applied to the actual conditions of Mexico.

The intent of this thesis is to suggest an ideal town or towns. The demonstration will be the evolution from existing towns, or a proposed design in an attempt to give an effective answer to the needs of its inhabitants. The study will occur in a specific geographical region (testing field).

It is thought that the conceptual principles lie just below the surface of the socio-economic and geographic-ecological truths of the country. The intent is to produce a system oriented from the present status of Mexico and to provide the basis for future developments. This study will be experimental and therefore will not involve a final design commitment to the national scheme. This thesis is not an end in itself, and its findings are only tools in the process of planning Mexican towns.

The project will evolve in the zone where the ideal and the real overlap.

Expected Gains

A demonstration of an ideal Mexican town can serve:

A. As a model - an example showing what principles are believed appropriate to town design and resultant forms.
B. As a typical planning approach - since the ideal town is composed of interrelated proposals giving a synoptical view of the possible town environment, it will serve as the catalyst for a multidisciplinary approach.

C. As an ideal with practical consequences - knowledge of an ideal Mexican scheme will contribute to better understanding of some of the more practical planners' endeavors.

D. As an element which will develop criticism - any field of art which does not provoke criticism lacks vitality and potential to growth. Up to now in Mexico, planning does not have a systematic body of critical literature concerned with city design.

E. To suggest areas of research - it is axiomatic that other avenues of investigation will be recognized as essential.

Thomas A. Reiner wrote, "The contribution is made by the mere willingness to explore and be creative!" *

The Procedure: the study method of this thesis, attempting to find a valid criterion for Mexican town planning, will be:

A. The Analysis - the study and appraisal of determining conditions and trends. This section studies the peoples and their values, institutions, technology, and resources, linking to the thesis the related sciences in order to provide a field for analysis, diagnosis, and proposals.

The first part will be informative, providing historical background of Mexican towns and their evolution to their actual stage of development. The second part will be formative, analyzing the problem according to the following framework.

1. Fundamental points of theory studies:

   Constants in the town-settlement evolving pattern
   
   Producers  Man  Produced artificially created physical
   Society      environment.
   Nature

a. Served main spaces and their functions.
b. Server linkages and supporting functions.

2. From the analyses of these theoretical points of study, the essentials to form a criterion will be extracted:

Variables - essential of basic criteria to properly design

<table>
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<tr>
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<td>b. Economy</td>
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<tr>
<td>d. Culture</td>
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Forces at work

- c. Technology

To better understand what are being called "essentials", they may be described as those norms and factors that can form a basic criterion.

B. The Final Step Will Be the Thesis Demonstration - the design must give a clear expression to the thesis concept.

The design purpose is to give to these concepts, values, norms, and factors an architectural expression. This is indeed the main task of the architecturally oriented planner.

To demonstrate this thesis, a Minor Urban Form will be designed.

### The Design

The Demonstration Pattern Shall Be:

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<td>and of Activities on the Physical Environment</td>
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<td>Rational</td>
<td>Functional Interaction</td>
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<td>Spatial Distribution; Resulting Patterns Synthesis, Plan.</td>
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<td>Geophysic Environment</td>
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<td>Man-Made Environment.</td>
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The Testing Field

To demonstrate this thesis, the Jalisco region has been chosen as representative of "El Problema del Campo".

The urban structure of Jalisco is similar to the nation's general urban scheme and somehow also typical of Latin America, one immense capital city and a large number of towns and villages.

The towns composing the Jalisco region are characteristic of Mexico's general settlement pattern. It can be assumed that the forces affecting these towns, whether interior or exterior factors, are basically the same. It is felt therefore that the state of Jalisco is a valid region to use as a testing field. One or more of its towns will be developed as a valid national example of the concepts in this town planning thesis for Mexico.

To better comprehend the labor of this thesis, James Ford's * Planning Definition might clarify the intent:

"City planning is a science and an art concerned primarily with the city's ever-changing pattern. As a pure science it examines causes (history, etiology) and reciprocal influences of man and environment (urban geography and ecology). As applied science it synthesizes these findings with those of the economic, sociological, and political sciences, as well as the technological branches of statistics, civil and sanitary engineering, architecture, landscape architecture, and all other pertinent branches of human knowledge, in an attempt thoroughly to understand conditions and their contexts and trends. As an art it utilizes these materials, instructs or organizes citizens, molds events, and thwarts or guides trends to bring about the changes in city design which it contemplates."

*From Slums and Housing, quoted by Harold MacLean Lewis in Planning the Modern City, p. 7.
ANALYTICAL APPROACH
Chapter II

Introduction

This chapter attempts to present the historical evolution of human settlements in Mexico from a city planning point of view; it analyzes certain trends considered necessary to fundamental criteria of what Mexico has had, actually has, and establish true contrast to what the nation needs.
Analytical Approach

Historical Division  It is defined into three periods:

A.  **Indian Period**, from the thousand year old man of Tepexpan until the fall of Tenochtitlan in 1521. The story of urban structures in Mexico started when agriculture allowed man to establish permanent villages. The principal contributions of the indian civilization are the actual sites of urban settlements—from primitive pyramid of Cuicuilco (600 - 400 B.C.) to a mature development in Teotihuacan, the first ceremonial center of the central plateau. The end of this age is marked by the conquest, and its most representative city—Tenochtitlan—is today known as Mexico City.

B.  **Spanish Period**, from the 16th to 18th centuries. The foundations of a new nation were established by means of synthesis of races, ideas, and modes of life. A new cohesive culture was born. Colonial towns were founded in the ruins of indian settlements. Mexico's towns owe their present physical character to this period. In the overall design of towns and cities, a single dogmatic policy was applied: the "Felipe II Royal Ordinance" (March 1576, Sn. Lorenzo del Escorial). *

C.  **Independence and Revolution:** (1800 to 1926). As a logical consequence of its organic growth, Mexico attained its independence, the resultant struggle hindered the development of city planning. This is a period of adjustments and clarification of ideas and plans; not of material advancement. The only significant fact is the creation of networks of communication (railroads, telegraph). Few contributions were made to the city and none to the towns.

*Felipe II quoted by Garcia Ramos in "Iniciacion al Urbanizmo", p. 68.
1. Urbanization
   
a. Indian Period. The nature-oriented indian society could not be labeled Urban. Their settlements were in the beginning totemic symbols helping to settle the tribes into a man-made space framework. Besides the formal influences of nature, these urban settlements had socio-theocratic factors shaping them. This was the beginning of urbanization.

b. Spanish Period. As during the indian period, the culture remained rural, but the movement toward urbanized settlements grew stronger. Towns and cities had an appreciable degree of interaction. The typical colonial urban structure is formed by a number of small towns and one gigantic capital.

c. Independence and Revolution. To the struggle of this period, Mexico owes its actual trend of urbanization. During this period, Mexico changed from rural to urban society as a result of concepts of directed economy and social justice. The big city grew uncontrolled while agrarianism created a backward movement toward ruralism in scattered sub-towns. There was no science dealing with cities as functional spaces. The result today is that an urban society approaching the 21st century lives in towns planned for the needs of the 16th century.

Conclusions

Urbanization is an inevitable trend. Our society, although still evolving, is becoming urban with accompanying urban needs. This urban society is actually sheltered in rural settlements. Therefore, people are abandoning them for places with urban characteristics. Unfortunately, in Mexico, this urban classification is restricted to three major cities and some 20 others not so suitable to the concept. The national policy toward this problem has been confused.

Proposition:

That the urban condition must be created in a large number of settlements by a reciprocal reinforcement, channeling the present colonial structure into a modern one.
2. The Role of the City.

a. Indian Period. The primitive Indian city existed as a totemic symbol. Support of religion, government, and certain levels of commerce were its only functions. As the theocratic role increased, Indian socio-economic cohesiveness grew, and new functions (dwelling, education, formal marketing) appeared. The early ages created ceremonial centers; the latest created religious cities. The concept of city is measured by quality in response to certain cultural needs.

b. Spanish Period. The formation of a new cultural pattern with its implications on religion, economy and political and social changes brought a new role to the urban structure in general and to the town in particular. The urban structure intended to support a nationwide economic system, taking advantage of the country's natural resources. Mining and agricultural towns (exploitation role) were built, sheltering a complex number of functions (dwelling, recreation, government, commerce, health and welfare, defense, and education).

c. Independence and Revolution. During this period of transition, the role of the city started to diversify within an economic framework. This meant a break in city goals and functions; for instance, work until then was limited to agriculture or mining. From this point, commerce, services, and industry became significant. Specializations in town activities defined new roles. Economically, a town became a concentration of consumers and a setting for certain types of production; sociologically, it became a place of frequent but segmental interaction and social mobility.

Conclusions:
The roles played by towns and cities have been evolving toward greater complexity. The change for more complete roles is necessary if the town is to survive. Definitions of town's role are obscure, a variety of specialists define it partially without coordination. The role of the town and its functions are intimately related. The existing organization of towns permits no change to conform to their new roles.

Propositions
The role of today's Mexican towns must be clearly defined in a multidisciplinary fashion in order to find what town design concepts should be and what new functional systems should be added.
3. Activity System.

The functioning of cities is based on peoples' institutional activities.

a. Indian Period. Two opposed tendencies were generated.

Eccentric—tending to desintegrate urban ties; for example agriculture and hunting: out-of-town activities

Concentric—(integrative) as the well developed power structure.

The former dispersed dwellings and the latter united the village. Most every day activities were out-of-town, while ceremonial activities were held in-town although sporadically (between crops). These ceremonial activities created the pattern of circulation and the disposition of plazas. The latest cultures developed routine activities in-town.

b. Spanish Period. Their various activities led to diversification of functions.

The town has significant movements of population daily. In this preconceived urban environment, institutional out-of-town activities are still present (mining and agriculture), but the concentric force created new services and facilities such as a church to go to every Sunday, a market to go to every day; these actions are stronger. Social behavior generated two meeting spaces: the plaza congregated people in either formal or informal ways, the patio segregating family recreation.

c. Independence and Revolution. The city activity systems grew over-complicated by further diversification of events taking place in an inadequate physical arrangement (for instance vehicular transportation makes clear the obsolescence of designs). This is also true of towns. Although out-of-town productive activities exist, their importance is lessening, the need to diversify in-town activities is demanded by the machine age and the industrial revolution that will come in the next ten years.

Conclusions

Activity systems dictated town designs. In the past these systems were preconceived, static, unchangeable. In this age of rapid change, the obsolescence of the old colonial towns is evident; furthermore, atrophy is foreseen in the imminent industrial revolution.
Proposition

An analysis of today's activity systems must be done. The experiences of Europe and the U.S.A. on industrialization problems should be examined.

To accommodate changing systems, town arrangement must be flexible to allow adaptation, modification, and expansion.
4. **Structure of the City.**

**a. Indian Period.** The overall characteristics of the pre-Hispanic city
are: a ceremonial center of great size compared to the total, with an integrated
zone of palaces following an axial N-S composition. The pattern of circulation
leads into the center. Pyramids and palaces forming plazas in scale for massive
groupings with a sense of proportion between solid pyramids and open spaces. Market
activities are on secondary squares or along the streets. Dwellings, if existing,
were modularly ordered according to social stratification. Most of the dwellings
were scattered in the hinter land. The development is horizontal or when in the
mountains, is stepped in rectangular platforms. City zones were defined according
to function.

**b. Spanish Period.** The overall characteristics of these cities were dic-
tated by the Felipe II Royal Ordinance (Art. 110-133). Sites were to be strategi-
cally situated to prevent attacks, to allow growth, and to permit means of communi-
cation to the rich hinter lands. The Plan was to follow the gridiron pattern exclusively,
with blocks of 100 by 50 yards starting from the Plaza Mayor (concept of city center)
with the church, government palace, and commerce buildings forming a court with
arcades all around. The streets were dimensioned according to climate. Other
plazas facing churches were distributed through the town. Dwellings were almost
uniform, aligned right at the edge of the sidewalks, with continuous high walls form-
ing rectangular blocks. Hospitals were to be out-of-town buildings. Buildings
producing trash were to be situated along the rivers or harbor shores. The surround-
ing land was the source for work and production.

**c. Independence and Revolution.** The major urban forms grew to gigantic
size almost without control, suffering from emergency adaptations and new buildings.
Vertical development changed their physical appearance. Towns did not change.
The very same rules of Felipe II were followed. The few new buildings conflict with
the ancient image of the traditional town plazas. Development remained horizontal,
three or four floors at most.
Existing construction did not permit expansion, therefore, what were formerly single family houses were altered to accommodate more people as the population grew. Among the new buildings were railroad stations, movie houses, prefabricated schools, and markets. The few industrial towns that are being built are poorly designed.

Conclusions

Mexico's city structure is defined by two different cultures. A third culture (today's) is forced upon it. Today's culture has inherited a physical arrangement pertinent to the 16th century and has not been able to produce its own as an identifiable type. The dogmatic edicts of Felipe II, good in his time, are not compatible with today's mobile society.

Proposition

City structures should support the functional requirements of the cultures they shelter. Today, Mexico's urban structures ignore the actual trends and functions originated by our age. A comprehensive restructuring is absolutely necessary. This restructuring must be based on predicted social, political, technological, economic, and population growth, and designed to work at maximum efficiency, growing and changing parallel to these trends. Any resultant proposition must overlap in time with the current facilitating change in such a way that the old becomes diffuse and finally melts into the new.
5. **Size.**

   a. **Indian Period.** The size of the Indian city was relatively small (from three to six miles by one to two miles). Their sizes were indicative of the prestige within the tribal structure. The hierarchy of cities according to size did not extend to the country as a whole.

   b. **Spanish Period.** A diversification of town sizes originated according to every one separated potential. The colonial structure consisted of a large trade and consumer center and many small producing towns. Mining towns developed rapidly during the 16th century. Mexico City had 173,000 inhabitants; provincial capitals 20,000 to 50,000; towns had 2000 at most. These sizes fluctuated constantly. Some settlements grew, others didn't. The largest cities had up to 50,000 inhabitants and were concentrated in the central plateau.

   c. **Independence and Revolution.** Characteristic of this period was a growing gap between city and town size due to a steady centralizing movement. Major urban forms became ill-growing settlements (consumer oriented) with increasing services, functions and dimensions, growing horizontally and vertically, without a comprehensive plan. Minor urban forms increased in density but not in size or function. Many of them are depopulating to extinction. By 1926, Mexico was said to have one metropolis, two cities, and many villages and towns (80 per cent).

**Conclusions**

The excessive centralization carried for centuries is damaging the relationship between physical dimensions and volume of occupancy of all urban settlements in Mexico. Densities have grown but town size has remained static. They actually are overcrowded towns on their way to extinction. Major urban centers are growing without restraint and are reaching the upper limits of tolerance. Minor urban centers are losing their young population suddenly, almost at once.

**Proposition**

The growth of major urban forms must be controlled before a limit of tolerance is reached rendering its systems inoperative. Minor urban forms must be motivated to actively grow and relate to others similar to them, thus turning today's narrow concept of city (urban culture) into a broader one in its meaning and dimensions.

a. Indian Period. The location of our present urban emplacements is the main Indian contribution to the current situation. Determinants of location were: geography, religion, economy, and defense.

The more adequate ecological regions according to climate, topography, and vegetation were under the 22nd parallel, in the valleys of the central plateau and in the peninsula of the Yucatan.

Many sites were chosen by priest-enforced superstitious thought, for example, Tenochtitlan, today Mexico City, was founded in a marshland because an eagle devouring a snake was seen there.

Agriculture and hunting required valleys and mountains (main productive activities) for subsistence.

Closed valleys were the most strategic regions for defense. Valley edges and slopes were the preferred sites.

b. Spanish Period. Despite the fact that Felipe II provided a set of conditions for sites, the conquerors managed to find these conditions in the very same ruins of Indian villages and towns. Seaport cities are the main Spanish contribution. The so-called mining colonization of the 16th century was also planted in Indian towns; however, colonization extended beyond the bounds of Indian settlement.

c. Independence and Revolution. Independence created no new towns. The revolutionary agrarian land ownership and colonization policy is an important fact, since it possibly was the last backward step to ruralism in the form of scattered sub-towns. Around main cities, isolated development took place in the form of pseudo-satellites and industrial towns.

Conclusions

Today's inherited sites were decided by the Indian culture and adopted by the Spaniards who also expanded settlement north of the Indian frontier. Agrarian policy of the revolution further scattered sub-towns. The pseudo-satellites and industrial towns are more extensions of the city than new locations. Topography is a directrix of urban settlements.
Proposition

Location is the product of several cultures. Although the location factors for one culture become obsolete in the next, successive investment makes of actual sites a permanent fact.

Today, the trend is toward colonization of unexploited regions which will impose a new national pattern of settlement upon Mexico. This thesis proposes that a new urban structure must be devised to organize and direct orderly development.
7. **Time and Space.**

a. **Indian Period.** Time - Timing in the use of the city is not important since institutional movements are weak. Rhythm is related to the season of the year; for instance, the influence of crop season in the use of ceremonial centers. Space is experienced at pedestrian speed about four miles per hour.

Space - dominant features are the relation of architecture and city design to the concept of the universe as a unit shown in the axis of orientation. Respect for nature, recognizing exterior space as the determinant of the city which is integrated into natural forms by adoption or adaptation. The indians' capacity for abstraction is reflected in the geometric shapes of buildings and cities, composition of pyramids and plazas with a great sense of spatial union.

b. **Spanish Period.** Time - becomes a necessary part of the city organization. There was a daily routine in the use of town spaces (marketing in the morning, farm work during the day). Some movements of goods and people were vehicular (horsepowered). Town-to-town distance was often measured by one day's journey.

Space - the generator of space is the major plaza, surrounded by the taller buildings in the center of town; from there the space narrows into the streets (generated by a gridiron pattern), flowing sometimes into other plazas forming a rhythmical succession of wider public spaces. In the mass of buildings, the patios form a pattern of relief punctures.

c. **Independence and Revolution.** Time - becomes a dominant factor. A failure on the organization of urban spaces to respond to the speed and frequency of use is noted. Time is basic in organized urban societies.

The introduction of machines (motor vehicles) makes commuting easier and faster, linking one urban settlement to another in such a way that they become almost one.

Space - town spaces statically designed ignore the use of vehicles; and when they are forced into the urban spaces, emergency measures are applied--ruining the best of old towns without solving the traffic problems.
Conclusions

Time, movement, and space relationships had importances of different order through the ages. From the timeless Indian city to today's accelerated rhythm, the sense of space has changed and with it the use of urban spaces at higher frequency. Time/space today renders obsolete the town design of 16th century.

Proposition

A time and space relationship must be coordinated to fit present and future trends. Man can travel through space at rates of speed varying from four miles per hour as a pedestrian to 600 miles per hour by airplane. While traveling, man experiences different degrees of intimacy and sense of relation to volumes, according to his speed. Also, the routine activities occurring through the 24-hour use of the town with greater intensity by the scheduled man of today are facts to which town organization should be designed. This design should not ignore possibly increasing or decreasing changes in the time/space relationship that could alter the resultant project.
8. Aesthetics.

a. Indian Age: this is the one force the indians mastered: the proportions and scale of exterior spaces within the city, very properly dimensioned composition, and organic integration to the site, all of this made with balance, clarity, and contrast. The expressive potential of line, surface, volume, and space is well exploited. For instance, the line in the highlands is straight and simple, forming rectangles and closed shapes; in the Mayan zone, it becomes curved, soft, and voluptuous, reflecting environmental influences.

b. Spanish Period: The city is only rudimentarily integrated into the landscape. The aesthetic value of city spaces and of buildings (partitions) retained a homogeneity due to gridiron pattern and regulations, in spite of the variation of architectural styles beginning with Gothic and Moresque to Plateresque in the first half of the 16th century to severe Herrerian in the 17th; Baroque, Churrigresque, and ultra-Baroque in the 17th; to Neo-Classic in the late 18th and early 19th. The town retained scale and warmth during this romantic age in its environment.

c. Independence and Revolution. Aesthetic needs at the scale of the city were forgotten facts at the beginning of this period. The shift of architectural styles continued through a search for identity (Neo-Classic, Art Noveau, Modern). A concern for understanding today's aesthetic values by the second quarter of our century originated heterogeneous tendencies (some might be called modern) intending to supply this need for beautification. An existing atavistic regionalism with its roots in the indian culture ignored the emergence of the nation, this together with a colonial romanticism begat aesthetic dangers.

The latest achievements, however, show a trend toward a more realistic interpretation of modern Mexican culture.

Conclusions

The different aesthetic expressions are worth observing since they explain the taste of past, present, and future generations. One fact is common: heterogeneity. It must not be ignored that the latest architecture is a response to the current urban mass culture, based on an equalizing trend communicated by mass media.
Proposition

Aesthetic forces as a source of city formation cannot be confined to one proposal. The approach must be multiple and grounded on the irreversible trend toward mass society, without ignoring the lessons of the past or present original contributions.

Today's problem is an ambiguous one: heterogeneity vs. homogeneity; freedom vs. order; liberty vs. system. Only by approaching the problem from both extremes can proper expression be achieved. Individual and mass society must be reconciled into one town design.

The definitive answer is in the hands of future generations.
GRAPHIC SUMMARY

A. Indian Period
   Theotihuacan

B. Spanish Period
   Plaza Mayor in Mexico City Zocalo

C. Independence
   Large City – Gigantic Growth
   Industrial Town – Poorly Designed

Mexico as a synthesis of three cultures
   Plaza of the Three Cultures Tlaltelolco.
THEORETICAL APPROACH
Chapter III

Introduction

The purpose of this section is to structure a comprehensive framework within which the proposals can be consistently led toward a clearly prescribed design. By structuring the proposals, a design may be achieved in which the state of town affairs that actually are will evolve toward the state of affairs that should be.
Theoretical Approach

Approach

The producers of the artificial physical environment are:

A. Nature Which are interrelationships requiring a molding
  of physical elements arranged in such a way that
  nature, man, and society relationships can co-
  exist providing positive answers to the material
  and spiritual needs of human beings.

B. Man

C. Society

Outline of Proposition

The producers are: A Nature Producing: D Artificial physical

B Man

C Society

D. Artificial Physical Environment

E Forces at work: Population
  Economy
  Technology
  Culture

F Urban condition: Urban Form
  Human Needs and city func-
  tions

G City functions: City Systems
  Supporting Functions
  Linkages
Producers: A. Nature.

Nature acts as a producer of the artificially made physical environment by providing the primary structure in which it exists: water, air, land— as elements, climatological and geographic conditions (weather, topography, subsoil), and natural resources permitting agriculture and minerology; all of these combine in a spatial land form, in which the total urban complex lies.

Since nature is a relative moldable fact in man's actions, it is important to assess attitudes applicable to natural inputs. Three attitudes are found: that proclaiming mastery over nature (the megastructurists), that advising harmony with nature (the realists), and that accepting subjugation to nature (the romantics).

The problem of attitudes concerning nature stems from the fact that natural resources are constant, but their exploitation forced by increasing needs is an irreversible trend. The breaking point if any is far away in the future, but any consistent city design must formulate its own criteria and belief.

It is believed that a total mastery over nature is questionable even in those cases in which technology might provide the means; a biotic balance of natural resources and man-made environment must exist, the basic question is not so much whether mastery over nature is possible, but rather to decide what the fundamental alterations to be made in the natural inputs should be in order to achieve a harmonic balance. Harmony with nature is one of the facts supported in this thesis. Subjugation to nature is a negativist position, endangering human existence in the face of forthcoming problems (overpopulation, for example).

Harmony with nature: topography is perhaps the strongest natural force shaping Mexican urban structure and settlement form; harmony with the topographic limitant must be followed, channeling future developments through the corridors of its mountains and plateaus.
"In order to study the city, one should not start from the land or its geographic and economic conditions, but from the human being in whom the spirit of creativity is manifest" — Marcel Poete*

Man is the molder of all needs and actions that a city should satisfy. Physically, man is more than a mere container of biological, sensorial, perceptual, and emotional needs; spiritually, the mean of man goes further than the values and goals of the society to which he belongs, for he is the only unit of humanity.

The instrumental end of architecture is to shelter man in the appropriate physical environment. The city is here considered as an enlarged piece of architecture. Man contains the needs and architecture contains man.

**Man-Contained Needs:** as an organic unit, man is born, grows, reproduces, maintains himself along his life, and dies. As a sensorial unit, he achieves feelings in his psyche — it awakens emotions and by so doing is stimulated to respond, evoking answers at the same time.

These processes of man are the fundamentals of his needs and functions, carried on in architectural spaces measured upon him and his tools.

**Architecturally-Contained Man:** the actions of man and his perceptions evoking his emotions call for the appropriate environment — protected, enclosed, or exposed, integrated or segregated, unified or not, spaces are molded according to man's actions. This is the initial purpose of the shelter. But the purpose of man's existence is of a higher level than the mere material fitness and satisfaction of basic needs; in his intellectual pursuits, man always seeks higher goals. This makes of him a self-improving product, providing the most important inputs for the elaboration of the artificial environment.

The environment of today's Mexican towns lacks the quality of response to the Mexican man up-grading needs and goals of all orders. The satisfaction of his mixed spiritual and physical needs requires understanding of a culturally and intellectually enhanced response.

The design of future town environment must evoke such response. Only when this higher level is achieved, shall man accept his city.

"To conceive a city means to think of man--to know his needs, possibilities, and evolution--and only the man himself can insure the evolution of his cities".

- Georges Candilis*

Producers. C. Society.

Society is a self-regulating device, balancing the habitat with the man-made environment.

The Mexican Society: as a social system is the dynamic interplay of the relationships of man in his social groups, and his social systems, patterning behavior and interacting through shared expectations, ideas, and values organized through the functions of its institutions.

As a system, the Mexican society is experiencing an integrative process affecting all of its components. This process has reached an irreversible status in its four social dimensions: cultural, normative, participative, and functional. This apparent trend leads to the formation of a "mass society" (integral and standardized) as its ultimate consequence.

The Mexican town has been regarded as the shelter of a rural community on its way to oblivion by means of integration into the broader society. The aspects of this change affects the sub-systems, structure, and processes of the rural community; the consequence is an increasing dependence on the related systems, structure, and processes of the larger society that are performing more adequately the major social functions of economy (production-distribution-consumption), socialization, (teaching of behavior), social participation (interaction), social control (government), and mutual support (among social units).

The rural conditions have become obsolete for the type of society the town shelters. It is demanding urban conditions.

Cultural patterns of behavior have increasingly shifted from rural to urban. The patterns of behavior of a community are defined as vertical and horizontal. The horizontal pattern is based on the locally relevant interaction of the community subsystems among themselves. These are the ties of town systems to each other. The horizontal pattern is relinquishing its power and functions to the vertical systems; the town-community cohesiveness and autonomy gives way in favor of an ever-enlarging vertical pattern, that is, increasing links of local systems to nationwide systems working as a whole.
Urbanization and industrialization are some of the aspects to be faced under this change.

The Causes of Change: the town is subject to inner causes of change. They are: 1) Imbalance of population, changes in number and composition resulting in institutional adjustments, for instance in work. 2) Universal scarcity situations, rising living standards, imbalance of political and economic power. 3) Dialectic raised by changing expectations. The pressures from the exterior come mainly from the capacity of the broader social systems to solve needs.

The town must face the following aspects of change if it is to become a city.

1. Division of labor and specialization.
2. Diversification of interest and associations.
3. Systematic relationship to the broader society.
4. Rational systematization and organization.
5. Transfer of functions to government.
6. Urbanization.
7. Change of values (from production to consumption).*

These aspects will be reached through processes of planned:

Organization: to achieve organic interdependability of towns.
Industrialization: diversification of employment, standardization.
Urbanization: adoption of city environment and correspondent behavior.

The thought of revitalizing ruralism is atavistic, so is the idea of preserving towns as refuges for romantic life. The process of urbanization accompanies the irreversible trend of integration of the Mexican society. The end of the rural community must be recognized in favor of an emerging urban society; the actual conditions of Mexico demand that the urban environment must be created in a larger number of settlements. If the town is to survive and evolve to the urban condition, it must be fully integrated to the broader society in the search for quality in response to its social needs.

The response of the major social functions is made as suggested below:

<table>
<thead>
<tr>
<th>Systems</th>
<th>Functions</th>
<th>City Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) The Family</td>
<td>Basic &quot;Kin&quot; Unit</td>
<td>Dwelling</td>
</tr>
<tr>
<td>2) The Economy</td>
<td>Work (Industry)</td>
<td>Factory Zone</td>
</tr>
<tr>
<td></td>
<td>distribution</td>
<td>Shopping Center</td>
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<tr>
<td></td>
<td>consumption</td>
<td></td>
</tr>
<tr>
<td>3) The Government</td>
<td>Social Control</td>
<td>Civic Center</td>
</tr>
<tr>
<td>4) Religion</td>
<td>Socialization</td>
<td>Religious Center</td>
</tr>
<tr>
<td>5) Education</td>
<td>Socialization</td>
<td>University Campus</td>
</tr>
<tr>
<td>6) Health and Welfare</td>
<td>Mutual Support</td>
<td>Hospital Center</td>
</tr>
<tr>
<td>7) Recreation</td>
<td>Social Participation</td>
<td>Cultural Center</td>
</tr>
</tbody>
</table>

The need to shelter these systems gives origin to the functions to be performed by the town as the encloser of all of them and of their relationships, and to every architectural structure sheltering a unit of these institutions or a combination of them; This is the Task of the Town Defined as a Container of Social Systems.

"L'urbanisme est exactement l'expression de la vitalité d'une société. Dans le monde entier

- Le Corbusier*

*Poesie Sur Alger, p. 11
Produced: Artificial Physical Environment

The artificial urban environment consists of:

a) The embodiment of man's needs and values into the proper man-measured spaces.

b) The harmonious embodiment of natural inputs as related to man-made inputs.

c) The embodiment of social systems into a formal-functional division of spatial relationships (by architectural means).

The attempt of this thesis is to find a comprehensive planning concept able to control migration, and to find how the physical environment should be molded or remolded. Then, according to such a design system, make of the town an efficient human settlement. Both issues are closely related.

The solution rests in the proper embodiment of the whole nation as a social system, and of the town as integral part of this system, all made according to the country's human needs and values and appropriate to the natural aspects of the country.

Migration is in essence the search for urban conditions. Today these conditions are the privilege of a very few settlements.

It is the proposal of this thesis that urban conditions should be proliferated in a greater number of settlements. This must be done with careful regard to the society inhabiting those towns whose response it is believed will be stimulated not so much by the presentation of a new town image, but by a plan for comprehensive, guided development of the forces at work.
Forces at Work:

"The truth is that we are situated in an epoch of transition and we don't have yet a full consciousness nor full control of recently unchained forces."

- Teilhard du Chardin*

Chardin's observation becomes less valid from the moment we begin to define these forces. The control of such forces is the task of our culture. Once this task is accomplished, another cultural epoch shall follow.

It is felt that these forces are bound to form the urban structure of Mexico as well as the urban form of every one of the settlements to be designed during our epoch in a span of time of twenty to thirty years.

A) Population dimension changes
B) Economy
C) Technology
D) Culture.

All of this resulting in: Urban Forms of our Times.

*Ensayos de la Razon y la Imaginacion, p. 77.
A) FORCES AT WORK: POPULATION DIMENSION CHANGES.

The sharp dimensional change of population is the most important fact to take into account. The trend toward population explosion carries with it all the potential of new developments since it is imperative to adopt great solutions to solve this problem.

The percentage of increase of population is 3.8 per cent, one of the highest in the world. This means population will double in the next 20 years, again in the next ten, then again in five, if the trend is continuous. The classification of Latin America as decreasing mortality and increasing birth rate justifies the forecasts.

Although the solution of the population explosion does not rest only in the hands of planners and architects, the prudent attitude even in the best case is that Mexico must without delay enable a great number of settlements to meet the demand.

Population Movement:
Here is where migration considered as a dynamic phenomenon imperils the whole country, since people are moving to the few cities in large scale. Mexico City, for instance, has a 4.3 per cent population increase, most of which (3/4) is due to migration. The big cities clamor for a reduction in the rate of in-migration.

*Censo Nacional 1960, "Resumen", p. 802. (This graph is repeated on p. 65).
in order to give themselves time to adopt a system more adequate to their growth rates.

In addition, a new concept must be evolved to enable the towns to retain their population.

Mobility of population cannot be forcibly constrained by laws or regulations even in dictatorships. It is neither a matter of enforcing constraint nor of ignoring the movement, but of properly directing it by lessening pressures upon the city and revitalizing a series of settlements effecting their transformation into cities in a directed and manageable urbanization process.
B. Forces at Work: Economy.

The process of production-distribution-consumption, at a national scale is becoming one integrated unit. The cities have a good balance of production of secondary goods and transformation of raw materials, the secondary institutions of commerce performing distribution services is also a city privilege, but the city is principally a great center of consumption for what is produced in the towns.

The role of towns as economic units is mainly production of raw material. A more complex role on the part of the town is necessary and it may begin by implanting processing industries, thus making more rational the process of distribution. (As it is now, raw material goes to the city, is processed, and then sent back to the town). Also, the buying power of the town inhabitant must be boosted, in this way raising living standards and creating a wider market of consumers.

Facts in favor of an extended economy:

a) The total exploitation of agricultural land is almost complete.

b) Mechanization of agriculture will increase unemployment.

c) The solution to rural poverty lies in a balance of labor force with job opportunities and fair distribution of wages.

The occupational change shall relocate population creating poles of growth.

"Man always gathers around his instruments of work". - LeCorbusier.**

*United Nations: "Problemas Socio-Economico de la Integracion Urbana," p. 11. (This graphic is repeated on p. 65).

** Mensaje a los Estudiantes de Arquitectura, p. 67.
This is the reason why economy must be directed first in the achievement of better conditions.

If a complete development is to be reached, then roles of producing, processing, distributing, and consuming must be enforced in carefully selected towns, forming groups, in this way creating poles of growth.

This solution to rural poverty based on equilibrizing manpower with job opportunities requires a diversification of labor, imperative to restrengthening national power in advance of its actual and forthcoming problems.

These suggested poles of growth, formed by several selected towns, must encourage interchange amongst themselves, thus forming a single economic entity, working in a "state of organic solidarity" which must exist within the nation as a whole, in which each formed urban unit will become supporting and dependent.

The process of economy so viewed undoubtedly will reshape our towns by giving them power and by demanding optimum physical conditions in the efficiency of the functions derived from new roles.
C. Forces at Work: Technology.

Technology as the application of scientific methods to produce new tools, has brought with its advancements a process of mechanization to which every man and the nation is adapting; struggling throughout in an effort to learn how best to make use of these new tools.

Technology with its entwined aspects of mechanization and industrialization has freed a great potentiality whose possibilities, and dangers as well, are the exclusive privilege of this generation. Since this generation must decide the criteria to approach technology, these criteria must be assessed now.

"With our technology we can do many complicated things very easily but ...... one thing we can not do with our technology is to decide the important things to do".

--Paul Jacques Grillo*

Today's technology is no longer a limiting factor. The decisions to be made find the following situation in Mexico: the country is experiencing a late industrial revolution similar to the one the U.S.A. and Europe went through in the last century. Major cities have developed industrial poles permitting them to grow.

Industrialization has the same good and bad effects everywhere. Good effects are, for example, the provision of unlimited job sources; bad effects result mainly from ignorance in the use of industrialization; for instance, visual ugliness, air and water pollution, and traffic congestion. Observing the experiences of the U.S.A. and Europe, Mexico must look forward in order to avoid the misuse of technology.

A retarded but indispensable industrialization is occurring and will continue through the next decade and beyond, and will occur in the town dealt with in this thesis. The next steps should be anticipated. First, an increasing use of machinery at work which equals industrialization. Second, an increasing construction of networks likely to give definitive form to the country. These networks of communication and transport will provide man-made conditions: land, climate, and light. The definitive structure of the nation is what is at stake.

*Introduction to a Design Problem, Rice University, December 1965.
Technological advancement seems to give us mastery over all forces at work, but a very careful use of technology is necessary in order to avoid our mechanical idols from ruining our criteria, creativity, and the life of those future cities by blinding positive thinking with apparently easy solutions or by simply polluting air and water, or finally by giving to supporting systems, such as transportation networks, priority of design decisions as is happening in post industrial countries.

City designers and architects are the only ones standing in the middle ground between pure technology and humanism. It is essential that the advance of science be matched by an advance in creativity.

"The more powerful scientific energy becomes, the stronger man's consciousness of his own existence should become."

—Kenzo Tange*

The time to decide without restrictions has come. Utopian projects are not unbuildable today thanks to advanced technology. Society in the face of great problems is finding justification and legitimizing the ideas of new cities that were fantasies only yesterday.

C. Forces at Work: Culture.

Culture is defined here as the potential of the country based on its concept of existence, skills, arts, instruments, and institutions.

Culture is the force that includes all others. What is to be examined throughout culture is the power of Mexico to solve: "El Problema del Campo" by proliferation of urban conditions in the build-up of cities, for the city is the synthesis of all cultural expression.

Concept: Mexico is a democracy and the postulates of freedom and social justice of the republic create the necessary framework for progress.

Skills: The ability to achieve solutions for "El Problema del Campo" and build a new urban environment is there, but the final solution will require a restrengthening of national skills and the prior solution of supporting conditions before the state of creation can be reached.

Arts: The creation of a new environment must be pre-thought, pre-conceived, preplanned, and experimentally designed until the degree of accuracy between propositions and possibilities coincides. We must start designing now in order to get ready for the future when the forces will converge in their directions, when the time to apply the design to the reality arrives.

Instruments: The previously examined forces at work are the instruments to be manipulated by the nation in order to create the new environment required by the Mexican society. As mentioned, the nation does not yet have full instrumental command of the forces, but it is struggling toward this achievement.

Institutions: The institutions of Mexican society are the self-regulating devices of its needs and achievements. The government as the control of all other institutions is showing a great concern for "El Problema
The universities, the systems of economy, health, and welfare, and others, are also getting involved in this problem.

Belief in the possibility of future application of the concepts stated here is supported by the positive attitude of the concern expressed by professional and political groups.

Cultural forces must be organized and directed into a common purpose, that of solving "El Problema del Campo". We must start now by solving with limited conditions, but the ideas must not be limited—the ideas must fly higher in the region of unlimited possibilities.

"Freedom of imagination characterizes all other freedoms of the spirit".

- Frei Otto*

Today, it is demanded from the Mexican architects the creation of a world designed in the proper measure of the country's aspirations, rich and stimulating, as Paul Jacques Grillo said:

"The art of living shall replace the struggle for survival".**


**Paul Jacques Grillo, at Rice University, December 1965, Introduction to Design Problem.
DESIGN APPROACH
Chapter IV

Design Approach

The purpose of this section is to arrive at a graphic expression of the proposals, with the intention of giving ideogramic form to the concept as a final tool of the design process.
Design Approach

The Urban Condition

The urban condition is a quality of the physical organization of a settlement subservient in its components to the social needs of its population.

Migration is in essence a blind search for urban conditions.

The solution is an extensive proliferation of urban conditions in a greater number of settlements.

This proliferation of urban conditions will give command of all forces at work directed to the objective of progress, enriching once more the nation by steady organizational trends and the individual life by means of a gradual cultural integration in his own territory.

Given the scarce number of urbanized settlements in Mexico today, the nation faces a great problem made every day more acute by the increasing population. The solution must not be delayed.

A total rational organization of the urban structure is required, such organization must obey the integrative process of the national society in its aspects: normative, participative, cultural, and functional.

This process of integration must be consistent, and must start by broadening the concept of community locality by extending the idea of one nucleus equal to one town, to the concept of one pole of growth equal to one city.

The poles of growth are the layout structure from which the city arises. The poles of growth are made out of several existing nuclei (towns) acting in the same manner as molecules, in which similar but not identical nuclei depend upon each other for the existence of the unit.

This unit is an urban form based on the organic solidarity of its components. This is indeed an approach to "Molecular City" as a possible solution for the "Problema del Campo".

Parallel to the achievement of modern city images must be the achievement of urban systems and behavioral aspects. Thus the image of the city shall be justified by the concept of the city.
The concept of the city is herein based on a simultaneous definition:

The City is: Man; a man-made land, it is the physiological structure providing protection to the biological needs. Here the perceptional and psychological mechanisms of man receive frequent stimulative inputs.

Society; an envelope of complete social systems, providing for the major social functions, based mainly on secondary institutions in which the members (inhabitants) develop a segmental, regulated interaction, highly structured.

Nature; a synthesis of man-made land and nature, with aspects of their synthesis requiring biotic balance and adjustment between resources and requirements.

Economy; a setting for the processes of production, distribution, and consumption, mainly a market, industrial activities and supporting services as its magnets of energy.

Technology; a concentrated network, man-made and man-maintained, requiring a comprehensive application of applied science for its maintenance. A pole attracting all technological achievements.

The City is in itself an instrument.

As a planning concept the city is: a structure of functions and a shelter for activity systems, integrated within the spatial architectural order. This integration is achieved by a synthesis, merging the image (exterior appearance) with the internal concept. The concept of the city is thus stated through the diverse disciplines of man listed above. It is the intangible, inner reason for its being.

The direction toward urbanization can be achieved by inducing a gradual evolution of rural towns toward urban environment—evolution dictated through the needs of Mexican society and induced by reducing indexes of differentiation.
Indexes of Differentiation

Function: Production
Primary Institutions: Rural
Occupation: Totally of farmers and their families. Few representatives of several non-agricultural pursuits.

Environment: Predominance of nature over socio-cultural environment, direct relationship to nature.

Community Size: Open farms or small communities, "Agrarianism" and size are negatively correlated

Heterogeneity-Homogeneity: Homogeneous in racial and psycho-social traits. Negatively correlated with heterogeneity.

Density of Population: In the same county at the same time, density is lower than U.C. density and rurality are negatively correlated.

Social Differentiation and Stratification: Rural differentiations and stratifications are less than urban ones.

Mobility: Territorial, occupational, and other forms of mobility are comparatively less intense. Current migration carries individuals to the city.

Urban Condition
Consumption
Secondary Institutions: Urban
Occupation: Totality of people engaged mainly in manufacturing, commerce, government, supporting services.

Environment: Greater isolation from nature. Predominance of man-made environment over natural.

Community Size: As a rule in the same county at the same time, size of urban community is larger. "Urbanization" and size positively correlated.

Heterogeneity: More Heterogeneous than rural communities. Urbanity and heterogeneity are positively correlated.

Density of Population: Greater than rural areas, urbanity and density are positively correlated.

Social Differentiation and Stratification: Differentiation and stratification are positively correlated with urbanity.

Mobility: More intense, urbanity and mobility are positively correlated. Trends of migration only in periods of crisis.

- Taylor and Jones.*

*Rural Community and Urbanized Society, p. 50.
The proposed concept of molecular city involves an urban form inducing change; therefore, its structures must be dynamic and subject to modifications according to successive stages.

<table>
<thead>
<tr>
<th>Stages of change:</th>
<th>Physical form:</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1. Initial rural condition.</td>
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<tr>
<td>Cooperation</td>
<td>2.</td>
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<tr>
<td>Adaptation</td>
<td>3.</td>
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<tr>
<td>Assimilation</td>
<td>4.</td>
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<tr>
<td>Amalgamation</td>
<td>5.</td>
</tr>
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<td></td>
<td>6. Final Molecular City.</td>
</tr>
</tbody>
</table>

This association of several towns will provide the necessary initial population and enough power for growth; power that they would lack individually.

The rural community will merge, symbolically speaking, with the urban cultural condition. Molecular city attempts to provide the adequate setting for this process in which the rural-urban differences will diminish according to qualitative cultural vectors rather than quantitative aspects. However, since quantity also plays a role (population, density, construction), it must also be manipulated, but only in second place. Patterns of function and systems are first, then densities.

**Pattern of change:**
- **Diversification** - in the agricultural village, production and consumption are closely integrated. This primary relationship becomes inefficient and inflexible in the attainment of individual and group needs thus leading to the need for many occupations instead of one.
- **Adaptation** - shall be the process during which individuals and town systems accept their newly related partners from the other towns, accepting thus interaction as a basic step toward molecular formation.
- **Integration** - specialization is of little value without the integration of specialized functions into an enlarging system, that of molecular city.
Ecological Process in the Rise of Urban Conditions:

The arranged relationship of several towns and their resources inducing dependence is a model of interaction similar to city functions applied to a score of towns resting in the idea of "organic solidarity". Organic solidarity effects the interdependence required to perform their tasks as settlements, making of them a single unit.

Through the processes of:

a) Centralization of secondary institutions lodged in specific architectural units as trade, industry, education, recreation, and government. Converting into a whole, villages and towns.

b) Concentration of people and activities within the boundaries of the molecular system. This means grouping of architectural units, now scattered through the countryside in the form of farms and small ranches, inside the developing city form.

c) Specialization of functions. The specific architectural units with their specialized functions are located separately in each town in such a way that for the function of one, the other is necessary, and vice-versa.

Molecular City

Molecular City is the proposition of this thesis illustrated in the design. Molecular City is a model stimulating optimum conditions in which rural-urban differences will diminish.

It is a place where division of labor and specialization will be enforced and town isolation minimized.

Molecular City is based on concepts of organic solidarity and mutual dependability created by a rational share of functions.

This mutual interdependence for the need-solving process will enhance communication and gradually create the city atmosphere out of social, economic, and technological conditions. The diversification and allocation of activities will make the settlement acquire an activity system similar to the one of the city.

The quality of a city is found in the activity of its systems, in the functional display. Molecular City is not an enlarged farm or an organization of farms.
The allocation of facilities, population, functions, and power of development is expected to give to it the necessary quality to reattract an errant society, the migrant population.

Molecular developments embodied in a total urban structure will form a continuum able to control migration, avoiding the dangers of excessive centralization.

Molecular City will develop mainly from existing towns thus providing the link from the present to a future when the total urban structure is formed.

Molecular Settlements start as the smallest qualitative units able to hold population. Just as the concept of a building as a free-standing structure is outdated, so the concept of town as an isolated, self-sufficient settlement is today an obsolete idea.

Once molecular developments are started, Mexico will have at hand two ways to solve migration:

1) The city will have time to reorganize, adopting new systems such as larger modules of growth.
2) The towns converted into stronger formations as proposed will also furnish shelter for the population.

These shelters of living conditions should not be only responding to the bare necessities for survival, but should be providing the lasting benefit of a fulfilling life.

Rational, instantly-produced communities and naturally evolved ones are not in conflict with the layout framework of the Molecular City.

The molecular formation is not a satellite nor a self-sufficient city. It is part of a forming continuum, always related to larger settlements.

The larger city and the Molecular City are not competing concepts. They are complements of one another. It is felt that this complementary condition is indispensable to the solution of Mexican urban structure.

The objective is an urban centralization, but made in a poly-nuclear scheme throughout the nation, different from today's single-nucleus centralization.
The molecular concept is a tool to achieve an end. It is not an end in itself. There is a distinction between ends and means.

The Ends: relocation of migrant population.
The Means: molecular formations.

The commitment of an idea produces a resultant. A molecular city is the resultant of this thesis, proposed as one possible solution for the migratory problem.

The demonstration design is a tridimensional graphic explanation of the concept, of the common systems required by this concept, and of the structure required to support the processes of these systems. This hypothesis is applied to an actual example in the State of Jalisco, Mexico.

The demonstration design is not a prototype of form since the example has particular characteristics and in every case these characteristics may change. There are always the variables of initial population, number of nuclei, specific industrial potential, and natural topographical inputs.

The resultant design images can be many, but the proposed idea is one and is constant. The demonstration design is a sample of one interpretation of the idea. There can be others.

The degree to which the divergent terms, Utopia and Reality, can be integrally resolved is measured by the practicability of the solution. In this case, the emphasis is placed on the practical feasibility of the system, but the three stages suggested are aimed at satisfying the idealistic aspects described at the beginning of this thesis (page 8).

The design demonstration implies also a compromise between the particular and general conditions of the idea, but not a compromise of the molecular principle itself.

The unique characteristics of any example must surely result in diverse forms for each design instance. The molecular idea controls the particularities of each special case. It permits possible diverse interpretations by different designers utilizing the same principle.
Molecular City:

The Molecular City places in its various original nuclei, specific common architectural units whose tasks are necessary to the whole. Every nucleus is indispensable to the other. This means shared systems.

A network of communication makes possible the sharing of activity systems providing the necessary nucleus-to-nucleus mobility. The network of transport is used by both public and private vehicles, but there is an interior system connected to the national network as a whole.

Two continuums form the city; one of dynamic circulation (servant), the other of static functions (served).

The continuum of mobility (distributive function) is patterned by its lines of maximum efficiency.

The continuum of relative rest is organized by the relationship of its social systems, with freedom for arrangement. Its pattern is one of the man, not of the vehicle.

A tridimensional order, intangible in form, unifies both continuums and provides a system to relate structurally (topology). Diffuse units, such as dwellings, are placed freely within the molecular formation.

Molecular centers must be composed with natural features in a harmonic balance. Growth initially must be directed through locating the new specific units in the desired direction out of the old town, and by laying the servant structure (systems of circulation, sewerage, water installations, and the like), in the specified zones.

Once the molecular center reaches a stage of amalgamation among the initial towns, its concept ceases to exist.
Urban Form

The urban form is the recipient of social institutions whose relationships and functions combined give meaning and shape to the city.

According to Louis Kahn, spaces in relation to their functions are "served" and "servant", making an analogy to the classification of the Ekistics Group: "served" are the shelters; and the networks "servant".

The main functions of the city, served shelters of its social institutions are:

<table>
<thead>
<tr>
<th>Social Systems</th>
<th>Spatial Units (shelters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The Family</td>
<td>the house, neighborhood</td>
</tr>
<tr>
<td></td>
<td>housing zone</td>
</tr>
<tr>
<td>2. Economy</td>
<td>factory, farm, industrial zone</td>
</tr>
<tr>
<td>(Production)</td>
<td>market, shopping center, commercial zone</td>
</tr>
<tr>
<td>(Distribution)</td>
<td>made in diffuse units of other systems</td>
</tr>
<tr>
<td>(Consumption)</td>
<td></td>
</tr>
<tr>
<td>3. Social Control</td>
<td>civic center, government palace, administrative</td>
</tr>
<tr>
<td></td>
<td>buildings</td>
</tr>
<tr>
<td>4. Socialization</td>
<td>university campus, colleges, schools, cathedral,</td>
</tr>
<tr>
<td></td>
<td>churches, religious center</td>
</tr>
<tr>
<td>5. Social Participation</td>
<td>cultural centers, theatres, stadiums</td>
</tr>
<tr>
<td></td>
<td>sport centers, recreational areas</td>
</tr>
<tr>
<td>6. Social Support</td>
<td>medical centers, hospitals, clinics, asylums,</td>
</tr>
<tr>
<td></td>
<td>charity buildings</td>
</tr>
</tbody>
</table>

The same social systems can be listed according to their functions:

1. The Family: kin association, unit of consumption
2. Economy: maintenance association, work
3. Social control: directive, administrative association, government
4. Socialization: teaching, learning association, education and religion
5. Social participation: cultural interaction, recreation
Diagram of Systems and Urban Form:

The urban form combines within its context and shapes sub-forms that must be integrated in a single composition.

Integration is by definition the mutual acceptance and adaptation of the parts, not necessarily a categorical absorption of the parts into a single shape.

The supporting functions of the city servants, or networks, are:

**Primary Functions**

1) Connecting functions - the task is to establish a linkage between the main systems. They are divided according to:

   Media definition
   a) Air vehicular - airplane, helicopter
   b) Water - ship, boat
   c) Land - railroad - train, subway
          highway - car, bus, truck

   Qualitative definition
   a) Private, freedom of direction
   b) Public, efficiency of mass transportation.

The most important are those of roads and rail, since the actual patterns of cities obey these almost exclusively.

The connections of a city can be: exterior - to and from the city
interior - within the city,
depending upon the location of desired targets.

2) Communications media: Television, telephone, telegraph, teletype, although they do not need spatial organization, their influence is important in city pattern since they provide communication over long distances allowing dispersal of architectural units and substituting face-to-face contacts for all functional purposes except that of social participation.

*This sketch is repeated on page 82.*
Secondary Functions

Systems of lighting, electrical power, water supply, sewerage and disposal, and gas lines support the functions of the main systems by providing the necessary energy for maintenance.

The processes and relationships of both main and supporting functions interacting within the spatial container of the city, as well as of any architectural container, are subject to the following alternatives:

- Integrated
- Segregated
- United
- Separated
- Linked

All of these alternatives of relationship occur within the context of the city structure, in series of combinations.

The city structure is today formed by secondary networks. The resulting patterns of composition appear to be like this:

*Villagran Garcia, Teoria de la Arquitectura, p. 35. (These graphics are repeated on p. 77.)
It is believed that a new formation of city pattern is required today; a pattern not so much linked to the street system as its only determinant, but to the systems of social relationships within a multi-dimensional structure (depth, width, length, and time), more in harmony with all needs and natural or artificial features rather than to only a layout of blocks.

The design of an urban form, container of systematic functional relationships cannot be totally synthesized in plans, sections, sketches, perspectives, or even three-dimensional models. A complete expression can only be expressed through an exhaustive three-dimensional simulation of possible experiences of a multitude of observers in motion.

From the point of view of the conceptual expression of this thesis, the design is only one interpretation of the many possibilities and alternatives of city image supported by this concept, that of a minor urban unit with the quality of urban conditions.
DESIGN APPROACH GRAPHIC SYNTHESIS
ESSENTIAL CONCEPTS
POPULATION DISTRIBUTION

LONG-NORMAL

Belgium
Italy
U.S.A.
Poland
Finland
W. Germany
Switzerland

City size in thousands

MEXICO
Colonial Structure
Excessive Centralization

Curve

Guadalajara and Monterrey

City size in thousands
POSSIBLE CONVERSIONS TO URBAN CONDITION MUST BE PLANNED
SEARCH FOR THE URBAN CONDITION

LEAVING INADEQUATE SHELTER

WITHOUT CHOICE BUT THE LARGE CITY

PROPOSITION: TO OFFER AN ALTERNATIVE BY INDUCING THE TOWN INTO THE URBAN CONDITION.
THE CONCEPT OF CITY MUST BE EXPANDED TO AN ENLARGED COMPLEX OF TOWNS;

REINFORCING EACH OTHER

A LINKED SOLIDARITY AMONG TOWNS BY INDUCED DEPENDABILITY OF FUNCTIONS SHALL IMPULSE A NATURAL EVOLUTION OF THE VARIOUS NUCLEI AS A WHOLE INTO THE URBAN CONDITION
FORMATION PROCESS

INITIAL STAGE

centralization (1)

clusterization (2)

organization (3)

amalgamation (4)

FINAL STAGE: INTEGRAL URBAN STRUCTURE
Villages depopulating

PROPOSED URBANIZATION

City ill growth

Town

Jalisco actual state of centralization

Clusterization

Molecular structure

APPROACH SUMMARY

Clusterization

Villages

One-Way Migration

Proposed alternative

Town mutual reinforcement
MAIN MOLECULAR COMPONENTS
STATE OF JALISCO

(Refer to page 84)
MOLECULAR CITY IS BASED ON CONCEPTS OF:

1) FUNCTIONAL INTERDEPENDENCE OF THE MULTI-NUCLEI UNIT.

INTERDEPENDENCE MEANS SHARE OF SYSTEMS BY ALL NUCLEI
MADE POSSIBLE THROUGH EFFECTIVE COMMUNICATION.

THE SHARE OF SYSTEMS PROVIDE THE REASON FOR INTERACTION

SOLIDARITY

COMMUNICATION THE MEANS
2) CREATION OF POLES OF GROWTH AS STRUCTURES OF CHANGE INTO THE URBAN CONDITION.

POLE OF GROWTH

1. The molecule is the unit. Its initial nuclei are only parts.

2. As a unit, the molecule is linked to all the nation. It is the end terminal of the national vertical system.

3. Solidarity of functions among its components.

4. Interdependence of activities.

5. Starts as the smallest qualitative settlement able to provide urban conditions. It is a model of city functions, not a model of city image.
MOLECULAR CITY:  As a transitional structure shall convert itself from old to new.

We must design for the future, providing the proper link to the future.

ABSORPTION

MOLECULAR FORMATIONS ARE THE APPLICATION OF THE PROPOSED SYSTEM. THEY ARE NOT FINISHED FORMS; THEIR CONCEPT IS VALID ONLY FOR THE FORMATIVE STAGES. THE EMPHASIS IS UPON EVOLUTION OF CONDITIONS, NOT IN THE DESIGN OF ARBITRARILY STATED CITY IMAGES. WHEN THE PROCESSES CREATING THE URBAN CONDITION ARE COMPLETED, THE CONCEPT WILL BECOME OBSOLETE.

THE PROCESS
SHARED SYSTEMS

Units labeled specific shall be allocated in one of the nuclei or in its area of influence.

Molecular main specific poles:
- Nucleus of recreation
- Nucleus of industry
- Nucleus of education
- Nucleus of commerce
- Nucleus of government

Units labeled diffuse are allocated in every nuclei, their functions are secondary to the molecule but primary to the nuclei.

As examples of diffuse units:
- Dwellings
- Churches
- Agricultural land

### Systems

<table>
<thead>
<tr>
<th>Systems</th>
<th>Function</th>
<th>Architectural Unit</th>
<th>Inputs 70-80-90-2000</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family</td>
<td>Kin association</td>
<td>dwelling zones</td>
<td></td>
<td>Diffuse Units</td>
</tr>
<tr>
<td></td>
<td>Consumer units</td>
<td>neighborhoods</td>
<td></td>
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<td></td>
<td></td>
<td>apartment buildings</td>
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<td></td>
<td></td>
<td>house</td>
<td></td>
<td></td>
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<tr>
<td>Economy</td>
<td>Production</td>
<td>industrial zone</td>
<td></td>
<td>Specific Units</td>
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<td></td>
<td>Extractive</td>
<td>factory compound</td>
<td></td>
<td>Diffuse Units</td>
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<td></td>
<td>Transformation</td>
<td>artifacts</td>
<td></td>
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<td></td>
<td></td>
<td>farm land</td>
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<td></td>
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<td>stables</td>
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<td>ranches</td>
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<td>Distribution</td>
<td></td>
<td>commercial zone</td>
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<td>Specific Units</td>
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<td></td>
<td>Sending</td>
<td>shopping center</td>
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<td>Receiving</td>
<td>market</td>
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<td>Storing</td>
<td>department store</td>
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<td>Exchanging</td>
<td>business center</td>
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<td>office building</td>
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<td>banks</td>
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<td>warehouses</td>
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<td>Consumption</td>
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<td>Dwelling</td>
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<td>Diffuse Units</td>
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<td>recreational zone</td>
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<td>resort areas</td>
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<td>cultural center</td>
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<td>museum</td>
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<td>stadium</td>
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<td>theaters</td>
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<td>movie</td>
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<td>clubs</td>
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<td>sports</td>
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<td>Education</td>
<td>Socialization</td>
<td>university campus</td>
<td></td>
<td>Specific Units</td>
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<td></td>
<td></td>
<td>technical school</td>
<td></td>
<td>Diffuse Units</td>
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<td></td>
<td></td>
<td>high school</td>
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<td></td>
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<td>elementary school</td>
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<td></td>
<td></td>
<td>kindergarten</td>
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<td>Religion</td>
<td>Moral Recreation</td>
<td>ceremonial center</td>
<td></td>
<td>Specific Units</td>
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<td></td>
<td></td>
<td>cathedral</td>
<td></td>
<td>Diffuse Units</td>
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<td></td>
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<td>church</td>
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<td></td>
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<td>seminary</td>
<td></td>
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<td>Health &amp; Welfare</td>
<td>Social Support</td>
<td>hospital compound</td>
<td></td>
<td>Specific Units</td>
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<td></td>
<td></td>
<td>clinic</td>
<td></td>
<td>Diffuse Units</td>
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<td>emergency post</td>
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<td></td>
<td></td>
<td>maternity</td>
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<tr>
<td>Government</td>
<td>Social Control</td>
<td>civic center</td>
<td></td>
<td>Specific Units</td>
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<td></td>
<td></td>
<td>administration building</td>
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<td>Diffuse Units</td>
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<td>post office</td>
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COMMUNICATION

THE SPREAD OF FUNCTIONS IS ONLY POSSIBLE THROUGH AN EFFECTIVE SYSTEM OF COMMUNICATIONS AND TRANSPORTATION NETWORKS.

INTRA MOLECULAR AND NATIONAL LINKAGES.
PRIORITY INPUTS IN THE CREATION OF MOLECULAR CITY.

TRANSPORTATION

TARGETS FROM MOLECULAR CITY TO NATIONAL NETWORKS.
FROM NUCLEUS TO NUCLEUS (INTERNAL SYSTEM)
FROM SPECIFIC AND DIFFUSE UNITS TO: OTHER UNITS OTHER NUCLEUS THE NATION

EXTERNAL SYSTEM INTERNAL SYSTEM

NATIONAL NETS

INTERNAL NET

THIS NET OF TRANSPORTATION MUST START WITH THE EXISTING AND EVOLVE LATER INTO A MORE ADEQUATE ONE.

COLLECTIVE AND PRIVATE MEANS OF TRANSPORTATION OPTIMUM USE.
NETWORKS OF TRANSPORTATION MUST EXIST IN THEIR OWN CONTINUUM
THUS THEIR DYNAMIC FUNCTIONS DO NOT INTERFERE WITH THE SHELTER'S STATIC FUNCTIONS. THUS BOTH DYNAMIC AND STATIC SPACES SHALL BE PATTERNED BY THEIR OWN MAXIMUM TASK PERFORMANCE PATTERN.
MOLECULAR CITY FORM:

AS RESULTANT OF SYNTHESIS OF:

I) ACTUAL CONDITIONS, INHERITANCES OF SITE SETTLEMENTS AND NETWORKS.
II) THESE ORGANICALLY RESHAPED BY INDUCED DEPENDABILITY OF FUNCTIONS.
   A) NEW DEVELOPMENTS CONSISTING OF SPECIFIC ARCHITECTURAL UNITS.
   B) ADDITIONAL INTER-MOLECULAR CIRCULATION SYSTEM.
III) FINALLY, MOLDED ACCORDING TO MAN'S WILL

CITIES ARE THE PRODUCT OF MANY PEOPLE AND INSTITUTIONS WORKING TOGETHER THROUGH A TIME VECTOR, AS A VITAL FORM IS ALWAYS IN FORMATION. THE CITY IS AN UNFINISHED FORM.

THE CITY IS NOT ONE SPACE, BUT MANY SPACES.

This space is confined by addition of integrated sub-forms, architectural units.

NOT ONE SHAPE, BUT MANY SHAPES.

THE MOLECULAR CITY IS AN INTERDEPENDENT TRANSPORTATION STRUCTURE INTEGRATING MANY FUNCTIONS. IT IS A SYNTHESIS OF FUNCTIONS, SHELTERS, NETWORKS.

A SINGLE CONTINUUM

Heterogeneity of forms is equal to heterogeneity of:

individuals
functions
life

City sub-forms are the shelters of its systems; they exist in one space, not in one shape, for unique it would be.
CITY FORM

PARTITIONS, SYSTEM OF RELATIONSHIP

A) Integrated

B) Unified

C) Segregated

EXAMPLES:

Relation (A.2.)

Relation (B.4.)
(A.2.)
(C.5.)

Relation (B.3.)

Pedestrian

Vehicular

Industrial

nucleus

agriculture

MOLECULAR CITY MAIN RELATIONSHIPS.
CITY FORMS

PROPORTIONS: TIME AND SPACE

The proportions of the city sub-forms as related to man's perceptions.

The dimensions of the city are experienced by man within many sub-containers. Therefore, city proportions good or bad depend not so much on their density or size but in the imagery imposed upon the inhabitant at the varying degrees of perception, time/space.

THE CITY IS NOT ONE CONTAINER BUT MANY.
Neither back to the cave, nor destruction of natural assets.

Valley
No retreat, nor total invasion.

IMPLANTATION MUST BE LIKE

CITY

OR LIKE THE BEACH

Beach
Sand
Water

A PERFECT SYNTHESIS

TREE ROOTS
New developments consciously planned must follow same rules and in the cases of undesirable locations provoke a displacement to better position in relation to the habitat.

To properly apply the molecular concept, every habitat must be examined, its particular characteristics appraised and then the design artificial elements implanted accordingly.
MOLECULAR CITY PATTERN IS THE SYNTHESIS OF PARTITIONS AND PROPORTIONS OF:

I) SHELTERS ACCOMMODATED AND PATTERNED BY THEIR SYSTEMS IN THEIR OWN CONTINUUM.

II) NETWORKS PATTERNED BY THE STRAIGHT LINE OF MAXIMUM EFFICIENCY. THEIR PURPOSE IS TO SERVE; THEREFORE, THEY ARE DEPENDENT ON THE SHAPE OF THE SHELTER SPACES.

III) NATURAL LAYOUT (VALLEY AS THE GENERAL LAND FORM) MODIFIED IN THE DEGREE (MINIMUM) OF FITNESS TO THE ARTIFICIALLY CREATED SHAPES.

SYNTHESIS OF THESE ELEMENTS EQUALS MOLECULAR CITY PATTERN.
MOLECULAR CITY FORMATION =
1. Special allocation of architectural units
2. Shared systems
3. Actual isolation
4. Existing shelters
5. Synthesis participative
6. Two continuums

MOLECULAR CITY STRUCTURAL FORMATION
THE NATION AND THE REGION
DESIGN
LOCALIZATION IN THE STATE

Initial Nucleus

Sta. Ana Acatlán
Villa Corona
Bella Vista
El Ejido
Sta. Catarina

JALISCO COMMUNICATION NETWORKS
MOLECULAR EXAMPLE

LOCALIZATION ON THE COASTAL REGION

REGIONAL COMMUNICATIONS NETWORK
MOLECULAR CITY INITIAL NUCLEUS

- BELLA VISTA - 1,700 Inhabitants
- STA. ANA ACATLAN - 10,800 Inhabitants
- VILLA CORONA - 6,300 Inhabitants

- STA. CATARINA - 4,100 Inhabitants
EL EJIDO - 3,200 Inhabitants

THE MICRO-REGION
FORMATION
PERSPECTIVE

INITIAL STAGE OF ISOLATION
PLAN

INITIAL STAGE OF ISOLATION
Specific Unit COMMERCE
Specific Unit INDUSTRY

Specific Unit RECREATION

1. ACTIVATION OF MOLECULAR FORMATION
   Shared systems enforced by specifically located architectural units.

2. Activation by Reconditioning of a Rudimentary Internal Net of Transportation.

Specific Unit RECREATION

Specific Unit EDUCATION

ACTIVATION OF MOLECULAR FORMATION
INITIAL STAGE
MOLECULAR CITY INITIAL STAGE
SECOND STAGE
New Unit Government Palace
Old Town

New Unit Factory
INDUSTRY Zone

New Unit Market
Old Town

AGRICULTURE Zone
Old Town
New Unit Stadium

AGRICULTURE Zone

AGRICULTURE Zone

New Unit Hotel
Old Town

New Unit School
Old Town

ZONIFICATION
CIRCULATION SYSTEM

NATIONAL NETWORK

INTRA MOLECULAR

INTRA NUCLEUS
- GOVERNMENT

- INDUSTRY

- COMMERCE

STA. ANA ACATLAN and BELLA VISTA

MOLECULAR CITY

NUCLEI OF GOVERNMENT, INDUSTRY AND COMMERCE PLAN
INDUSTRIAL NET

EXTERNAL NET

INTRA MOLECULAR NET

INTRA NUCLEUS NET

CIRCULATION SYSTEMS
The architect must be fully aware of the future since only through the understanding of it shall he be acquainted with the nature of the present.

It is through concepts that the backstage of development is built.

This thesis comprises a research on concepts as its main body.

Its findings are the involvement of my beliefs today with the migratory problem in Mexico.

The ideas formulated here are directed to further develop a process of approach.

An approach to the future.

As a confrontation between:

The City as a Building
The Society as its Inhabitant
and myself as an Architect.

Not to think of the future is not to have one.

José Morales González.
STUDY OF TOWN PLANNING CONCEPTS FOR MEXICO - THE CASE OF JALISCO

BIBLIOGRAPHY

ALEXANDER, CHRISTOPHER
Notes on the Synthesis of Form

ARQUITECTOS MEXICANOS, Colegio Nacional de Arquitectura de Mexico
4000 Years of Mexican Architecture
Editorial Libreros Mexicanos Unidos, Mexico D.F. 1956.

ALVAREZ, ALFREDO JUAN
Mexico Prehispanico y Colonial

A.L.P.R.O. VII JORNADAS
JUNTA GENERAL DE PLANEACION Y URBANISMO DEL ESTADO DE JALISCO
Reporte de Urbanismo

CHERMAYEFF, S. AND ALEXANDER, C.
Community and Privacy

CIAM
La Carta de Athenas
Contempora, Buenos Aires 1957.

CARLSON, DEPPE AND MAC LEAN
Recreation in American Life

DOXIADIS, CONSTANTINOS
Between Dystopia and Utopia

Architecture in Transition
DHUL, LEONARD J.
The Urban Condition

FUTTERMAN, ROBERT A.
The Future of Our Cities

BARDET, GASTON
L'Nouvelle Urbanisme

GARCIA, RAMOS DOMINGO
Iniciacion al Urbanismo

GALLION, ARTHUR B. AND SIMON EISNER
The Urban Pattern

GIEDION, SIGFRIED
Space, Time, and Architecture

GOODMAN, PERCIVAL AND PAUL GOODMAN
Communitas

HALL, EDWARD T.
The Hidden Dimension

KEPES, GYORGY
Structure in Art and in Science

KAHN, LOUIS
"Remarks"
Perspecta 9/10
LYNCH, KEVIN
The Image of the City
The Technology Press and

LECORBUSIER
Poesie Sur Algier
Editions Falaize, Paris 1948

LECORBUSIER
Mensaje a los Estudiantes de Arquitectura (2nd ed.)
Ediciones Infinito, Buenos Aires 1961

LECORBUSIER
The Home of Man

LOPEZ, ROSADO DIEGO
Historia de Mexico, Perspectiva Grafica
Talleres Maria Duran de Diaz Garay, Mexico D.F. 1959.

REINER, THOMAS A.
The Place of Ideal Community in Urban Planning

SANDERS, IRWIN T.
The Community

STYLES, FREDERICK G.
The Concept of the Ideal Urban Form (2nd ed.)

TAYLOR, LEE AND ARTHUR R. JONES, JR.
Rural Life and Urbanized Society

UNESCO
Urbanization in Latin America
Bibliography - continued

WARREN, ROLAND E.
The Community in America

Perspectives on the American Society

WINGO, LOWDON, JR.
Cities and Space

WEBLER, DYCKMAN L. AND ASSOCIATES
Exploration into Urban Structure

YALE UNIVERSITY, DIRECTIVE OF REGIONAL PLANNING
The Case of Regional Planning

JOURNALS AND PERIODICALS

Architectural Design
October 1964

Menah - U.A.G. Arquitectura
1965

L'Architecture d'Aujourd'hui
Jun-Jul 1964

KUITOKAMA, N.
"Tokyo's Unofficial Future"

GOMEZ MAYORGA, MAURICIO
"El Arquitecto, el Urbanista y el Ingeniero Civil"

CANDILIS, GEORGES
"Recherches d'Architecture", p. 14

BAKEMA, J. B.
"L'Urbanisme Dans la Deuxieme Revolution", p. 20.

FREI OTTO
"Villes Futures", p. 22.

BLOCK, ANDRE
"Recherche d'Expressions Architecturales", p. 94.
Bibliography - continued

Calli Internacional
Sept-Oct 1966
EDITORIAL
"La Arquitectura y las Organizaciones Agrícolas", p. 2.

May-Jun 1967
ORTIZ FLOREZ, FDO.
"Vivencia en Guadalajara", p. 11

Jun-Aug
CYMENT, DAVID
"Urbanismo", p. 12.

United Nations Departamento de Economía y Asuntos Sociales
"Formacion del Personal para la Planificación Urbana", 1957.
Seminar in Puerto Rico
"Seminario Sobre la Planificación Regional" Seminar in Tokyo, 1959.

Censo Nacional 1960
Gobierno de la República Mexicana Poder Ejecutivo
Talleres Gráficos de la Nación, 1960

Town Planning Review
April 1964
Published by the Liverpool School of Architecture
CRITTEES, ELIZABETH
"The Structures of Urban Areas", p. 117.

October 1964
CLARK, COLIN
"The Location of Industries and Population", p. 145.

January 1965
WIDDLE, A.E.
"Rural Land Resources", p. 267.

July 1965
FRIEDEN, BERNARD J.
"The Search for a Housing Policy in Mexico", p. 103.

MASSEY, F. J., AND D. C. STROND
"The Metropolitan Village", p. 211.

October 1965
WRIGHT, MYLES
"Regional Development", p. 147.

CZMANSKI, STANISLAW
"Industrial Location and Urban Growth", p. 165.

January 1966
BROADY, MAURICE
"Social Change and Town Development", p. 269.

JOHNSTON, R. J.
"Components of Rural Population Change" p. 279.
Bibliography - continued

Ekistics
February 1962
Published by Athens Center of Ekistics, Athens.
From United Nations, Dept. of Economics and
Social Affairs
"Establishment of Industrial States in Under-
developed Countries", p. 63.

BENY, BRIAN J. L.
"City Size Distribution and Economic Develop-
ment", p. 91.

THIJSSE, JAC P.
"Rural Pattern for the Future", p. 104.

April 1962
EDITORIAL
"Decentralization, Palliative or Cure for
Excessive Urbanization?, p. 207.

JATRIDES, DEMETRIOS S.
"International Conference on Rural
Development, p. 237.

May 1964
DARLING, FRASER

July 1964
WILKENING, E. A.
"Some Perspectives of Change in Rural
Communities", p. 10.

September 1964
VON BOVENTER, EDWIN
"Spatial Organization Theory as Basis
for Regional Plan", p. 130.

February 1965
OROZCO, VICENTE
"Planning for the Valley of Mexico"

September 1965
ROTERCES, VICTOR
"Centralization or Decentralization of
Economic Growth, p. 121.

January 1965
WOLFE, MARSHALL
"Implications of Recent Changes in Rural-
Urban Settlement in Latin America", p. 201.

August 1966
FRANK, ANDREW G.
"Unstable Latin America", p. 136.

MALPERN, JOEL